



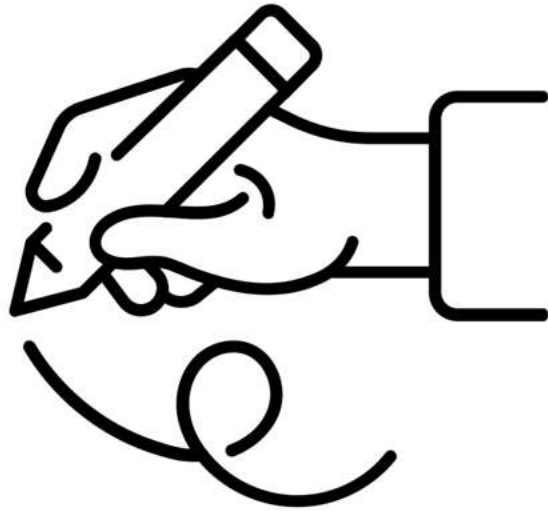
Knowledge Organisers

Year 11





Pages	Subject	Pages	Subject
9-10	English	52-64	Information Technology
11-12	French	65	Business
13-16	Urdu	66-67	Design Technology
17-23	Maths	68-69	Art
24-29	Geography	70-71	Food
30-51	History	72	Music
		73-95	Science

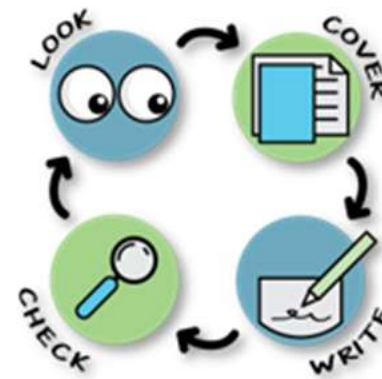


You will use your book of knowledge organisers to practice the 9 techniques for self study.

Each week will focus on a different technique, and you will practice it in every subject.

Your teacher will let you know which knowledge organiser to use and which section to focus on.

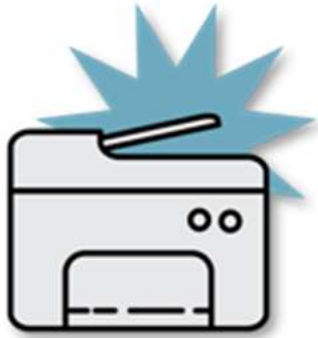
Week 1 starts 3rd January 2022



Look, Cover, Write, Check

➤ *Used to reproduce small sections of text*

1. Look carefully at the section.
2. Read it through very carefully.
3. Read it again.
4. Cover it over.
5. Write down everything you can remember.
6. Uncover the section.
7. Check and correct any mistakes.
8. Try again until you are 100% correct.



Photocopy

➤ *Used to reproduce larger sections of text or worked examples*

1. Look carefully at the section.
2. Read it through very carefully.
3. Read it again.
4. Copy it down accurately.
5. Cover it over.
6. Write down everything you can remember.
7. Check and correct any mistakes.
8. Try again until you are 100% correct.



Recreate

➤ *Used to reproduce diagrams*

1. Look carefully at the diagram.
2. Try tracing over it with your finger.
3. Read any captions.
4. Copy the diagram accurately including the captions.
5. Cover it over.
6. Recreate (draw) the diagram including the captions.
7. Check and correct.
8. Try again until you are 100% correct.

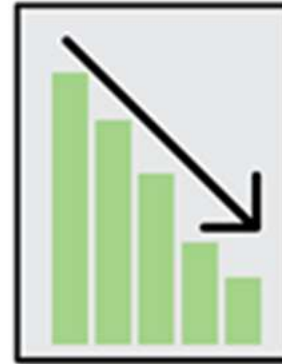




Transform

➤ *Condense text by changing it to visual prompts*

1. Look carefully at the section.
2. Read it through very carefully.
3. Read it again.
4. Draw pictures or icons to show the information in the text.



Reduce

➤ *Condense a larger piece of information into a few key words*

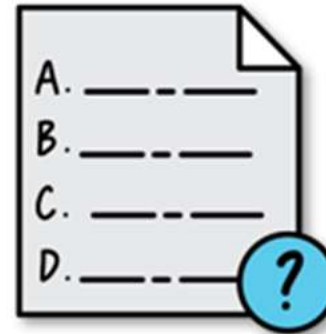
1. Look carefully at the section.
2. Read it through very carefully.
3. Read it again.
4. Rewrite it using as few words as possible.



Prioritise

➤ *Used to condense to top three ideas*

1. Look carefully at the section.
2. Read it through very carefully.
3. Read it again.
4. Pick the top three ideas.
5. Put them in order from most to least important.
6. Explain why you picked each idea.

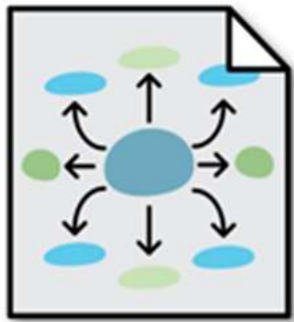


Quiz

➤ *Used to test yourself on selected information*

1. Look carefully at the section.
2. Read it through very carefully.
3. Read it again.
4. Write 5 questions based on the section.
5. Try using these question types.
 - *What is the definition of.....?*
 - *How do you know?*
 - *How do ____ and ____ connect?*





Mind Map

➤ *Show connections within a knowledge organiser*

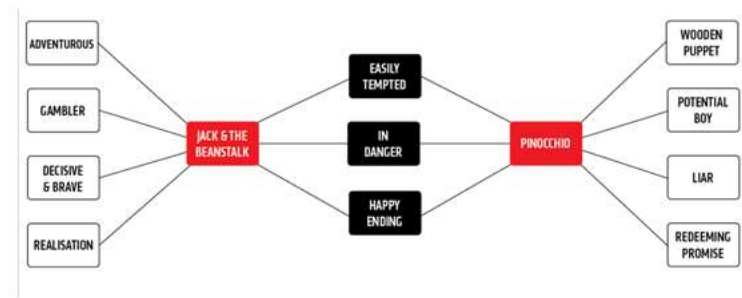
1. Look carefully at the organiser.
2. Read it through very carefully.
3. Read it again.
4. Write the title in the middle of a blank page turned landscape (sideways).
5. Make branches for the main ideas (about four is usual).
6. Make smaller branches with ideas and examples linked to each of the main ideas.
7. Use very short sentences or single words.



Connect

➤ *Make connections between knowledge organisers*

1. Look carefully at the organisers
2. Read them through very carefully
3. Read them again
4. Write down the key ideas from each organiser
5. Find any ideas that link
6. Explain why
7. You could use a double spray diagram to show your ideas





Word

Definition

1. Social Responsibility	Looking after those less fortunate than you
2. Poverty	Being poor
3. Novella	A short novel
4. Allegory	A story with a hidden, moral message
5. Charity and generosity	Giving money to support the poor

Redemption

The act of change for the better



The belief that no matter how bad a person is, they can still be forgiven and go to Heaven if they truly repent (if they regret their actions)

Plot summary

1. It is Christmas Eve. Scrooge is rich, but hordes his money. Marley visits Scrooge and tells him he must change or face eternal damnation.



2. The Ghost of Christmas Past takes **Scrooge** to see himself as a boy and apprentice. We also see **Scrooge's** engagement fail. **Scrooge** begins to regret his choices.



3. The Ghost of Christmas Present takes **Scrooge** to see the **Cratchits'** and **Fred's** Christmases.



4. The Ghost of Christmas Yet To Come shows **Scrooge** his death and that of **Tiny Tim**. **Scrooge** is not missed. He promises to change.



5. Scrooge wakes up on Christmas Day. He changes his ways and becomes kind and generous to all. **Tiny Tim** lives!



Themes

Wealth



Christmas Spirit



Poverty and Social Responsibility



Family



Characters

1. Ebenezer Scrooge
2. Jacob Marley
3. Bob Cratchit
4. Tiny Tim
5. Fred
6. The Ghost of Christmas Past
7. The Ghost of Christmas Present
8. The Ghost of Christmas Yet to Come

Quotes

1. "Twisting, squeezing...covetous old sinner"
2. Marley made his chain "link by link"
3. Scrooge worships a "golden idol"
4. "If they would rather die, they had better do it and decrease the surplus population."
5. "God bless us, every one!"

Context

1. Thomas Malthus argued that poverty was inevitable.
2. The Poor Laws punished the poor for their poverty.
3. Victorians were very religious and believed in Heaven and Hell.



Word	Definition
1. Script	the written text of a film or play
2. Tragedy	A play with a sad ending
3. Feud	A fight or argument
4. Contrast	Showing something is opposites
5. Sonnet	14 line love poem – Shakespeare's favourite poem!

Dramatic Irony



Where the audience/ some characters know something that the rest of the characters do not. It creates confusion, secrecy and lies.

Plot summary	
1. Capulets and Montagues fight in the streets and are threatened by the Prince . Romeo and Juliet meet and instantly fall in love.	
2. Friar Lawrence and The Nurse help Romeo and Juliet marry in secret.	
3. Tybalt kills Mercutio by accident. In grief, Romeo kills Tybalt and is exiled. The Nurse tells Juliet to marry Paris .	
4. Juliet goes to Friar Lawrence to get out of marrying Paris . Together, they fake Juliet's death with a sleeping drug.	
5. Romeo doesn't know Juliet isn't really dead. He kills Paris , then kills himself with poison. Waking up, Juliet stabs herself to be with Romeo .	

Themes	
Love	
Hate	
Family, Honour and Feuds	
Fate	

Characters

1. Romeo Montague
2. Juliet Capulet
3. Mercutio
4. Benvolio
5. Tybalt
6. The Nurse
7. Friar Lawrence
8. Paris
9. Prince Escalus

Quotes

1. "My only love sprung from my only hate"
2. "A plague on both your houses"
3. "If ever you disturb our streets again, your lives shall pay the forfeit"
4. "And you be mine, I give you to my friend"
5. "She doth teach the torches to burn bright"

Context

1. Romeo and Juliet is set in a **patriarchal** society, where men had absolute power over their women family members. Juliet choosing Romeo herself is rebellious.
2. It was normal for girls of 13 to be married at the time.



90 Word Checklist

1. All bullet points covered.
2. At least 3 opinions.
3. Past tense used.
4. Present tense used.
5. Future tense used.
6. Talk about yourself and at least one other person.
7. Connectives used.
8. Adjectives used.
9. DIFFERENT adjective to follow the last used.
10. Adverb used.
11. Intensifier used.
- 12. Comparatives used.**
- 13. An idiom used.**
- 14. Three additional tenses.**

Adverbs

1. tout à fait – completely
2. un peu – a bit
3. Malheureusement - Unfortunately
4. Normalement – Normally
5. De temps en temps- From time to time
6. D'abord – Firstly
7. Généralement - Generally
8. Finalement – Finally
9. Souvent- Often
10. tellement- so

Linking Words

1. Si – If
2. Néanmoins - nevertheless
3. Puis – Then
4. Donc – Therefore
5. Alors – So
6. Quand – When
7. Par conséquent – As a result
8. Par contre – On the other hand
9. Tandis que – Whilst
10. Puisque - Since

Opinion Verbs

1. J'aime bien – I really like.
2. J'aime assez - I quite like.
3. Je n'aime pas du tout – I don't like...at all.
4. Ce que m'intéresse- What interests me
5. Je ne supporte pas – I can't stand.
6. Ce que me plaît - What pleases me.
7. Je trouve que - I find that
8. J'estime que - I reckon that
9. J'en ai marre de - I am fed up of

Idioms

1. Donner un coup de main- Give someone a hand.
2. Avoir le cafard- To feel low.
3. Ça vaut la peine- It's worth the pain.
4. Une perte de temps – A waste of time.
5. C'est dommage! - It's a shame.
6. Une perte d'argent – a waste of money.
7. Ça m'a beaucoup plu – I really like it.

Three Tense Time Phrases

1. L'année dernière - Last year
2. Il y a deux semaines – Two weeks ago
3. Pendant les grandes vacances – During the summer holidays.
4. Tous les jours – Everyday
5. La plupart du temps- Most of the time
6. D'habitude – Usually
7. Le weekend prochain – Next weekend
8. Après avoir quitté l'école - On leaving school
9. Dans mes rêves - In my dreams



Exam vocabulary	
Vous écrivez	You are writing
Mentionnez	Mention/ Include
Les phrases	The sentences
Vous envoyez	You are sending
Positive/ négative	positive/Negative
90 mots en français	Ninety words in French
Répondez	Reply
Chaque aspect	Each bullet point
Correspondant	correspondant
Choisissez	Choose
Vrai/ faux/pas mentionnez	True/false/not mentioned
La case	The box
La bonne personne	The correct person
La bonne réponse	The correct answer

Adverbs

1. Qu'est-ce que – What?
2. Comment – How?
3. Combien de – How many?
4. Qui – Who?
5. Quand – When?
6. Puis-je – Can I?
7. Où est – Where is?
8. Quel/ Quelle – Which?
9. Vous pouvez répétez la question? -Could you repeat the question?
10. Comprenez -vous?- Do you understand?

Past participles

1. ER infinitives - é
 2. RE infinitives - u
 3. IR infinitives - i
- Examples;
J'ai regardé - I watched
J'ai vendu – I sold
J'ai fini - I have finished.
- Exceptions
1. J'ai vu/bu/lu - I saw/drank /read
 2. J'ai pris – I took
- SAP** –SUBJECT/ AUXILARY / PAST PARTICIPLE

Être Verbs

1. Aller – to go
 2. Venir- to come
 3. Arriver – to arrive
 4. Partir – to leave
 5. Sortir – to go out
 6. Naître - to be born
 7. Mourir – to die
 8. Rester – to stay
 9. Entrer – to enter.
 10. Descendre – to go down
 11. Montrer- to go up
- All reflexive verbs also take être as the auxiliary verb

AVOIR and ÊTRE

- | | |
|---------------|-------------|
| 1. J'ai | Je suis |
| 2. Tu as | Tu es |
| 3. Il a | Il est |
| 4. Elle a | Elle est |
| 5. Nous avons | Nous sommes |
| 6. Vous avez | Vous êtes |
| 7. Ils ont | Ils sont |
| 8. Elles ont | Elles sont |

Near Future Tense

1. Je vais
2. Tu vas
3. Il va
4. Elle va
5. Nous allons
6. Vous allez
7. Ils vont
8. Elles vont

Add the infinitive



Key vocabulary

مشغلہ۔ سر گرمی۔ دلچسپ ی / شوق۔ فارغ وقت	Hobby, activity, interest, free time
کتابیں پڑھنا / کتب بنی۔ اخبار پڑھنا	Reading books, reading newspaper
تھپلی پکڑنا۔ تیرنا / تی راکی کرنا۔ تاش / شطرنج کھیلنا۔ باغبانی کرنا۔ پہاڑوں پر چڑھنا۔	To fish, to swim, to play cards/chess, gardening, mounting climbing,
کشتی چلانا۔ گھڑ سواری کرنا۔ رابطے میں رہنا	To row, horse riding, to stay in contact

Tenses with habiter

1. I live میں رہتا / رہتی ہوں
2. I am going to live میں رہوں گا / گی
3. I would like to live میں رہنا پسند کروں گا / گی
4. I used to live میں رہتا / رہتی تھی
5. Although I live اگرچہ میں رہتا / رہتی ہوں
6. – Although I live

Adjectives

ست / دلچسپ / اچھا کھلاڑی / بوریت / بُرا / مشکل
تیز / چست / تھکا ہوا / صحت مند / مفید
دلچسپ / کمزور / خوفناک / تکبر / تخلیقی / سنجیدہ /
پہلوان / چالاک / منظم / جلد باز / ایسا انداز

Photo details – key
Vocab

1. people - لوگ
2. men - مرد
3. women - عورتیں
4. kids - بچے
5. sky - آسمان
6. they are happy - وہ خوش ہیں

intensifiers

یہ بھی / بہت / کافی / ایک
چھوٹا / زیادہ / بلکہ
انتہائی / تو / تقریباً / بہتر / اچھی طرح
time phrases
گزشتہ کل۔ پچھلا۔ اگلا۔ ... سال
آج / ہر دن / عام طور پر موجودہ
مستقبل میں / کل آنے والا

Key phrases

- ۱۔ کیا میں اس کے بارے میں پر جو ش ہوں
- ۲۔ یہ مجھے اچھا محسوس / لگتا ہوتا ہے۔
- ۳۔۔۔۔۔ پھیلائیں،
- ۴۔ مجھے لگتا ہے کہ یہ ہے۔۔۔
- ۵۔ جہاں تک میں فکر مند ہوں۔۔۔



Infinitive	English	present	Past (I did)	Past perfect (used to) two tenses	future (I will do)	conditional (I would do)
کھیلنا	to play	میں اپنے دوستوں / بھائیوں کے ساتھ کرکٹ / ہاکی / فٹ بال / بیڈمنٹن کھیلتا / کھیلتی ہوں	میں اپنے دوستوں / بہن بھائیوں کے ساتھ فٹ بال / ہاکی / کرکٹ / بیڈمنٹن / والی بال کھیلتا۔	میں بچپن میں کرکٹ کھیلتا کرنا تھا لیکن اب فٹ بال کھیلتا ہوں۔	میں کھیلوں گا / گی۔	میں کھیلنا چاہوں گا / گی۔
پڑھنا	to read	میں اپنے فراغ وقت میں میگزین / ناول / کہانیوں کی کتابیں / رسالے / اخبارات پڑھتا / پڑھتی ہوں۔	میں نے پچھلے مہینے ایک کتاب پڑھی۔ میں نے کل اخبار پڑھا۔ میں کل ناول پڑھا۔	میں جب چھوٹا / چھوٹی تھا / تھی تو میں تصویروں والی کتابیں پڑھتا / پڑھتی تھا / تھی لیکن اب میں اخبار پڑھتا / پڑھتی ہوں۔	میں پڑھوں گا / گی۔	میں پڑھنا چاہوں گا / گی۔
دیکھنا	to watch	میں ٹی وی / ویڈیو / فلمیں دیکھتا / دیکھتی ہوں	میں نے کل ٹی وی پر پروگرام دیکھا۔ میں نے پچھلے ہفتے اپنے دوستوں کے ساتھ فلم دیکھی۔ میں نے ویڈیو دیکھی۔	میں جب چھوٹا تھا / چھوٹی تھی تو کارٹون دیکھتا تھا / دیکھتی تھی اب فلمیں دیکھتا / دیکھتی ہوں	میں دیکھوں گا / گی۔	میں دیکھنا چاہوں گا / گی۔
سننا	to listen	میں گانے / موسیقی / نعت / قوالی / مقرران کی تلاوت سننا / سنتی ہوں۔	میں نے کل اپنی پسند کے گانے سنے۔ میں نے پچھلے ہفتے موسیقی کی محفل میں گیا / گئی۔	میں پہلے فلموں کے گانے سننا تھا / سنتی تھی لیکن اب نعتیں سننا / سنتی ہوں۔	میں سنوں گا / گی۔	میں سننا چاہوں گا / گی۔
تیرنا	to swim	میں اپنے دوستوں کے ساتھ تیرتا ہوں۔	میں کل اپنے دوستوں کے ساتھ تیرنے گیا / گئی۔	میں اپنے دوستوں کے ساتھ تیرا / تیری۔	میں تیروں گا / گی۔	میں تیرنا چاہوں گا / گی۔



	Key vocabulary	
1	بہتر کرنا	to improve
2	بچانا	to avoid
3	کم کرنا	to reduce
4	مدد کرنا	to help
5	بند کرنا	to close
6	قبول کرنا	to accept
7	بے روزگاری	Unemployment
8	سماجی مسائل	Social issues
9	فائدے اور نقصانات	Advantages & disadvantages
10	اثر	impacts
11	حیاتی زندگی	family life
12	قریب کرنا	bring close

Photo details – key Vocab

1. لوگ - people
2. مرد - men
3. عورتیں - women
4. بچے - kids
5. آسمان - sky
6. وہ خوش ہیں - they are happy

Key questions

آپ ٹیکنالوجی کس مقصد کے لیے استعمال کرتے ہیں؟
 آپ کے خیال میں ٹیکنالوجی کے کیا فائدے اور کیا نقصانات ہیں؟
 آپ کے خیال میں ٹیکنالوجی نے کون سے سنگین مسئلے حل کیے ہیں؟
 ٹیکنالوجی تعلیم میں آپ کی کس طرح مدد کرتی ہے؟
 ٹیکنالوجی کب اور کیسے شروع ہوئی؟
 ٹیکنالوجی کا کثافت پر کیا اثر پڑا اور کیوں؟
 ٹیکنالوجی سے ہماری سماجی زندگی میں کیا تبدیلی آئی؟

Opinion phrases

میں محبت کرتا ہوں
 یہ مجھے پریشان کرتا ہے
 اس سے مجھے + تکلیف ہوتی ہے۔
 میرے نقطہ نظر میں۔
 یہ مجھے تکلیف دیتا ہے
 مجھے پسند ہے
 یہ میرے لئے اہمیت رکھتا ہے
 مجھے پرواہ نہیں

Key phrases

میرے خیال سے ٹیکنالوجی نے دنیا تبدیل کر دی ہے۔
 یہ اس وجہ سے ہے کہ دنیا سمٹ گئی ہے۔
 میں ٹیکنالوجی کا روزمرہ زندگی میں استعمال۔۔۔
 مستقبل میں میں چاہوں گا کہ ٹیکنالوجی کا استعمال۔
 ہمارا خاندانی نظام زندگی۔۔۔ پچھلے سال میں نے ایک لی
 دوستوں اور رشتہ داروں سے۔۔
 کوئی بات اب چھپی نہیں رہ سکتی کیوں کہ



Infinitive	English	Present	Perfect / past I have.../ I did	Imperfect I used to...	Future I am going to...	Conditional I would...
کام کرنا	To work	کام کرتا/تی ہے	کام کیا/ کرچکا/ چکی	کام کرتا تھا/ کرتی تھی	کام کروں گا/ گی	کام کرنا چاہوں گا/ گی
سیکھنا	To learn	سیکھتا/ سیکھتی ہے	سیکھ گیا/ سیکھی/ سیکھی/ چکا/ چکی	سیکھتا تھا/ سیکھتی تھی	سیکھوں گا/ گی	سیکھنا چاہوں گا/ گی
استعمال کرنا	To use	استعمال کرتا/ کرتی ہے	استعمال کیا/ کی/ کرچکا/ چکی	استعمال کرتا تھا/ کرتی تھی	استعمال کروں گا/ گی	استعمال کرنا چاہوں گا/ گی
لطف اٹھانا	To enjoy	لطف اٹھتا/ اٹھاتی ہے	لطف اٹھایا/ اٹھا چکا/ چکی	لطف اٹھاتا تھا/ اٹھاتی تھی	لطف اٹھائوں گا/ گی	لطف اٹھانا چاہوں گا/ گی
پیغام بھیجنے	To send message	پیغام بھیجتا/ بھیجتی ہے	پیغام بھیجا/ بھیج چکا/ چکی	پیغام بھیجتا تھا/ بھیجتی تھی	پیغام بھیجوں گا/ گی	پیغام بھیجنے چاہوں گا/ گی
بات چیت کرنا	To chat	بات چیت کرتا/ کرتی ہے	بات چیت کیا/ کی/ کرچکا/ چکی	بات چیت کرتا تھا/ کرتی تھی	بات چیت کروں گا/ گی	بات چیت کرنا چاہوں گا/ گی
پیغام وصول کرنا	To receive message	پیغام وصول کرتا/ کرتی ہے	پیغام وصول کیا/ کرچکا/ چکی	پیغام وصول کرتا تھا/ کرتی تھی	پیغام وصول کروں گا/ گی۔	پیغام وصول کرنا چاہوں گا/ گی
شیئر کرنا	To share	شیئر کرتا/ کرتی ہے	شیئر کیا/ کی/ کرچکا/ چکی	شیئر کرتا تھا/ کرتی تھی	شیئر کروں گا/ گی	شیئر کرنا چاہوں گا/ گی



	Word	meaning
1	Perpendicular	Two lines that meet to make a right angle
2	Trapezium	A four sided shape with one pair of parallel lines and
3	Isosceles	A triangle or trapezium with two lengths and base angles equal
4	Quadrilateral	A four sided 2D shape
5	Compound Shape	A shape made up of two or more simple shapes
6	Surface Area	Sum of the area of all faces of a 3D shape
7	Volume	The amount of space inside a 3D shape
8	Perimeter	The distance around the outside of a shape
9	Area	The space inside a 2D shape

Linked Units

Unit 9F

Unit 11F

Unit 17F

Word Power

Quadrilateral
Prefix **Quadri** – four
Stem: quadrilaterus

Perimeter and Area

Perimeter

Area

Calculate the area of each triangle.

$$b = 7, h = 4$$

$$\text{Area} = \frac{1}{2}bh$$

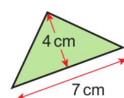
$$= \frac{1}{2} \times 7 \times 4$$

$$= 14 \text{ cm}^2$$

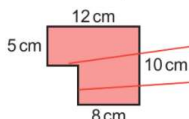
Write down the values of b and h .

Substitute them into the formula for area of a triangle.

Write the units with your answer.



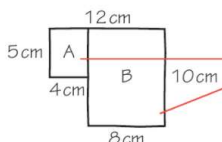
Calculate the perimeter and area of this compound shape.



Sketch the shape. Work out the missing lengths.
 $12 \text{ cm} - 8 \text{ cm} = 4 \text{ cm}$
 $10 \text{ cm} - 5 \text{ cm} = 5 \text{ cm}$

Perimeter = $12 + 10 + 8 + 5 + 4 + 5 = 44 \text{ cm}^2$

Add all the lengths around the shape to work out the perimeter.



Divide the shape into two rectangles A and B.

$$\text{Area of A} = 5 \times 4 = 20 \text{ cm}^2$$

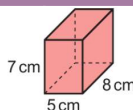
$$\text{Area of B} = 8 \times 10 = 80 \text{ cm}^2$$

$$\text{Total area} = 100 \text{ cm}^2$$

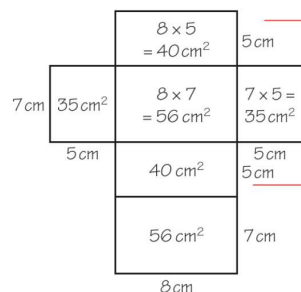
Work out the area of each.

Surface Area

Work out the surface area of this cuboid.



Sketch the net.



Label the lengths.

Work out the area of each face.

$$\text{Total surface area} = 40 + 56 + 40 + 56 + 35 + 35 = 262 \text{ cm}^2$$

Converting Units and Volume

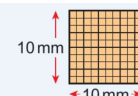
Compound units

These two squares have the same area.
 To convert from cm^2 to mm^2 , multiply by 100.
 To convert from mm^2 to cm^2 , divide by 100.

$$\begin{array}{c} \text{cm}^2 \quad 0 \quad 1 \quad 2 \quad 3 \quad \text{cm}^2 \\ \times 100 \quad \text{mm}^2 \quad 0 \quad 100 \quad 200 \quad 300 \quad \text{mm}^2 \end{array} \div 100$$



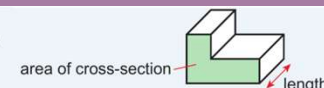
$$\text{Area} = 1 \text{ cm} \times 1 \text{ cm} = 1 \text{ cm}^2$$



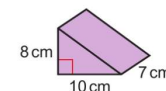
$$\text{Area} = 10 \text{ mm} \times 10 \text{ mm} = 100 \text{ mm}^2$$

Volume

Volume of a prism = area of cross-section \times length



Work out the volume of this prism.



Volume = area of cross-section \times length

$$\text{Area of } \triangle = \frac{1}{2} \times 10 \times 8$$

$$= 5 \times 8$$

$$= 40$$

$$\text{Volume} = 40 \times 7$$

$$= 280 \text{ cm}^3$$

Write down the formula.

Work out the area of the cross-section.

Substitute the area of the cross-section and the length into the formula.

Write the units.

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Perimeter and Area

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Volume

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Surface Area

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Converting Units

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	Word	meaning
1	Parallel	Two lines that never meet
2	Midpoint	The midpoint of a line segment is the point in the middle.
3	Gradient	Steepness of a graph
4	Linear equation	Produces a straight line
5	Rate of change graph	Shows how a quantity changes over time
6	Velocity-time graph	Gradient represents the acceleration

Linear graphs

Midpoint

Find the midpoint of a line segment with start point (3, 2) and end point (7, 9).

$$\frac{(3+7)}{2} = 5$$

Add the x -coordinates and divide by 2.

$$\frac{(2+9)}{2} = 5.5$$

Add the y -coordinates and divide by 2.

Midpoint = (5, 5.5)

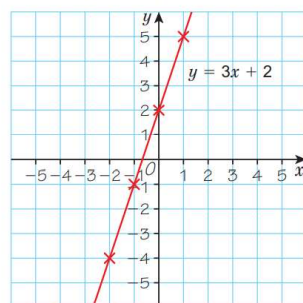
Linear graphs

Complete this table of values for the equation $y = 3x + 2$

x	-2	-1	0	1
$y = 3x + 2$	-4	-1	2	5

When $x = -2$, $y = 3 \times -2 + 2 = -4$
When $x = -1$, $y = 3 \times -1 + 2 = -1$
and so on...

Draw the graph of $y = 3x + 2$



Plot the coordinate pairs from the table with crosses (-2, -4), (-1, -1), (0, 2), (1, 5). Join them with a straight line and extend it to the edge of the grid.

Linked Units

Unit 11F

Unit 16F

Unit 14F

Word Power

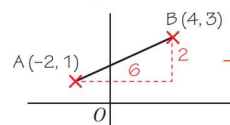
midpoint

Prefix ??????

Stem: ??????

Gradient

Find the gradient of the line joining the points A (-2, 1) and B (4, 3).



Sketch a diagram. Draw in lines across and up. Work out the distances across and up.

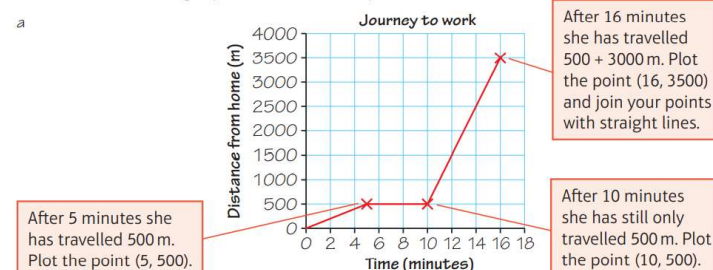
$$\text{Gradient} = \frac{\text{total distance up}}{\text{total distance across}} = \frac{2}{6} = \frac{1}{3}$$

Distance – time graph

Jenny walks 500 metres in 5 minutes, then arrives at the bus stop. She waits 5 minutes for the bus. She travels 3000 metres on the bus and gets off 16 minutes after she left home.

- Draw a distance–time graph for her journey.
- Work out the average speed in km/h of Jenny's walk.

a



b Jenny walks 500 m in 5 minutes.

$$\begin{array}{l} \times 12 \quad \begin{array}{l} 5 \text{ min} \quad 500 \text{ m} \\ 60 \text{ min} \quad 6000 \text{ m} \end{array} \quad \times 12 \\ \text{Average walking speed} = 6 \text{ km/h} \end{array}$$

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Midpoint

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Gradient

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Linear graphs

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Distance – time graphs

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	Word	meaning
1	Ratio	Is a way to compare two or more quantities
2	Proportion	Compares a part with the whole
3	Unit ratios	In a ratio, one of the numbers is 1
4	Unitary method	You find the value of one item before finding the value of more
5	Inverse proportion	As one value increase the other decreases at the same rate
6	Direct proportion	As one value increases, the other increases at the same rate

Using ratio to solve problems

To make orange paint Maria mixes yellow paint with red paint in the ratio 3 : 1. She uses 4 tins of red paint. How many tins of yellow paint does she use?

Write down the ratio. Use Y for yellow and R for red.

Y : R

$\times 4$ $\begin{matrix} 3 : 1 \\ 12 : 4 \end{matrix}$ $\times 4$

Multiply each part by the same number to get an equivalent ratio.

Maria uses 12 tins of yellow paint.

Simplifying ratio

Write 1.5 : 8 as a whole number ratio in its simplest form.

$\times 10$ $\begin{matrix} 1.5 : 8 \\ 15 : 80 \end{matrix}$ $\times 10$
 $\div 5$ $\begin{matrix} 15 : 80 \\ 3 : 16 \end{matrix}$ $\div 5$

1.5 has 1 decimal place so multiply both sides of the ratio by 10 to get a whole number.

The HCF is 5 so divide both sides by 5.

Using ratio to convert between units

Convert 8 m to cm.

1 m is 100 cm.

m : cm
 $\times 8$ $\begin{matrix} 1 : 100 \\ 8 : 800 \end{matrix}$ $\times 8$

The ratio of m : cm is 1 : 100.

So 8 m is 800 cm.

Sharing amount into ratios

Share £25 in the ratio 3 : 2.

3 + 2 = 5 parts

£25

$£25 \div 5 = £5$

$£5 \times 3 = £15$

$£5 \times 2 = £10$

Answer: £15 : £10

Check: $£15 + £10 = £25$

Work out how many parts there are in total.

Work out 1 part.

Work out 3 parts and 2 parts.

Check they add up to the correct total.

Proportion

Molly makes a blackcurrant drink by mixing 30 ml of blackcurrant with 450 ml of water.

Hope makes a blackcurrant drink by mixing 40 ml of blackcurrant with 540 ml of water.

Whose drink is the stronger? Explain your answer.

Molly

blackcurrant : water

$\div 30$ $\begin{matrix} 30 : 450 \\ 1 : 15 \end{matrix}$ $\div 30$

Hope

blackcurrant : water

$\div 40$ $\begin{matrix} 40 : 540 \\ 1 : 13.5 \end{matrix}$ $\div 40$

Simplify to a unit ratio.

Hope's drink is the stronger because it uses less water for every millilitre of blackcurrant.

Compare the quantity of water per ml of blackcurrant.

Recipe problems

A recipe for 6 people uses 900 g of mince. How much mince is needed for

a 12 people

P : M

$\times 2$ $\begin{matrix} 6 : 900g \\ 12 : 1800g \end{matrix}$ $\times 2$

b 3 people

P : M

$\div 2$ $\begin{matrix} 6 : 900g \\ 3 : 450g \end{matrix}$ $\div 2$

c 9 people?

6 people + 3 people = 9 people

$900 + 450 = 1350g$

Discussion How would you work out the amounts for 18 people and 15 people?

Inverse proportion

It takes 2 painters 7 days to paint a house. How many days does it take 1 painter to paint an identical house?

2 people take 7 days, so 1 person takes $2 \times 7 = 14$ days.

It takes 1 person twice ($\times 2$) as long as 2 people.

Linked Units

Unit 12F

Unit 14F

Unit 15F

Word Power

Proportion

Prefix Pro – ?????

Stem: ??????

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Ratio

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332
333
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Proportion

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	Word	meaning
1	Percentage Change	$\frac{\text{Actual change}}{\text{Original}} \times 100$
2	Compound Interest	Interest calculated based on both the initial and principal and the accumulated interest from previous periods
3	Density	Is a compound measure. It is the mass of a substance contained in a certain volume (usually measured in g/cm^3)
4	Pressure	Is a compound measure. It is the force applied over an area
3	Average Speed	Average speed is the total distance traveled for the object in question divided by the total elapsed time taken to travel the distance, the total period of time.

Word Power

Compound: a thing that is composed of two or more separate elements; a mixture.

Percentages

Increase/Decrease

Increase:
 $100\% + 20\% = 120\%$
as a decimal multiplier $= 1.20$
 $1.2 \times \text{amount}$

Decrease:
 $100\% - 4\% = 96\%$
as a decimal multiplier $= 0.96$
 $0.96 \times \text{amount}$

Compound Interest

$$A = P \left(1 + \frac{r}{n}\right)^{nt}$$

Where,
P = principal amount (initial investment)
r = annual nominal interest rate (as a decimal)
n = number of times the interest is compounded per year
t = number of years

To the nearest £1, find the final value of £500 invested at 4% compound interest per year for 6 years

$$500 \times 1.04^6 \approx \text{£}633$$

Initial investment Increase by 4% means find 104%

Linked Units

Unit 4F, 8F, 9F, 11F

Reverse Percentages

A jacket costs £102 after a discount of 15%. What is the original price of the jacket?

The price of a ticket costs £30 inclusive of 12% tax. What is the pre-tax cost of the ticket?

100% - 15% = 85% = 0.85

Original Price ? $\times 0.85$ New Price £102

Original price = £102 ÷ 0.85 = £120

100% + 12% = 112% = 1.12

Original Price ? $\times 1.12$ New Price £30

Original price = £30 ÷ 1.12 = £26.79

Depreciation

What is the **Depreciated value** of **\$58990** at **20% p.a.** for **3 years**?

$$P = \$58990 \quad n = 3 \text{ years} \quad r = 0.20$$

$$D = P(1 - r)^n$$

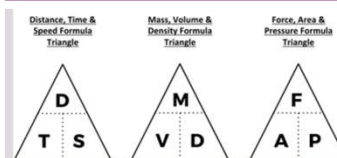
$$= 58990(1 - 0.20)^3$$

$$= 58990 \times 0.80^3$$

$$= \$30202.88$$

Compound measures

Density/Speed



The density of this metal block is 5 g/cm^3 . Find the mass of the block.

$D \times V = M$
 $M = D \times V$
 $M = 5 \times V$

$V = A \times L$
 $V = 30 \times 3$
 $A = 6 \times 5 = 90 \text{ cm}^2$
 $= 30$

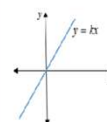
Proportion

Directly or Inversely Proportional

Directly Proportional

$$y \propto x$$

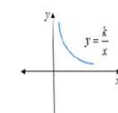
$$y = kx \text{ for a constant } k$$



Inversely Proportional

$$y \propto \frac{1}{x}$$

$$y = \frac{k}{x} \text{ for a constant } k$$



y is proportional to the square of x, $y = 60$ when $x = 5$

a. Find a formula for y in terms of x. b. Find y when $x = 4.5$

c. Find a value of x for which $y = 135$

a) $y = kx^2$ k constant b) $y = 5(4.5)^2$

$60 = k(5)^2$ $y = 112.5$

$k = \frac{60}{25}$ c) $135 = 5x^2$

$y = \frac{60}{5}x^2 = \frac{12}{1}x^2$ $135 = 5x^2$

$135 = 5x^2$ $135 = 5x^2$

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Percentages

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Speed/Dist/Time

716-724

Pressure

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735

736

737

Proportionality

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Key Word/Fact	Definition / Rule	Example
2D Shapes	Short for 'Two dimensional'. They are 'flat' shapes.	
3D Solids	Short for 'Three dimensional'. They are physical objects.	
Plan View, Front elevation/Side elevation	The plan view of a solid shape looks from directly from above the object. The elevations are the view of from one of the sides.	
Protractor and Compass	A tool used to measure the size of an angle on a 2D shape. A tool used to construct circles or arcs accurately.	Protractor Compass
SSS ASA SAS	Acronyms used when constructing triangles using a compass or protractor. Stands for 'Side, side, side'. Stands for 'Angle, Side, Angle'. Stands for 'Side, Angle, Side'.	Examples of an SSS, ASA and SAS construction.
Congruent	When two shapes are the same size and shape, they are congruent. Reflected or rotated shapes can still be congruent to each other.	
Net	The 2D faces needed to create a 3D solid. You can cut and fold to make a model of the 3D solid.	Net of a cube.
Bisector of an angle/line	A type of construction that divides a line or angle exactly into two.	Angle Bisector Perpendicular Bisector
Loci	A point, line, or curve moving according to mathematically defined conditions.	The red line is the loci of all the points equidistant from the black line.
Bearings	A 3-digit angle showing the direction of one object to another. Measured in a clockwise direction from the north.	

Construct a perpendicular bisector



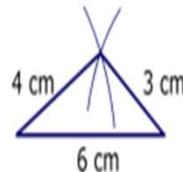
Construct a perpendicular bisector from a point ON a line



Construct a perpendicular bisector from a point TO a line



Construct a triangle given 3 sides



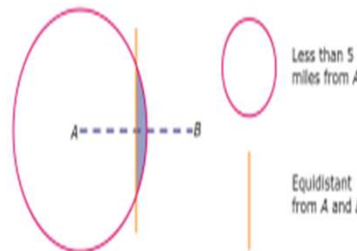
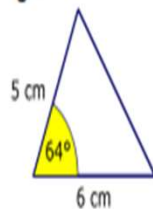
Locus (Loci) – the path a moving object takes

A and B are two towns 8 miles apart.

A mobile phone mast is to be installed.

It must be less than 5 miles from A and nearer to B than to A.

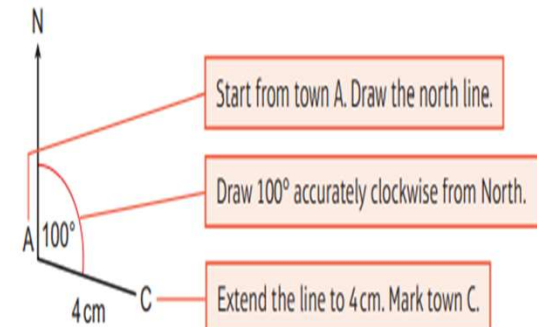
Construct a triangle given 2 sides and 1 angle



A **bearing** is an angle measured in degrees clockwise from north.
A bearing is always written using three digits.
This bearing is 025°.



Town C is 40 km from town A on a bearing of 100° from A. Draw this accurately using a scale of 1 cm to 10 km.



1 cm is 10 km
4 cm is 40 km

Always measure the angle of a bearing at the 'from' point.

• Hegarty Maths Videos

Construction
662-669
&
683

Loci
674-679

Bearings
492-496

Word Power

Loci – from Latin locus. A place, spot, appointed place, region, topic, subject. From Old Latin stlocus, a word from uncertain origin

Linked Units

Unit 6



	Word	meaning
1	Trapezium	A four sided shape with one pair of parallel lines and
2	Isosceles trapezium	Has one line of symmetry. Its two sloping sides are equal.
3	Hectare	The area of a square 100m x 100m = 10,000m ²
4	Upper bound	Half a unit greater than the rounded measurement
5	Lower bound	Half a unit less than the rounded measurement
6	Surface Area	The total area of all of the faces of a 3D solid
7	Prism	A 3D solid that has the same cross-section all through its length
8	Arc	Part of a circle

Linked Units

Unit 1H – Number

Unit 4H – FDP

Unit 5H – Angles and Trigonometry

Word Power

Trapezium

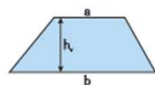
From late Latin literally meaning 'a little table'

Related words:

Trapezoid, Parallelogram, Rhombus

2D shapes

Area of a trapezium



Area of trapezium = average of parallel sides \times distance between them (vertical height)

$$A = \frac{1}{2}(a + b) \times h_v$$

EXAMPLE: The shape on the right shows a square with sides of length x cm drawn inside an isosceles trapezium. The base of the trapezium is three times as long as one side of the square.



In an isosceles trapezium, the sloping sides are the same length.

a) Find an expression for the area of the trapezium in terms of x .

Top of trapezium = side of square = x cm
Base of trapezium = 3 \times side of square = $3x$ cm
Height of trapezium = side of square = x cm
Area of trapezium = $\frac{1}{2}(x + 3x) \times x = 2x^2$ cm²

b) The area of the trapezium is 60.5 cm². Find the side length of the square.

Set your equation from part a) equal to 60.5 and solve to find x :
 $2x^2 = 60.5$
 $x^2 = 30.25$
 $x = 5.5$ cm

Area of a sector

EXAMPLE: In the diagram on the right, a sector with angle 60° has been cut out of a circle with radius 3 cm. Find the exact area of the shaded shape.

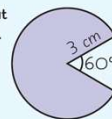
First find the angle of the shaded sector (this is the major sector):

$$360^\circ - 60^\circ = 300^\circ$$

Then use the formula to find the area of the shaded sector:

$$\text{area of sector} = \frac{x}{360} \times \pi r^2 = \frac{300}{360} \times \pi \times 3^2 = \frac{5}{6} \times \pi \times 9 = \frac{15}{2} \pi \text{ cm}^2$$

'Exact area' means leave your answer in terms of π .



Accuracy and Measures

EXAMPLES:

1. Convert 10 pounds into kg.
22 pounds = 1 kg
So 10 pounds = $10 \div 22 = 4.5$ kg

2. A rabbit's top speed is 56 km/h. How fast is this in m/s?

1) First convert from km/h to m/h:
56 km/h = (56 \times 1000) m/h = 56 000 m/h
2) Now convert from m/h to m/s:
56 000 m/h = (56 000 \div 60 \div 60) m/s = 15.6 m/s (1 d.p.)



$$1 \text{ m}^2 = 100 \text{ cm} \times 100 \text{ cm} = 10\,000 \text{ cm}^2$$

$$1 \text{ cm}^2 = 10 \text{ mm} \times 10 \text{ mm} = 100 \text{ mm}^2$$

$$1 \text{ m}^3 = 100 \text{ cm} \times 100 \text{ cm} \times 100 \text{ cm} = 1\,000\,000 \text{ cm}^3$$

$$1 \text{ cm}^3 = 10 \text{ mm} \times 10 \text{ mm} \times 10 \text{ mm} = 1000 \text{ mm}^3$$



EXAMPLES:

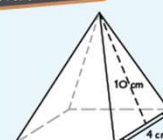
1. Convert 9 m² to cm².
To change area measurements from m² to cm² multiply by 100 twice.
9 \times 100 \times 100 = 90 000 cm²

2. Convert 60 000 mm³ to cm³.
To change volume measurements from mm³ to cm³ divide by 10 three times.
60 000 \div (10 \times 10 \times 10) = 60 cm³

3D shapes

Surface area of a square-based pyramid

EXAMPLE: Find the surface area of the square-based pyramid below.

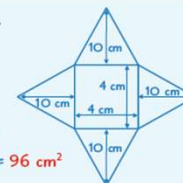


Sketch the net — a square-based pyramid has 1 square face and 4 triangular faces.

$$\text{Area of square face} = 4 \times 4 = 16 \text{ cm}^2$$

$$\text{Area of triangular face} = \frac{1}{2} \times 4 \times 10 = 20 \text{ cm}^2$$

$$\text{Total surface area} = 16 + (4 \times 20) = 16 + 80 = 96 \text{ cm}^2$$

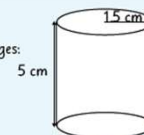


Surface area of a cylinder

EXAMPLE: Find the surface area of the cylinder on the right to 1 d.p.

Just put the measurements into the formula and work it out very carefully in stages:

$$\begin{aligned} \text{Surface area of cylinder} &= 2\pi rh + 2\pi r^2 \\ &= (2 \times \pi \times 1.5 \times 5) + (2 \times \pi \times 1.5^2) \\ &= 47.123... + 14.137... = 61.261... = 61.3 \text{ cm}^2 \end{aligned}$$



Surface area of a hemisphere

EXAMPLE: Find the exact surface area of a hemisphere with radius 4 cm.

A hemisphere is half a sphere — so the surface area of the curved face is $4\pi r^2 + 2 = 2\pi r^2 = 2 \times \pi \times 4^2 = 32\pi$ cm².

Don't forget the area of the flat face though — this is just the area of a circle with radius 4 cm: $\pi r^2 = 16\pi$ cm².

So the total surface area is $32\pi + 16\pi = 48\pi$ cm².

You're asked for the exact value, so leave your answer in terms of π .



Volume of a cylinder

$$\text{VOLUME OF PRISM} = \text{CROSS-SECTIONAL AREA} \times \text{LENGTH}$$

$$V = A \times L$$

EXAMPLE: Honey comes in cylindrical jars with radius 4.5 cm and height 12 cm.

The density of honey is 1.4 g/cm³. Work out the mass of honey in this jar to 3 s.f.

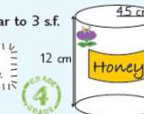
First, work out the volume of the jar — just use the formula above:

$$V = \pi r^2 h = \pi \times 4.5^2 \times 12 = 763.4070... \text{ cm}^3$$

Now use the formula mass = density \times volume:

$$\text{mass of honey} = 1.4 \times 763.4070... = 1068.7698... = 1070 \text{ g (3 s.f.)}$$

See p69 for more on density.



Hegarty Maths Videos

2D shapes and Area

539 - 547

559

3D shapes and Volume

582

829 - 832

Converting Units

700 - 704



	Word	Meaning
1	Plan/Front /Side elevation	The view from above/front/side an object.
2	Perpendicular and Angle bisectors	Cutting a line/angle in half
3	Locus	Set of all points that obey a certain rule.
4	Transformation	Moving a shape to a different position.
6	Object and Image	An original shape is called an object. After transformation, the resulting shape is called an image.
7	Congruent	Same shape and size.
8	Similar	Same shape but different size.
9	Construct	To draw accurately

Word Power

Locus

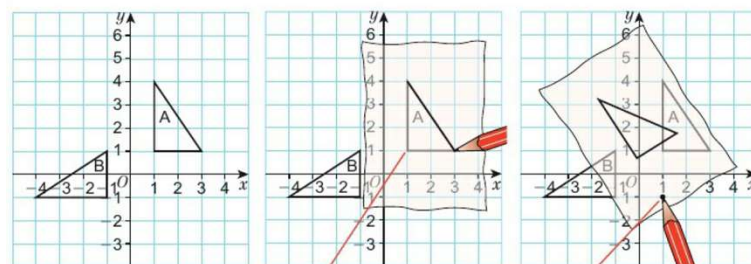
from Latin locus "a place, spot; appointed place, position; locality, region, country; degree, rank, order; topic, subject"

Related words:

allocate

Transformations

Describe the rotation that takes shape A onto shape B.



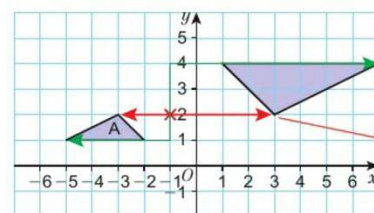
Trace the shape.

Rotate the tracing paper about a fixed point with your pencil. Repeat for different positions until your tracing ends up on top of the image.

Rotation anticlockwise 90° about $(1, -1)$

Give the direction, angle and centre of rotation.

Enlarge triangle A by scale factor -2 about centre $(-1, 2)$.



Count the squares from the centre of enlargement.

Instead of 1 down, 4 left, go 2 up, 8 right.

Instead of 2 left, go 4 right.

Linked Units

Unit 1H –
Number

Unit 4H –
FDP

Unit 5H –
Angles and
Trigonometry

Hegarty Maths Videos

Transformations

637-649

653-654

656-657

Drawings and Bearings

492-496

869

Constructions and Loci

659-669

683

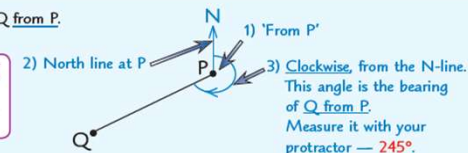
674-679

Drawings and Bearings

EXAMPLE:

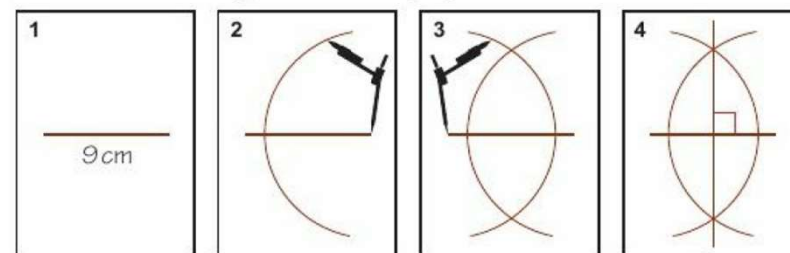
Find the bearing of Q from P.

ALL BEARINGS SHOULD BE GIVEN AS 3 FIGURES
e.g. 176° , 034° (not 34°), 005° (not 5°), 018° etc.



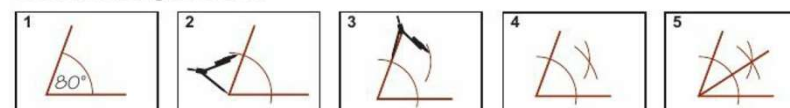
Construction and Loci

Draw a line 9 cm long. Construct its **perpendicular bisector**.



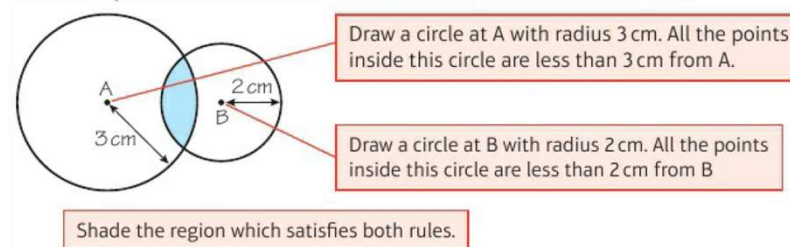
Draw an angle of 80° .

Construct the **angle bisector**.



A and B are two points 4 cm apart.

Shade the points that are less than 3 cm from A and less than 2 cm from B.



Shade the region which satisfies both rules.



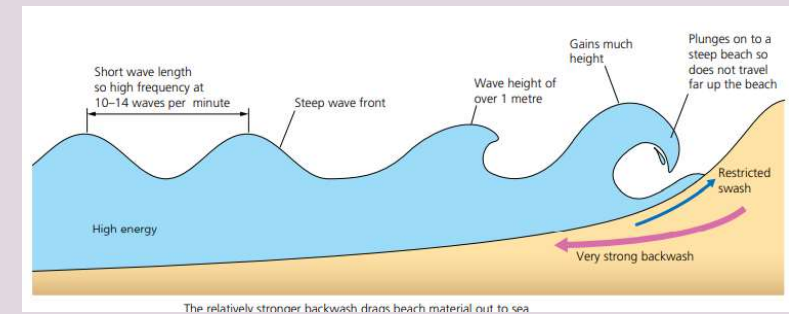
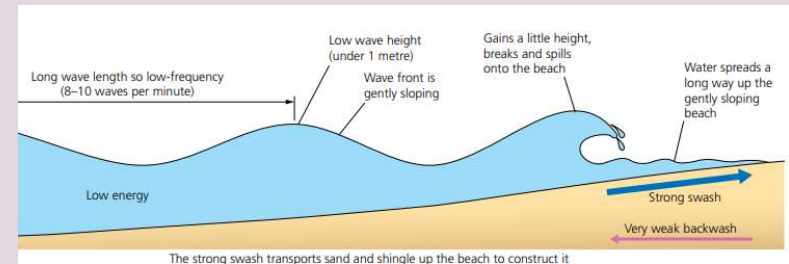
	Tier 3	Meaning
1	Waves	Ripples in the sea caused by the transfer of energy from the wind blowing over the surface of the sea.
2	Sub- Aerial Processes	Land based processes that affect the coastline e.g. weathering and mass movement.
3	Mechanical weathering	break up of exposed rock without any change in the chemical composition of the rock, for instance freeze thaw
4	Biological weathering	The weakening and breaking down of rock by plants and animals. E.g. plant roots get into small cracks
5	Chemical weathering	Rainwater and sea water reacting with the minerals in rocks. E.g. limestone and chalk can be dissolved.
6	Mass movement	The downhill movement of weathered material under the force of gravity. The speed can vary considerably.
7	Slumping	Rapid mass movement which involves a whole part of the cliff moving down-slope along a saturated shear-plane or line of weakness
8	Sliding	Occurs after periods of heavy rain when loose surface material becomes saturated and the extra weight causes the material to become unstable and move rapidly downhill,
9	Landslide	A rapid (fast) movement of surface material down a slope
10	Mudflow	Saturate soil and weak rock flows down a slope
11	Deposition	Occurs when material being transported by the sea is dropped due to the sea losing energy.

	Tier 2	Meaning
1	Saturated	Holding as much water or moisture as it can absorb (take in)
2	Frequency	The rate at which something occurs of a particular period of time

Word Power

Coast- where the land meets the sea
'margin of the land'

Types of waves

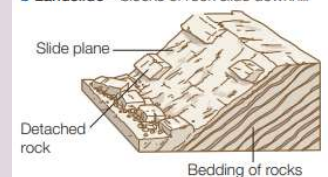


Mass Movement

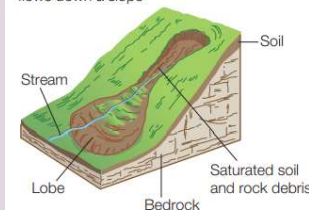
a Rockfall – fragments of rock break away from the cliff face, often due to freeze-thaw weathering



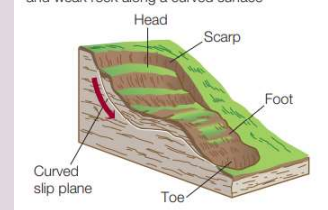
b Landslide – blocks of rock slide downhill



c Mudflow – saturated soil and weak rock flows down a slope



d Rotational slip – slump of saturated soil and weak rock along a curved surface

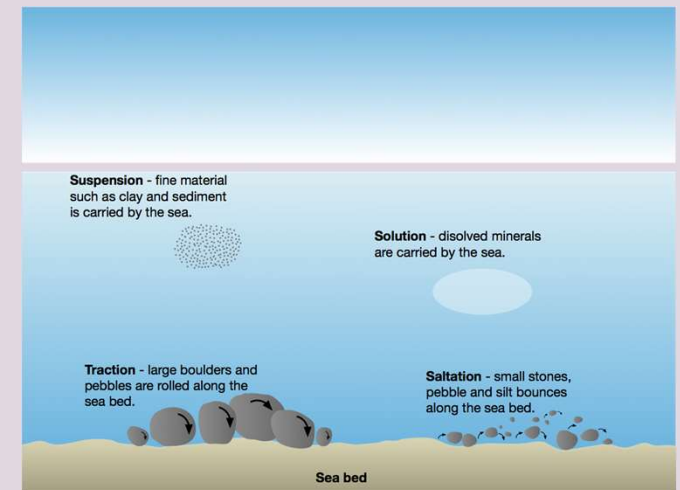




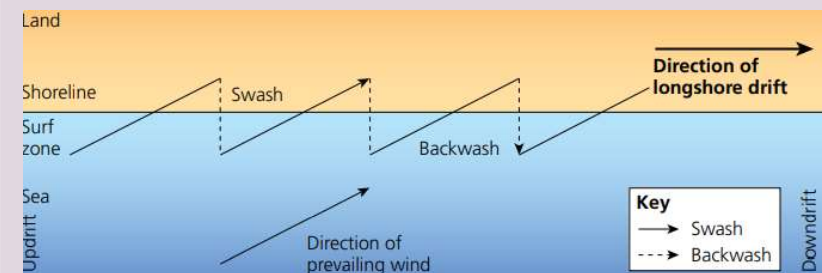
	Tier 3	Meaning
1	Marine Processes	Processes associated (linked) to the action of waves.
2	Erosion	The wearing away and removal of material by a moving force, such as a breaking wave.
3	Attrition	Erosion caused when rocks and boulders transported by waves bump into each other and break up into smaller pieces.
4	Abrasion (or corrasion)	The wearing away of cliffs by sediment flung by breaking waves
5	Hydraulic power	The process by which breaking waves compress pockets of air in cracks in a cliff. The pressure may cause the crack to widen, breaking off rock.
6	Transportation	The movement of eroded material.
7	Traction	The rolling of boulders and pebbles along the sea bed
8	Suspension	Fine particles of material held in the water whilst the water moves.
9	Solution	Soluble particles that are dissolved in the sea
10	Saltation	Small rocks / particles that bounce along the sea bed.
11	Deposition	Occurs when material being transported by the sea is dropped due to the sea losing energy.

	Tier 2	Meaning
1	Sediment	Solid material – rocks/ minerals/ sand/ pebbles
2	Load	Material being carried by the waves

Transportation of sediment (rocks/ sand/ pebbles)



Longshore Drift



The zig zag movement of sediment (sand/ pebbles) along a shore.

The waves go up the beach (swash) at the angle of the direction of the prevailing (main) wind.

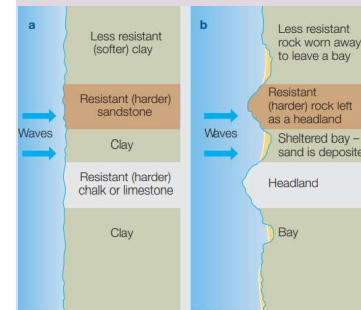
Waves return back (backwash) at right angle.

This results in the gradual movement of material along the coast.



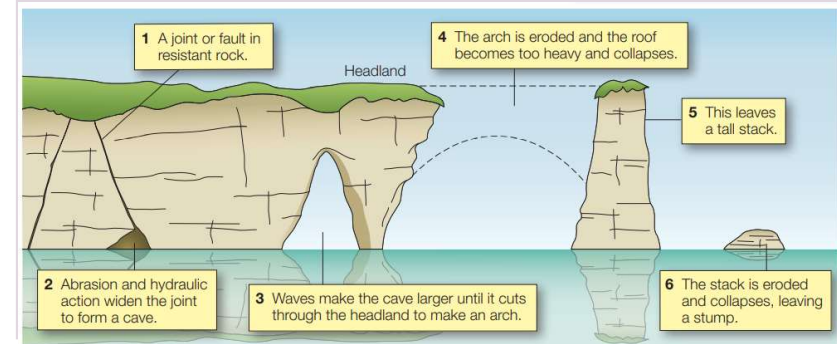
	Tier 3	Meaning
1	Cliff	A steep high rock face formed by weathering and erosion along the coastline.
2	Cave	A large hole in the cliff caused by waves forcing their way into cracks in the cliff face.
4	Arch	A passage (gap) through a headland.
4	Stack	An isolated (on its own) pillar of rock
5	Headland	A point of land (usually high with a steep drop) that extends into the sea.
6	Bay	Body of water in between two headlands. Sandy beaches often found in bays.
7	Resistant rock	Hard / strong rock – e.g. Chalk . More difficult to erode
8	Less resistant rock	Softer/ weaker rock e.g. Boulder Clay. Easier to erode
9	Wave cut platform	A rocky platform made up of fallen rock
10	Retreats	Goes backwards

Headlands and Bays

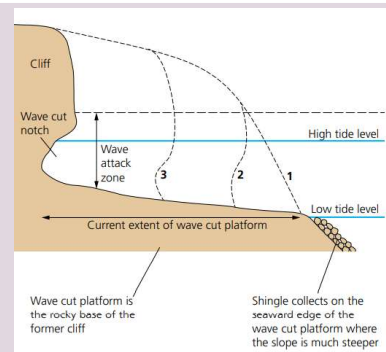


- Occur where there are alternating bands of soft and hard rock.
- The rocks erode at different rates.
- The soft rock erodes quicker creating a bay.
- This leaves the hard rock jutting out as headlands.

Headland- crack, cave, arch, stack and stump



Landforms of Coastal Erosion



Wave Cut Platforms

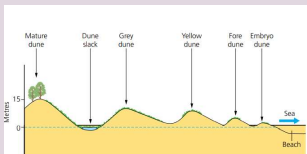
- Erosion is concentrated between high and low tide. hydraulic action and abrasion erode the base of the cliff.
- Continued erosion causes the rock to erode , leaving a wave cut notch , the rock above becomes unsupported.
- Eventually the notch is enlarged to the point where the overhang is no longer supported and it collapses.
- As the cliff retreats the fallen rock is left as a wave cut platform.



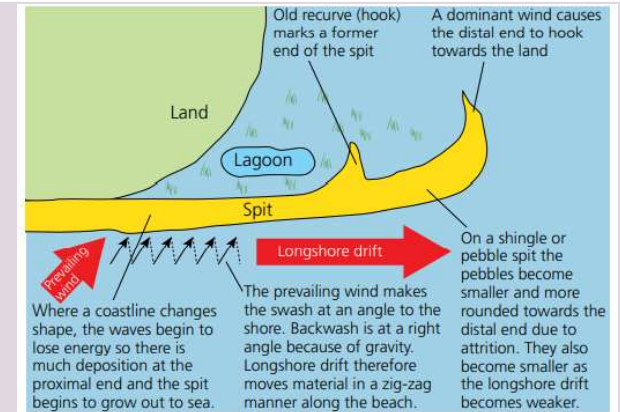
	Tier 3	Meaning
1	Spit	Long stretches of sand/ shingle that extend (go outwards) from the land
2	Proximal end	The point of the spit where it is connected to the land
4	Distal end	The point of the spit that is not connected the land
4	Beach	The zone of material (sand/ pebbles/ shingle) that are found between high and low tide marks.
5	Sand Dune	Coastal sand hill above the high tide mark, shaped by the wind action. Can be covered in grasses and shrubs (small trees)
6	Lagoon	Shallow body of water separated from a larger body of water.

Sand Dunes

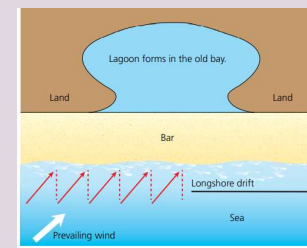
- Sand is deposited by longshore drift and blown to the top of the beach by onshore winds.
- Obstacles such as driftwood block sand movement, causing the sand to build up over time .
- Vegetation (plants) such as Marram Grass helps to stabilise (steady) and bind (hold together) the sand. This created the first small embryo dune.
- Over time the dune builds up into the land.



Spits



Bars



Bars form when a spit joins 2 headlands together.

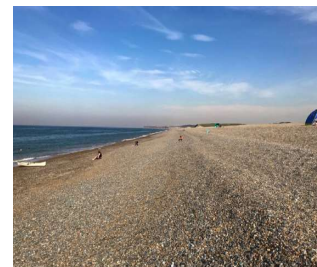
Trapping the water in a lagoon behind it.

Sandy Beach

- Occur where there are constructive waves
- Generally shallow almost flat
- Stretch in land a long way

Shingle/ pebble beach

- Occur where there are high energy waves - destructive
- Generally steep
- Do not stretch far in land
- Larger pebbles are found at the back of the beach





	Tier 3	Meaning
1	Hard engineering	The use of human made structures to defend land and protect it against natural processes such as erosion.
2	Soft engineering	Managing erosion by working with natural processes to help restore beaches and coastal systems
3	Coastal realignment	Creating a new position of the coast line by moving the boundary of the coast inland.
4	Coastal defence	Protection against erosion.

	Tier 2	Meaning
1	Benefits	An advantage / opportunity/ positive of something
2	Costs	A disadvantage / negative of something
3	Maintain	To continue to have/ keep in the existing condition.
4	Restore	Repair or re- establish

Sea wall



Beach Nourishment



Groynes



Beach reprofiling



Gabions



Managed retreat



Coastal Defences		
Hard Engineering Defences		
Groynes	Wood barriers prevent longshore drift, so the beach can build up.	+Beach still accessible. - No deposition further down coast = erodes faster.
Sea Walls	Concrete walls break up the energy of the wave . Has a lip to stop waves going over.	+ Long life span + Protects from flooding -Curved shape encourages erosion of beach -Expensive to build and maintain
Gabions or Rip Rap	Cages of rocks/boulders absorb the waves energy, protecting the cliff behind.	+Cheap +Local material can be used to look in keeping with environment. -Will need replacing.
Soft Engineering Defences		
Beach Nourishment	Beaches built up with sand, so waves have to travel further before eroding cliffs.	+Cheap +Beach for tourists. -Storms = need replacing. -Offshore dredging damages seabed.
Beach reprofiling	Re shaping of the beach to make it wider and absorb wave energy	+Natural -Expensive
Dune regeneration	Dunes are created or restored by adding sand, building fences or planting vegetation	+Help maintain natural habitats -Expensive and requires a lot of maintenance .
Do nothing		
Managed Retreat	Low value areas of the coast are left to flood & erode.	+Reduce flood risk +Creates wildlife habitats. -Compensation for land lost costs money.



	Tier 2	Meaning
1	Management	The process of dealing with or controlling things or people
2	Strategy	A plan of action or methods to achieve something
4	Settlement	Places where people live and work
4	Prevent	To stop something from happening
5	Absorb	To take in or soak up e.g. absorb the wave energy

Location and Background

The Holderness Coast is in North East England. It has one of the highest rates of coastal erosion in Europe.

It stretches from Flamborough Head to Spurn Point.

Key settlements include Hornsea and Mappleton.

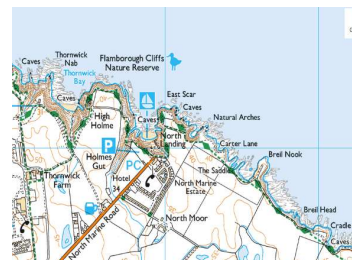


Coastal processes

Erosion is causing the cliffs to collapse along the coastline.

-Flamborough Head is made of chalk- strong resistant rock where as the rest of the coast is made out of less resistant rock- Boulder Clay.

- The prevailing winds mean that eroded material is moved south, along the coast by longshore drift.
- About 1.8m of land is lost each year.
- There are important areas along the coast including Gas Terminals and Nature reserves as well as seaside towns.



Management

Mappleton- rock armour and two rock groynes have been built to absorb the power of the waves.

-Hornsea- a sea wall has been built , wooden groynes prevent the movement of sand, as well as rock armour to absorb the energy.

Loss of land to the south of these places is still a concern.

Also as the sand is being trapped, less material is coming down the coast which is affecting the wildlife at Spurn Head.





Key term	Definition
1. General practitioner (GP)	A community-based doctor who treats minor illnesses. A GP will refer more serious cases of illness to a hospital
2. Smog	A heavy fog caused by air pollution. Although smog is no longer a problem, the government continues to pass laws to protect people from air pollution
3. Magic bullet	A chemical that kills certain bacteria without harming the body, for example Salvarsan 606 and Prontosil
4. Antibiotic	A medicine that destroys or limits the growth of bacteria in the human body
5. DNA	Short for deoxyribonucleic acid. DNA carries genetic information about a living organism. DNA information determines characteristics such as hair and eye colour
6. Pharmaceutical industry	Businesses that developed and produce drugs for use in medicine and health care.
7. Bacteriologist	Someone who studies bacteria.
8. Human Genome Project	International project to de-code and identify human genes.
9. Welfare system	System by which the government looks after the well-being of the nation.

Word Power:

Welfare

Prefix: Well, good health

Suffix: to travel

The meaning of the word changed in 1941 to now men looking after someone.

1. Ideas: genetics and lifestyles

- A. By 1900, the correct cause of many diseases had been discovered and the knowledge had been used to produce effective vaccines to prevent certain diseases.
- B. The 20th century witnessed a search for the cause of other conditions and greater understanding of other reasons for poor health.

During the 19th century. Mendel showed hoe human characteristics could be passed between generations.



In the 20th century new technology (electron, microscopes, X-rays) let scientists analyse human cells in greater detail. They found that every cell in the body contains DNA – codes controlling the genes of each person.



James Watson and Francis Crick worked together on how the genetic code of DNA fitted together.



They analysed X-ray crystallography by Maurice Wilkins and Rosalind Franklin at King's College Hospital (London) and eventually worked out the double helix structure of DNA (1953).



In 1990 James Watson led the Human Genome Project and started identifying and mapping every gene in human DNA.



2. New possibilities

Discovering the structure of DNA and the work of the Human Genome Project has led to:

- a better understanding of some genetic conditions, such as Down's syndrome
- predicting whether individuals are at higher risk of developing some cancers
- the discovery that stem cells can be grown into different cells.

However, there is not yet a:

- ❖ cure or effective treatment for most genetic conditions
- ❖ way of preventing most genetic diseases

3. Understanding of lifestyle factors

Since 1900, people have discovered that some lifestyle factors can negatively affect health and increase the chance of contracting disease.



Smoking Research now links smoking with many diseases, such as emphysema, high blood pressure, heart disease and many cancers.

Drinking alcohol Research now links drinking too much alcohol to many cancers, as well as liver and kidney disease.



Diet Scientific research has confirmed that eating a balance of different foods and limiting sugar and fat reduces the chances of getting certain types of cancer or heart disease.

4. Improvements in diagnosis

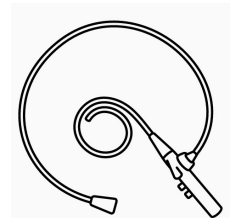
Developments in science and technology in the 20th century have improved the diagnosis of illness and the cause of disease.

Improvements in diagnosis The 20th century saw huge changes in the ways that doctors diagnosed illness.

Although doctors today still use their own knowledge and medical books, they combine this with medical testing, using science and technology to discover what is wrong.

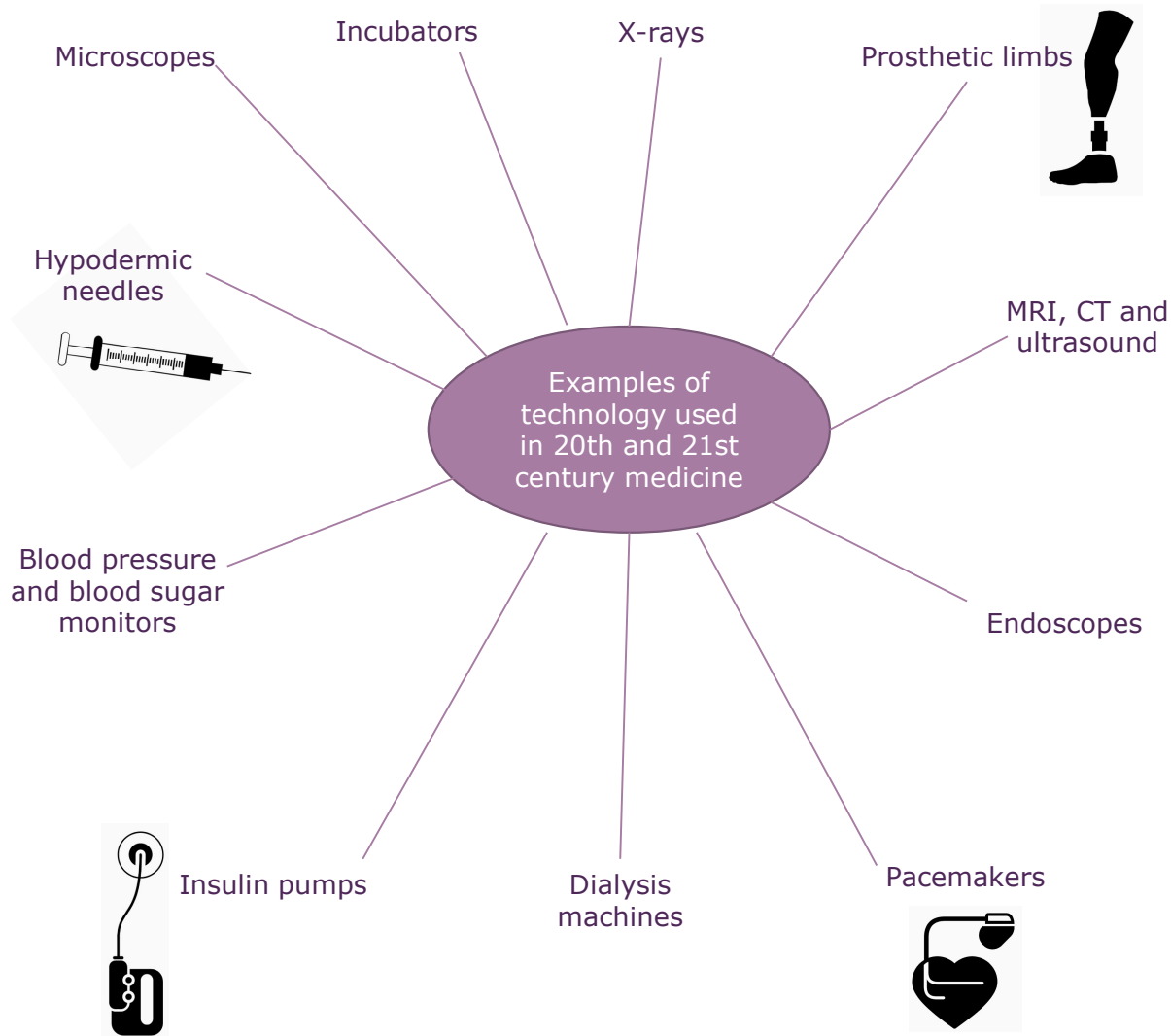
This includes the use of:

- laboratories to test skin or blood
- x-rays, scans and endoscopes to 'see' inside the body with more clarity than ever before
- monitors to see what is going on over a period. Improved scientific understanding and technology has made diagnosing disease far more accurate.





5. Medical technological advances

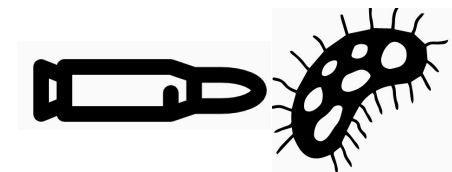


6. Change in care and treatment

- The 20th century saw major advances in treatments from new 'miracle' drugs that cured diseases to advanced surgical treatments, which solved other problems.

Magic bullets

Koch discovered that different chemical dyes-stained specific microbes.	Behring discovered the body manufactures antitoxins that only attack the microbe causing a disease.
Paul Ehrlich and his team of researchers searched for a 'magic bullet' – a chemical compound that would attack and kill the microbe causing a specific disease.	
The team, helped by German government funding, worked for many years. They tested many compounds of Salvarsan to find one to cure syphilis.	
In 1909, Dr Hata joined the team and discovered they had rejected a compound that worked – the 606th!	
In 1932, Gerhard Domagk developed the second magic bullet, Prontosil, which cured some types of blood poisoning.	
Other scientists checking Domagk's work found that the key ingredient in Prontosil, sulphonamide, also cured pneumonia, scarlet fever and meningitis.	





7. Antibiotics

- Antibiotics destroy bacteria or prevent its growth. The first to be discovered was penicillin.
- Scientists, inspired by the discovery of penicillin, experimented with other moulds and found more antibiotics that were effective against different diseases throughout the 1940s, 50s and 60s.
- Once the chemical structure of different antibiotics was discovered, scientists were able to make antibiotics, which solved the problem of having to grow them first in order to amend them to treat further diseases.
- Antibiotics have saved and extended millions of lives but due to overuse, super-bacteria, which are resistant to antibiotics, have evolved.

8. Discovery of penicillin

In 1928, Alexander Fleming noticed that bacteria in a Petri dish was being killed by a penicillium mould. He tested it on other bacteria and discovered that the mould produced an excellent antibiotic (penicillin).

In 1929, Fleming published his findings but did not believe that penicillin would work on living people and had no funding to continue his research.

It proved effective on mice, so they tested it on humans. Penicillin killed bacteria and therefore the infection – it was a miracle drug!

Several years later, Howard Florey, Ernst Chain and their team continued Fleming's research on penicillin.

9. Timeline of penicillin

Date	Description
1928	Fleming recognizes that mould kills bacteria
1929	Fleming publishes his findings.
1939	Florey and Chain continue Fleming's research.
1940	Penicillin proves effective on mice.
1941	US drug companies agree to help fund the production of penicillin. Penicillin proved effective on humans. In December, the USA enters the Second World War.
1942	Mass production of penicillin by US drug companies financed by US government.
1943	Mass production of penicillin by UK drug companies.
1945	Crowfoot Hodgkin identified penicillin's chemical structure.
1951	Frist chemical copy of penicillin created.



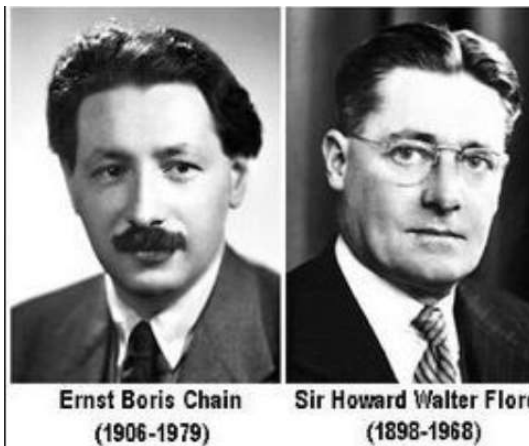
10. Alexander Fleming

- A. Fleming worked in the battlefields of the First World War.
- B. Part of his job was to study soldiers' infected wounds and try to find treatments.
- C. Many died from their infections.
- D. After the war, he worked at St Mary's Hospital in London, where he continued his work to try to find a way of healing bacterial infections.



11. Howard Florey and Ernest Chain

- A. Florey was an Australian pathologist who was researching ways to kill bacteria at Oxford Medical School.
- B. He assembled a group of scientists to help him.
- C. One of his first recruits was the German biochemist, Ernst Chain.
- D. They, together with Fleming, won the Nobel prize in Physiology and Medicine, in 1945.



12. Mass production

- A. Penicillin still wasn't used for medical treatment because huge amounts were needed to treat one person, and growing the mould took time and lots of space and was therefore expensive.
- B. Florey asked UK drug companies and factories to help, but these were being used for the war effort.
- C. In 1941, Florey asked US drug companies. Some agreed to help but on a very small scale.
- D. The effectiveness of penicillin was demonstrated.
- E. After the USA joined World War Two, the government saw the need for more penicillin to treat casualties and funded 21 companies to mass-produce it.
- F. US drug companies began mass production of penicillin in 1942 and British drug companies did so in 1943.





13. Booth and Rowntree

- A. Slums and other poor. Overcrowded housing were all still common in industrial towns in 1900.
- B. The poor worked long hours for low wages.
- C. Booth and Rowntree both wrote reports which highlight how widespread poverty was.

Booth's Report

- Written in 1889 and called 'Life and Labour of the People of London'.
- It showed that 30% of Londoners were living in severe poverty.
- He showed that some wages were so low that it wasn't enough money to support a family.

Rowntree's Report

- Rowntree had a factory in York.
- His report was called 'Poverty, a study of Town life' published in 1901.
- He found that 28% of people in York couldn't afford basic food and housing.

- D. The lack of access to good healthcare meant that most people's health was poor.
- E. When the Boer War broke out in 1899, army officers found that 40% of volunteers were physically unfit for military service.
- F. The government realised that it needed to improve basic healthcare in order to have an efficient army.

14. The Liberal Reforms

The newly elected Liberal government and its Chancellor, David Lloyd George, realised It had to take action.

Date	Changes made by the liberal government
1906	Free school meals were introduced paid for by local council taxes.
1907	Local Education Authorities started giving children at their school free medical inspections.
1908	Old age pensions were introduced for the first time – they were for people aged over 70. It was the first ever welfare scheme to be paid for by national taxes.
1909	Labour exchanges were introduced to help employed people find work.
1911	The National Insurance Act was passed. The worker, their employer and the government all contributed to a central fund that the workers could use for sick pay or to pay for a doctor.*

15. The World and and social change (Public Health)

- A. The First World War and Second broke down social distinctions and brought people together whose lives had been very separate.
- B. Raising mass armies made government and military officials more aware of the health problems of the poor, because many recruits were in poor health.
- C. Powerful people were more concerned with solving these health problems when at war, because they needed a strong army.
- D. Evacuation of children during WW2 increased awareness in richer rural communities of how disadvantaged many people were in other parts of the country.
- E. After WW2 people looked for improvements in society. This led to the 1945 Labour Party victory as they promised healthcare for everyone and full employment.



16. Housing and Health improvements after WW2

- A. In the 1920 and 1930s new council houses were built but many were too expensive for the poorest families, who still lives in the slums.
- B. During WW2, destruction from bombing and a lack of construction led to a severe housing shortage, making the situation worse.
- C. After the war the Labour government built 800,000 homes between 1945-51.
- D. In 1961, a report called 'Homes for Today and Tomorrow' gave specific standards for new housing, including heating, a flushing toilet and enough space inside and outside. This was the final step in tackling the issue of overcrowding, poor nutrition and poor waste disposal that had caused major public health problems.

17. The Beveridge Report

- A. In 1942, during WW2 William Beveridge published his report.
- B. He said that the government had a duty of care for all its citizens, not just the poor and unemployed.
- C. To achieve this, Beveridge suggested the creation of a welfare state – a system of grants and services available to all British citizens.
- D. In 1945 the Labour government was elected with the promise to implement Beveridge's proposals.
- E. The first Act was the passing of a new National Insurance Act in 1946 to support anyone who couldn't work, whether as a result of sickness, pregnancy, unemployment or old age.

18. The NHS

- In 1948 the Labour government set up the National Health service (NHS)
- Bevan was the Labour minister for Health and given the job to set up the NHS.
- The government nationalised hospitals and put them under local authority control. Treatments were made free for all patients.

There were argument for and against the NHS.

For the NHS	Against the NHS
<ul style="list-style-type: none"> • During WW2 the government took control of all hospitals, creating the Emergency Medical Service. Its success led many to support the creation of the NHS. • The NHS would make medical care free so it was accessible to everyone. • The NHS guaranteed that hospitals would receive government money. 	<ul style="list-style-type: none"> ○ Many conservative opposed the NHS as they believed the cost would be huge. ○ Doctors saw themselves as independent professionals – they didn't want to be controlled by the government. They also worried that they would lose a lot of money. ○ Many doctors threatened to go on strike in protest against the NHS.

Why the NHS was popular	Challenges facing the NHS
<ul style="list-style-type: none"> A. The conservative party could not abolish the NHS as it was too popular. B. It increased the number of people with access the healthcare. C. Today, the NHS provides a range of health services, most of which are free and accessible to everyone. They include accident and emergency care, maternity care and major surgery, as well as pharmacies, dentists, mental health and GPs. 	<ul style="list-style-type: none"> 1) Increased life expectancy, means more older people who are likely to suffer from long-term conditions. 2) People's life choices are putting strain on the NHS. 3) Modern treatments, equipment and medicines are very expensive. 4) The cost of the NHS is rising rapidly – in 2015/16 the NHS budget was £116 billion overall. In order to stay within its budget, the NHS sometimes had to make difficult choices about which treatments it can offer.



Key term	Definition
1. Microbe	Living organism that is too tiny to be seen without a microscope; includes bacteria.
2. Spontaneous generation	Theory that microbes appear as if by magic, and that germs are the result of disease.
3. Antiseptic	Chemical applied to a wound to prevent the growth of disease-causing microbes.
4. Germ theory	Theory that bacteria (germs) cause disease.
5. Aseptic	State of being completely free of harmful microbes; sterilising to create a contamination free environment.
6. Vaccine	Substance that is injected into a person to protect against a particular disease.
7. Laissez-faire	French word meaning 'leave alone'. This was the government attitude in the nineteenth century towards public health.

1. Continuity in theory of causes of disease

- There were few new ideas about the cause of disease in the 18th century, though some scientists thought that germs were produced by decaying matter – this was called spontaneous generation.
- Most people still thought miasma was a cause of disease, but this was becoming a less popular theory than it was in the Renaissance.

2. Microscopes

- By 1700, microscopes had developed so that cloudy images of what would become known as bacteria or germs could be seen.
- By 1850, microscopes had further improved so that extremely tiny images could be seen clearly.
- This was essential in enabling the scientific breakthroughs of the later 19th century.

Word Power: Aseptic

A = Not
septic = putrefying

Word Power: Antiseptic

A = opposing
septic = putrefying





3. Change in theory of causes of disease: Germ Theory

In 1861, Louis Pasteur (a French chemist) published his Germ Theory, which showed that spontaneous generation was incorrect. He proved that microbes (bacteria or germs) in the air cause decay (he discovered this when investigating why liquids turned sour for the brewing industry). He theorised that germs also caused disease but was unable to prove this.

Robert Koch (a German doctor and scientist) read Pasteur's work and began to study microbes himself. He proved that Pasteur's theory was right, that microbes caused disease as well as decay. He identified the specific microbes that caused TB in 1882, and cholera in 1883

Koch developed a new, easier way of growing bacteria on agar jelly, and also discovered that chemical dyes-stained bacteria, which made them easier to see under a microscope. Other scientists used these methods to identify the microbes that caused other diseases

Eventually, these discoveries were to have a direct impact on the prevention and cure of many diseases.

4. The influence of Pasteur and Koch

- A. Pasteur's Germ Theory had very little impact on medicine in Britain to begin with as he was not a doctor and his work focused on food and drink, not disease.
- B. Most doctors still believed in the spontaneous generation theory, but there were some (e.g., Joseph Lister) who did make the link between microbes and disease.
- C. Koch's work had more of an impact in Britain than Pasteur's had, and he inspired others to research other microbes.
- D. However, it took time for most doctors and the British government to accept the Germ Theory of disease. Even though the real cause of many diseases had been discovered, it didn't yet have an impact on their medical treatment and prevention.

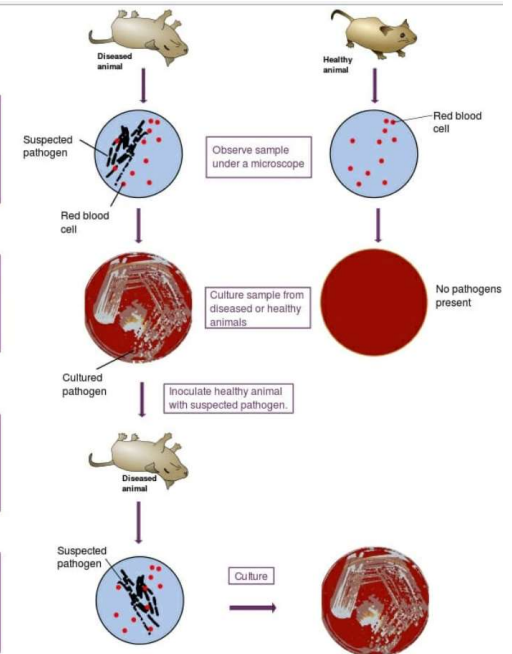
Koch's Postulates:

① The microorganism must be found in abundance in all organisms suffering from the disease, but should not be found in healthy organisms.

② The microorganism must be isolated from a diseased organism and grown in pure culture.

③ The cultured microorganism should cause disease when introduced into a healthy organism.

④ The microorganism must be reisolated from the inoculated, diseased experimental host and identified as being identical to the original specific causative agent.





5. Improvements in hospital care

Florence Nightingale was significant in influencing improvements in hospital care. Reports of her changes to hospital conditions after witnessing high death rates in military hospitals in the field had a significant impact on public opinion.

1. Nursing wasn't seen as a respectable job for women and there was little training.
2. Florence Nightingale attended the first nurses' training school in Kaiserwerth hospital, Germany.
3. She was asked to lead a team of nurses at the military hospital in Scutari during the Crimean War (1854–56)
4. She believed that miasma caused disease, so emphasised hygiene, fresh air, good supplies and training for nurses. Her approach lowered the death rate at Scutari hospital from 42% to 2%.
5. Her work was widely reported in newspapers in Britain. She published books on nursing and hospital organisation and set up a training school for nurses / midwives

6. Changes in hospital care

New hospitals (financed by charities and local councils) opened during the 19th century to look after the sick.

First cottage hospitals (small buildings where nurses gave care and GPs prescribed to create a home treatment) opened in 1859

Middle and upper classes could afford doctors to treat them at home.

Due to the work of reformers like Florence Nightingale hospitals cleanliness and organisation improved, and nurses were better trained. Pasteur's germ theory led to improved hygiene.

Nurses were given a more central role caring for patients and assisting doctors.

Great Ormond Street Hospital, 1856



The elderly, sick or disabled poor were forced to enter workhouses.

Most hospitals tried to create a home atmosphere. Parents and visitors had to help nurses look after the patients.

Great Ormond Street Hospital, 1875



Public pressure led to infirmaries (separate to the workhouse) being set up for the poorest in society.

Specialist hospitals (such as asylums for the mentally ill and fever houses for infectious diseases) developed.



7. Search for an anaesthetic

Before 1800, alcohol and opium had little success in easing pain during operations.



Laughing gas was used in 1844 in dentistry in the USA but failed to ease all pain and patients remained conscious.



Ether (Used from 1846) made patients totally unconscious and lasted a long time. However, it could make patients cough during operations and sick afterwards. It was highly flammable and was transported in heavy glass bottles.



Chloroform (used from 1847) was very effective with few side effects. However, it was difficult to get the dose right and close kill some people because of the effect on their heart. An inhaler helped to regulate the dosage.



Cocaine was used as the first local anaesthetic in 1884. In 1905 a less addictive version Novocain – was used as a general anesthetic.

8. Opposition

- A. People worried about the long-term effects of using anaesthetics and thought that being unconscious made patients more likely to die.
- B. The Victorians were very religious and thought that God inflicted pain for a reason, so it was wrong to interfere with His plan.
- C. Also, it took a long time for doctors and surgeons to believe in the Germ Theory and therefore accept Lister's discoveries.

9. Development of antiseptics

Date	Event
1861	Half the patients in surgery die from postoperative infections. Lister starts work as a surgeon.
1864	Lister reads Pasteur's Germ Theory and learns that carbolic acid kills parasites in sewage.
1865	Lister soaks bandages in carbolic acid to avoid wounds getting infected.
1866	Lister uses carbolic acid to clean wounds and equipment and invents a spray to kill germs in the air.
1867	Lister states that his wards have been free from infection (sepsis) for 9 months. He publishes his ideas.
1877	Lister becomes Professor of Surgery at King's College Hospital, London

9. Aseptic surgery

Lister's work inspired others to search for methods to prevent the spread of infection in hospitals. By 1900, operating theatres and wards were thoroughly cleaned using aseptic techniques, and surgeons and nurses wore sterilised clothing and used sterilised instruments.



10. The impact of anaesthetics and antiseptics

- A. Surgery became pain free, and patients didn't struggle, so surgeons could take more time and be more careful.
- B. Deeper, complex surgery became possible, and the death rate dramatically decreased as surgery was more successful and infection was reduced.
- C. They also led to aseptic surgery, which reduced infections in the first place.



11. The development of vaccinations

1. Pasteur published the Germ theory of infection in 1861.



2. Pasteur's team of scientists discovered that a weakened version of a disease-causing microbe could be used to create immunity from that disease.



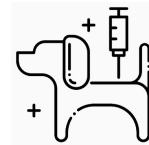
3. Pasteur admired Jenner and called his new discovery 'vaccination' in tribute to Jenner.



5. Pasteur's work inspired other scientists to develop vaccines for human diseases.



4. Pasteur developed vaccines for animals against anthrax, rabies and chicken cholera.





12. Reasons for the 1875 Public Health Act

- A. Previously the government did not believe it was its role to improve living conditions and saw it as interfering in people's lives.
- B. It preferred a 'hands off', laissez-faire policy. During the 19th century, the attitude of government began to change due to several epidemics (especially cholera) and the increasing scientific evidence that these diseases were caused by poor living conditions.
- C. Also, the increasing number of men who could vote influenced politicians.
- D. By 1875, people recognised that it was the government's responsibility to improve living conditions in the cities.

Public Health Act, 1875

City authorities must provide:

1. clean water
2. sewers
3. public toilets
4. street lighting
5. public parks.

As well as:

1. inspect lodging houses for cleanliness
2. monitor the building of new houses to prevent damp and overcrowding
3. check the quality of food sold in shops
4. employ a public officer of health to monitor disease.

13. Fighting cholera in London, 1854

The first cholera epidemic in Britain occurred in 1831 and was followed by another in 1848–49, and another in 1854. Then a London doctor, John Snow, found what was causing the disease.

What do we know about cholera?

- A. It was known as the 'blue death' as dehydration turns the skin blue.
- B. It mostly affected the poorest, slum areas of cities, although wealthier parts were affected too.
- C. It causes severe diarrhoea and vomiting leading to dehydration.
- D. In the early 19th century, there was no treatment and most people who caught it died.

Attempts to prevent the spread of cholera:

- E. Most people, including the government, believed cholera was caused by miasma and spontaneous generation.
- F. Therefore, people tried to keep their homes as clean as possible, and some local councils tried to clean the streets and clear away rubbish.
- G. The government's Public Health Act of 1848 suggested that cities should provide clean water supplies, but the Act was not compulsory, so few complied



14. The work of John Snow

- A. Snow was a popular and well-respected doctor and surgeon in London. He observed the cholera epidemic of 1848–49 and began work on his theory that cholera was spread through contaminated drinking water, not by miasma.
- B. When cholera broke out again in 1854 in Soho, where Snow lived, he mapped all the deaths and found a strong link to one water pump on Broad Street.
- C. He removed the handle from the pump so people couldn't collect water from it and the number of deaths fell dramatically.
- D. Later it was discovered that a cesspit close by was leaking waste into the well.
- E. In 1855, Snow presented his findings to the government.



15. The significance of John Snow's work

- A. Many cholera deaths in Soho were prevented after Snow stopped people using the Broad Street pump.
- B. Many did not believe Snow's theory. He had no scientific evidence to prove cholera was transmitted in water – the Germ Theory wouldn't emerge until 1861. Therefore, the government didn't act on Snow's recommendation to build a new sewer system for London.
- C. In the longer-term, Snow's work combined with other evidence (e.g., The Great Stink) and a new London sewer system was completed in 1875.
- D. Also, in the longer-term, Snow's work helped make the link between dirty water and disease, leading to the Public Health Act in 1875 when cities' authorities were finally forced to provide clean water.





1. The Red Menace

- After the Second World War, Western nations were engaged in a cold war with communist nations.
- The two ideologies of communism and democracy were headed by two superpowers, the USSR and the USA.
- These two superpowers feared fighting each other directly due to their fear of mutual destruction via nuclear weapons.
- Instead, they waged war by proxy, each country trying to ensure that smaller nations were either democratic or communist supporters.

Communism	Democracy
Held the belief that the government should be run by a communist party – unelected and powerful.	Held the belief that government should be selected by the people through representative elections.
Believed that wealth should be shared between the citizens of a nation and, ultimately, the entire world population.	Believed that capitalist economics should hold sway, meaning that people had the opportunity to become independently wealthy.
Believed that the well-being of the community, be it local, national or international, was more important than the wellbeing of individuals.	Believed that society is made up of individuals and their families and that these individuals should have liberal freedoms to act as they wish.
Distrusted member of society who were not workers, such as teachers, intellectuals and others,	Held a general belief that it was important to have some sectors of society that were richer than others, these riches gained by merit.
Examples of communist countries in 1950: USSR, China, North Korea, East Germany and Hungary.	Examples of democratic countries in 1950: USA, UK, South Korea, West Germany and France.

2. Reasons for the Korean war

- USSR and China planned it together to gain more power.
- Both countries were used as proxies by the USSR and USA to fight each other indirectly.
- Kim Il Sung (North Korea), simply wanted to conquer South Korea.
- Stalin, (USSR) showing Mao, (China), that he was the boss of Asia.
- South Korea provoked an attack from North Korea to bring the USA in to support them.

3. Truman Doctrine

President Truman promised to help stop the spread of communism across the world in 1947. Despite US efforts to support the Chinese Nationalist Chiang Kai-Shek take control of China, the communist Mao Zedong turned the most populous country on earth communist 1949.

4. The Role of the UN

The UN agreed to join the war on the side of South Korea, but only because the USA was the most powerful voice at the table. Staling and the USSR were boycotting the UN and China had been blocked from joining the UN by the USA. Troops from 18 UN countries joined the war, the majority from the USA.



**Key term****Definition**

1 Communism	Extrema left-wing group who believe everyone should be equal in the country and should be run for the workers.
2 Capitalism	Political system which promotes business for profits.
3 Containment	US policy of attempting to stop the spread of communism.
4 Truman Doctrine	Belief that US must help countries in danger if communist takeover.
5 Nationalist	Those who are devoutly dedicated to their country's status and or independence.
6 Veto	The right within an organization to block other's decisions.
7 Resolution	Official decisions made by an organization outlining intentions, for which members have voted and are expected to follow.
8 Amphibious	Military operation involving sea-landing into hostile territory.
9 Stalemate	When neither side can gain the upper hand and win a war.
10 Demilitarised Zone	Area where no soldiers or military equipment are permitted.
11 Armistice	Formal agreement to stop fighting which does not necessary lead to lasting peace.

Word Power

Communism

Prefix: common

Suffix: system



▲ A The two Korean zones set up after the Second World War, separated by the 38th parallel (line of Earth's latitude); this line divided the country approximately in half; Seoul (Korea's capital city) was just inside the US zone

5. The Korean War

- A. The Korean war began in June 1950.
- B. Korea was divided into two halves at the end of WW2.
- C. North Korea was a communist country supported by the USSR.
- D. South Korea was a Capitalist country supported by the USA.



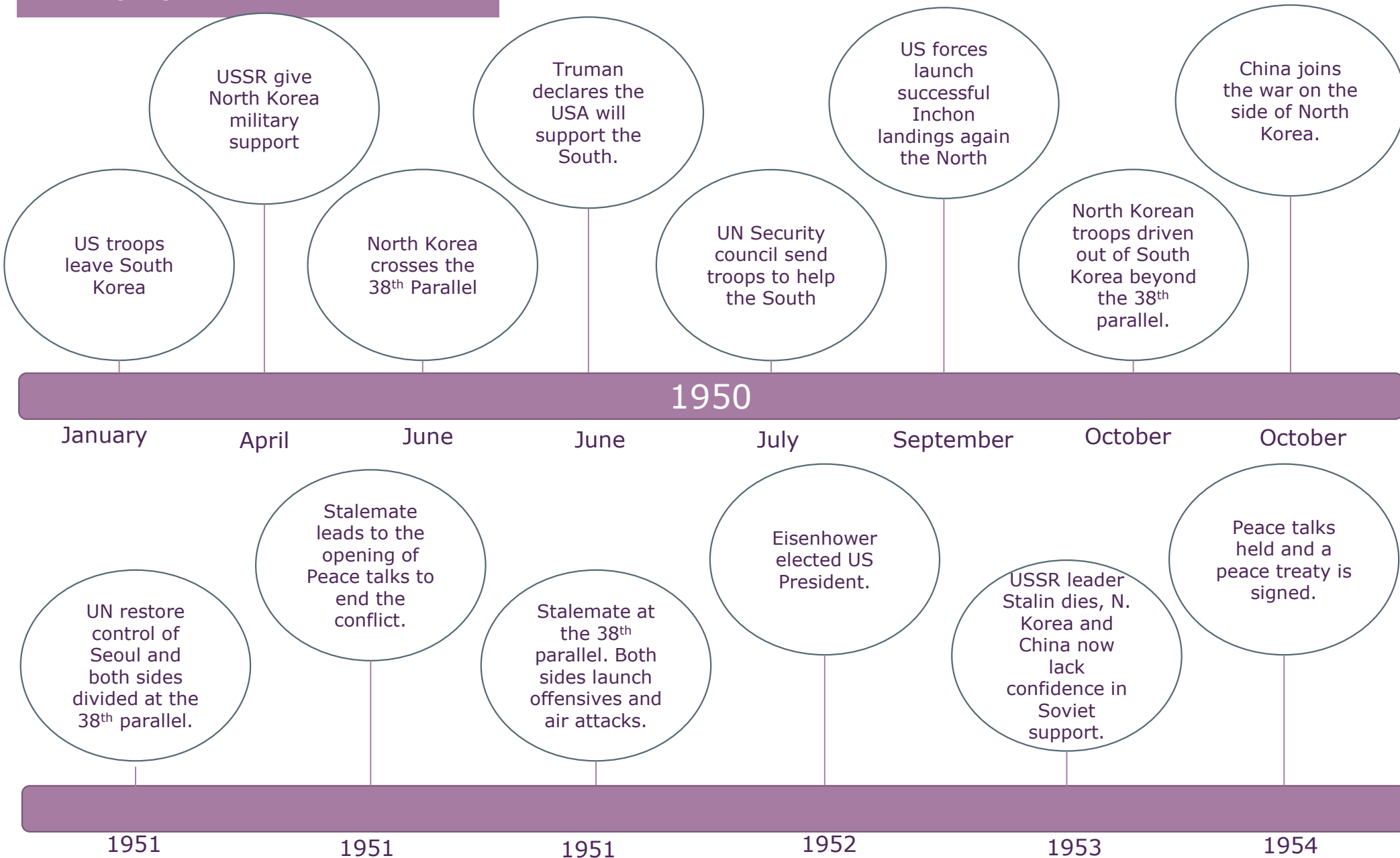
6. Key people

Key people	Description
A. Joseph Stalin	Leader of the USSR and key proponent of Cold War tensions. Grew angry over perceived lack of US and UK support during WW2. Keen to expand communism after WW2.
B. Harry Truman	President from 1945-53, was anti-communist. Oversaw containment policy against communism. Approached the UN support for South Korea, sacked General MacArthur.
C. Kim Il Sung	Soviet sponsored communist leader of North Korea. Invaded South Korea in June 1950.
D. Syngman Rhee	Leader of South Korea and supported by the USA.
E. Mao Tse-Tung	Communist leader of China who won control from 1949 following a period of fighting.
F. General Douglas MacArthur	UN appointed him commander of forces in Korea. Sacked by President Truman in April 1951.
G. Dwight D Eisenhower	Was a commander of the allied forces during WW2 and elected President in 1952 following a campaign promising to end the conflict. Ends the Korean conflict.





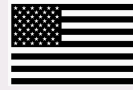





7. Timeline





8. The gains and losses of the Korean War

Country /Organisation	Gains	Losses
Korea  	<p>Limited: despite the ceasefire, Korea remained in a state of war, with no permanent peace treaty existing. However, relations between Korea and its allies became stronger.</p> <p>For example, the USSR cancelled North Korea's debt and sent economic aid in September 1953. China also cancelled North Korea's debt, gave monetary aid and sent experts help rebuild the country.</p>	<p>As well as the Civilian and military casualties, around 80 per cent of Korea's industrial and government buildings were destroyed. So too was half of all housing and most of the transportation networks.</p> <p>Both South and North Korea were bombed but the North suffered the greater damage. The housing shortage was so severe on North Korea, so some people had to live in caves.</p>
USA 	<p>South Korea was 'saved' from communism and the containment policy was seen to work against the spread of communism in Asia.</p>	<p>As well as the human cost of war, the USA spent billions on the war, but ultimately failed to 'save' North Korea from communism.</p>
United Nations 	<p>Gained respect by taking quick and decisive action. Fulfilled one of its aims: to use combined force to stop aggression, something that the UN's predecessor (the league of Nations) had failed to do in build up to the Second World War. The USSR subsequently returned to various UN organisations.</p>	<p>Some argued that the war was controlled by the USA and not the UN, which was just a 'puppet' of the USA. Trygve Lie, the Norwegian Secretary General of the UN, resigned from his position. This was largely due to the USSR's resentment of his support of UN military intervention in the war.</p>
USSR 	<p>Achieved a closer relationship with fellow communist state – China.</p>	<p>The war heightened tensions with the USA and forced the USSR into an expensive arms race with the USA.</p>
China 	<p>Achieved a closer relationship with fellow communist state – the USSR. The war propelled China onto the world stage as a major military power.</p>	<p>China was a poor country, and the war was very expensive. China failed to 'win' South Korea for communism. The war against the USA also meant the end of trade and political links with them for almost 25 years.</p>



9. Timeline

Year	Event
1954	French defeat at Dien Bien Phu leads to the creation of communist North Vietnam and non-communist South Vietnam.
1959	Hi Chi Minh trail created
1960	Ho Chi Minh creates the Viet Cong (National Liberation Front)
1961	16,000 US 'advisors' sent by President Kennedy to support South Vietnam.
1962-3	Number of 'advisors' is gradually increased.
1964	Gulf of Tonkin incident. President Johnson is given permission by congress to do 'whatever is necessary'
1965	Operation Rolling Thunder begins.
	The first US ground troops came to shore at Da Nang (3,500)
1966	Americans build large camps and control towns; the Viet Cong control the countryside
1967	The Pentagon Protest.
1968	The Tet offensive. Military defeat for the Viet Cong, media defeat for US.
	Operation Rolling Thunder ends.
	My Lai Massacre
1969	Nixon begins 'Vietnamization'
	Secret peace talks begin

Year	Event
1969	The public learn of the My Lai massacre
1970	Fighting spreads to Cambodia and Laos to disrupt the Ho Chi Minh Trail. Kent State Massacre.
1972	America troops almost gone from Vietnam. Bombing continues in Hanoi, the capital of North Vietnam.
1973	Ceasefire signed in Paris; US troops leave.
1974	North Vietnam launched invasions of South Vietnam.
1975	Saigon falls, last Americans flee, Vietnam becomes fully communist.

▼ A Vietnam was part of a larger area in Southeast Asia ruled by the French; the area was called French Indochina



▼ C The Ho Chi Minh Trail





10. US Protests

A. The Red Menace:

The Vietnam War was the first war in history to be regularly televised. Images of dying people, burning jungle and injured soldiers helped to turn the American people against the war.

Journalists such as Walter Cronkite told American people how the war was really going and events such as the My Lai Massacre shocked people 'back home'. Some say that the media lost the war for America, as an unhappy public led to the early withdrawal of the US army.

B. The My Lai Massacre:

When the public learned of the massacre of some 400 civilians in the village of My Lai at the hands of American soldiers, they were outraged. Lieutenant William Calley Jr. was sent to prison for life for personally killing 22 people during the massacre.

C. Powerful Pictures:

Images of civilian deaths shocked the American people. An execution of a Viet Cong Fighter was televised in 1968 and a picture showing a screaming, naked 10-year-old girl running from a napalm attack became the most well-recognised image of the war. This was not how the USA wanted to be seen at home or abroad.

D. The Kent State Shootings:

A peaceful protest at Kent State University in 1970 led to the killing of four students that were protesting the war as panicked police shot into a crowd.

E. The Pentagon Protest:

50,000 protestors covered the home of the US military in 1967 to protect the war. Protestors pushed flowers into the barrels of the Military Police's guns in a show of 'flower power'.





11. Nixon and the End

- A. When elected in 1968, Nixon promised to end the war. He started the process of 'Vietnamization' – replacing US troops for South Vietnamese.
- B. The ideas was welcomed by the American Public, but some were dismayed in 1970 when Nixon launched bombing raids on North Vietnam, Cambodia and Laos in order to destroy the HO Chi Minh trail and quicken the end of the war.
- C. Nixon entered secret peace talks with North Vietnam as early as 1969, but his spokesman, Henry Kissinger, was not successful.
- D. Peace talks in Paris in 1973 were more successful, leading to full withdrawal of American troops by March of that year. Nixon said he'd achieved 'peace with honor'.

12. The Tet Offensive

- A. 1968 saw the Viet Cong launch a massive offensive into South Vietnam, raiding 100 cities and even the American Embassy in Saigon.
- B. The Viet Cong hoped that the people of South Vietnam would rise and join them, but this didn't happen.
- C. North Vietnam was repelled at the loss of 10,000 experienced troops.
- D. Although this was an American victory, the media portrayed it as a defeat.

13. Aftermath

Two years after the Americans left Vietnam, the North conquered the South, uniting the country. American personal fled the country, with the last helicopter carrying US personnel and fleeing South Vietnamese leaving in April 1975.

14. Consequences of the Vietnam war

USA	Vietnam
<ul style="list-style-type: none"> A. The USA suffered a loss of face after the war. A superpower had seemingly lost to a tony communist country. B. The American public lost faith in the military and in the ethics of the government. C. Thousands of soldiers who had fought in Vietnam came home physically or psychologically injured. D. Many battled with alcoholism, drug abuse, PTSD and some even developed cancer owing to the handling of Agent Orange. E. Most were not given a heroes' welcome when they got home as so many people were against the war. 	<ul style="list-style-type: none"> 1. 3 million Vietnamese (from both North and South) were killed, including some 2 million civilians. 2. 5 million civilians were made into refugees as the jungle was poisoned and burned around them. 3. Rivers were poisoned, and 5.4 million acres of jungle was destroyed. 4. North and South Vietnam were united as a communist country, leading to a further 50,000 civilians deaths accounted to those fleeing the regime in boats, only to be drowned or murdered by pirates during the 1970s. 5. Vietnam was plunged into a cycle of poverty and hardship as the US sanctioned all trade with the country until the mid-1990s.



KS 4 IT & Computing: BTEC Creative Media Production



Who is this course for?

It is for pupils who want to acquire technical knowledge and technical skills through creative and practical scenarios in the media world.

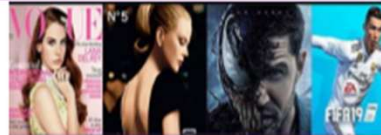
Year 10

Course requirements?

Pupils will, on occasions, work after normal school hours or during lunch times to complete their practical coursework

Am I suitable?

- are you prepared to work with technology?
- can you work well with others?
- can you meet strict deadlines and are organised?
- want take a "hands-on course"?



Unit 2 – Developing Digital Media Production Skills (Coursework)

You will develop the knowledge, skills and best practices on creating media products. You will learn to:

- experiment with production skills and techniques
- apply technical skills to make a product
- reflect on progress

ASSESSED: Internally

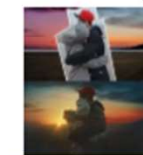


Unit 1 – Exploring Media Products (Coursework)

You will explore what the Media Industry is about, what it is like to work in and learn about media products such as:

- moving image (TV & Film)
- publishing (newspapers and magazines)
- interactive (websites, apps and games)

ASSESSED: Internally



Year 11

"We prepare our pupils for our GCSE Creative Media Production course by building on what they have learnt in Year 9".

Unit 3 – Responding to a brief (Coursework)

You will apply everything you have learned in the coursework units 1 and 2 to a real-life scenario. You will learn:

- how to respond
- plan the response
- apply the skills and techniques to create a media product
- justify the process
- reflect and evaluate

ASSESSED: Externally



What do we create?

It could be anything like:

- ✓ Magazines
- ✓ Animations
- ✓ Websites
- ✓ Videos
- ✓ Games



BTEC Tech Award Creative Media Production

**60% Coursework
40% Exam**

BBC





Word Meaning

1	Media	A means of communications within the 3 media sectors.
2	Product	The means through which the communication takes place.
3	Audio / Moving image	A form of entertainment that enacts a story by sound and a sequence of images.
4	Published	A media product which is printed or available online.
5	Interactive	A combination of digital elements which allow for user interaction.
6	(Target) Audience	The recipients of information or the consumers of media.
7	Purpose	The reason why the media product was created.
8	Genre	A way of categorising a particular media text according to its content and style.
9	Narrative	How the story of a media text is constructed and how it relays its information to an audience.
10	Representation	Refers to the idea that everything we see or hear in the media has been constructed.
11	Interpretation	Being able to understand the media text then explaining it to show understanding.

Media Sectors

1. Audio/moving image
2. Publishing
3. Interactive

Important

The relationship between media products, their audiences and purposes.

Purposes of Media Products

1. Information
2. Entertainment
3. Escapism
4. Profit
5. Community Benefit
6. Raising Awareness
7. Critical Acclaim
8. Inspiration
9. Experimentation

Target Audience

1. Primary
2. Secondary
3. Audience Groupings:
 1. Age
 2. Gender
 3. Ethnicity
 4. Socio-economic
 5. Lifestyle

Media Products

1. **Audio/moving image** - e.g. TV programmes, films, music videos, animations, TV / radio advertisements / broadcasts, podcasts
2. **Publishing** - e.g. newspapers, magazines, comics, brochures, advertisements
3. **Interactive** - e.g. websites, mobile apps, e-magazines, mobile games, video games, online games, advertisements

Socio-Economic Groups

A - Higher managerial, administrative, professional e.g. Chief executive, senior civil servant, surgeon

B - Intermediate managerial, administrative, professional e.g. bank manager, teacher

C1 - Supervisory, clerical, junior managerial e.g. shop floor supervisor, bank clerk, sales person

C2 - Skilled manual workers e.g. electrician, carpenter

D - Semi-skilled and unskilled manual workers e.g. assembly line worker, refuse collector, messenger

E - Casual labourers, pensioners, unemployed e.g. pensioners without private pensions and anyone living on benefits

Word power

Interactive
Prefix: Inter
Implies: to do things, between, among or together
From: French actif (12c.) and Latin activus



Interactive Media Sector: Codes and conventions

1. **User Interface** – the method by which the user and the computer exchange information and instructions.
2. **Interactive** – a two-way system of communications, using a computer.
3. **Customise** – to modify or change based on individual or personal preference or choice.
4. **Mise-en-Scene** – used to describe the design aspects of a theatre or film production, which essentially means "visual theme" or "telling a story".
5. **Codes** – are systems of signs, which create meaning. Can be technical and/or symbolic.
6. **Conventions** – are the 'accepted way' of doing something within the media sector.

Website: Codes & conventions

1. **URL** – uniform resource locator
2. **Homepage** – the first page or the website
3. **Masthead / Banner**
4. **House style** – themes, colours, logos
5. **Navigation** – Buttons, Menus
6. **Copy / text** – the information /text on the pages
7. **Images** – Main image / other images / rollover images
8. **Multimedia elements** – sound , video, animation
9. **External links** – text, image, other,
10. **Social media links** – to different websites
11. **Banner advert**
12. **Pop-up advert**
13. **White space** – empty space on the pages
14. **Above the fold content** – visible content on screen
15. **Tables / charts**
16. **Interactive** – games, quizzes, etc.

Theories relating to audiences and needs

Maslow's 'Hierarchy of Needs'

- Maslow said that you can segment audiences into 4 socio-economic groups:
- **Survivors** – those that want security and routine,
- **Social Climbers** – those with a strong materialistic drive and like status symbols e.g. cars.
- **Care givers** – Those who's esteem is reinforced by caring for others.
- **Explorers** – Those whose esteem is reinforced by personal growth and influencing social change.
- Each of these groups has needs in terms of raising their self esteem. **Esteem** is dependent on the audience wanting to gain respect and admiration from others.

Uses and gratification theory

- This theory was developed by Katz in 1974 and he identified 4 broad needs that were fulfilled by the viewers of media texts.
- This theory suppose an 'active' audience.
- **Diversion** – a form of escape or release from everyday pressures.
- **Personal relationships** – companionship through identification with characters in media texts and sociability through discussion about media texts with other people.
- **Personal identity** – The ability to compare one's own life with the characters and situations explored and portrayed in a media text.
- **Surveillance** – Providing information about what is going on in the world.

Audience interpretation

- **Passive audiences**, will accept the message without questioning
- **Preferred readings**, will identify the message the media producer wants the audience to receive
- **Active audiences**, will negotiate and question the message. Will use interactive features such as red button, online voting and consumer-generated content.

Genre & narrative

1. **Website genre** – what category / type your website falls under? (Gaming, E-commerce, etc.)
2. **Visual images / elements** – used to re-inforce the text on the page
3. **Text structures** – How is the text / information presented? Style – formal / informal?
4. **Point of view** – what role are you playing when using the website, e.g. User, Assigned, Administrator, Editor or other
5. **Theme / Setting** – setting, background, location
6. **Character representations** – positioning, identification, stereotyping, positive and negative representation



Interactive Sector: Media production techniques

- 1. Layout and Design:** alignment, balance, contrast, proximity, repetition, white space
- 2. Fonts and Styles:** typography, e.g. serif and sans serif typefaces, fonts and font size, continuity, letter spacing and line height, readability
- 3. Images and Editing techniques:** composition, image quality, lighting effects, depth of field, aesthetic, image editing techniques, e.g. adding filters, colour and contrast, layering images, distorting images
- 4. Interactive Features:** image galleries, menus, navigation screens, levels
- 5. User Interface:** screen, interaction, graphics, buttons, layout, colour, lighting schemes
- 6. Usability/Playability:** accessibility, navigation, controls, rules, challenge, mise en scène and lighting, graphics, characters, models, 3D environments, interactive objects, textures,
- 7. Audio Visual,** sound design, e.g. soundtracks, sound effects, sounds triggered by game events.

Assessment guidance

- 1. Identify (L1 Pass)** – lists / state the main features or purpose of something.
- 2. Outline (L1 Merit)** – Summarise the main features or a brief description or explanation with main points.
- 3. Describe (L2 Pass)** – Give a clear, account in their own words, showing recall (and application) of relevant features and information.
- 4. Discuss (L2 Merit)** – Consider different aspects of a topic and how they interrelate and extent to which they are important.
- 5. Analyse (L2 Distinction)** – Examine methodically and in detail, typically in order to interpret.

Glossary of key terms

- 1. Apply** – Put knowledge, understanding or skills into action in a particular context.
- 2. Assess** – Assess formally based on appropriate evidence or information with the intention of prompting change if necessary.
- 3. Audience** – the recipients of information or the consumers of media.
- 4. Demonstrate** – Carry out and apply knowledge, understanding and/or skills in a practical situation.
- 5. Effective** – Show control over techniques, equipment and processes to meet the details and broad aims of a requirement efficiently.
- 6. Evaluate** – Bring together all information and review it to form a conclusion, drawing on evidence, including strengths, weaknesses, alternative actions, relevant data or information.
- 7. Explain** – Provide details and give reasons and/or evidence to support an argument.
- 8. Explore** – Try out the qualities of materials, techniques or processes through practical investigation, with some record of results.
- 9. Independent** – Capable of carrying out tasks from given information.
- 10. Justify** – Give reasons or evidence to support an opinion
- 11. Purpose** – the reason why the media product was created.
- 12. Production techniques** – the processes which are used to create and combine the different elements to create meaning for audiences.
- 13. Reflect** – Think carefully and review information and/or performance, includes articulating ideas, concepts, activities, findings or features.
- 14. Refine** – Improve initial work, taking feedback into account.
- 15. Review** – Assess formally based on appropriate evidence or information with the intention of instituting change if necessary.
- 16. Select** – Choose the best or most suitable option related to specific criteria or outcomes.
- 17. Show** – Present using practical skills.



KS 4 IT & Computing: BTEC Creative Media Production



START HERE

Year
10

Who is this course for?

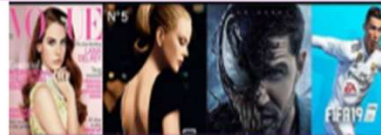
It is for pupils who want to acquire technical knowledge and technical skills through creative and practical scenarios in the media world.

Course requirements?

Pupils will, on occasions, work after normal school hours or during lunch times to complete their practical coursework

Am I suitable?

- are you prepared to work with technology?
- can you work well with others?
- can you meet strict deadlines and are organised?
- want take a "hands-on course"?



Unit 2 – Developing Digital Media Production Skills (Coursework)

You will develop the knowledge, skills and best practices on creating media products. You will learn to:

- experiment with production skills and techniques
- apply technical skills to make a product
- reflect on progress

ASSESSED: Internally



Unit 1 – Exploring Media Products (Coursework)

You will explore what the Media Industry is about, what it is like to work in and learn about media products such as:

- moving image (TV & Film)
- publishing (newspapers and magazines)
- interactive (websites, apps and games)

ASSESSED: Internally



Year
11

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Unit 3 – Responding to a brief (Coursework)

You will apply everything you have learned in the coursework units 1 and 2 to a real-life scenario. You will learn:

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- plan the response
- apply the skills and techniques to create a media product
- justify the process
- reflect and evaluate

ASSESSED: Externally



What do we create?

It could be anything like:

- ✓ Magazines
- ✓ Animations
- ✓ Websites
- ✓ Videos
- ✓ Games



BTEC Tech Award Creative Media Production

60% Coursework 40% Exam

BBC





Focus: Interactive Media Sector

Word	Meaning
1 Media	A means of communications within the 3 media sectors.
2 Product	The means through which the communication takes place.
3 Interactive	A combination of digital elements which allow for user interaction.
4 (Target) Audience	The recipients of information or the consumers of media.
5 Purpose	The reason why the media product was created.
6 Pre-production	The process of planning or designing something (such as a product or film) prior to production.
7 Production	The development of a media product, including the gathering, development and combining of assets appropriate to the relevant media sector.
8 Post-production	The process of testing and refining a prototype, using feedback and exporting the product into the required format.
9 Assets (media)	Content that is stored digitally, including photos, videos, text, spreadsheets, or slide decks. Plain-text files (such as Note pad files), Graphics (such as logos and other brand assets).
10 Prototype	a first or preliminary version of a device or product from which other refined forms of the product are developed.
11 Website	A website is a collection of web pages and related content that is identified by a common domain name and published on a web server.

Target Audience

1. Primary
2. Secondary
3. Audience Groupings:
 1. Age
 2. Gender
 3. Ethnicity
 4. Socio-economic
 5. Lifestyle

Interactive Media Products

1. Websites
2. Mobile apps
3. E-magazines
4. Mobile games
5. Video games
6. Online games
7. Advertisements

Website: Codes & conventions

1. URL – uniform resource locator
2. Homepage – the first page or the website
3. Masthead / Banner
4. House style – themes, colours, logos
5. Navigation – Buttons, Menus
6. Copy / text – the information /text on the pages
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10. Social media links – to different websites
11. Banner advert
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13. White space – empty space on the pages
14. Above the fold content – visible content on screen
15. Tables / charts
16. Interactive – games, quizzes, etc.

Word power

Interactive	Prefix: Inter Implies: to do things, between, among or together From: French actif (12c.) and Latin activus	Production	Prefix: Produce Implies: "a coming into being", "that which is produced" From: French produccioun (13c.) and Latin productio
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Creative Media Production –

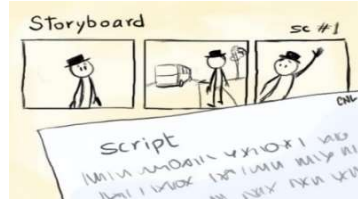
Component 2: Developing Digital Media Production Skills

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PRE-PRODUCTION

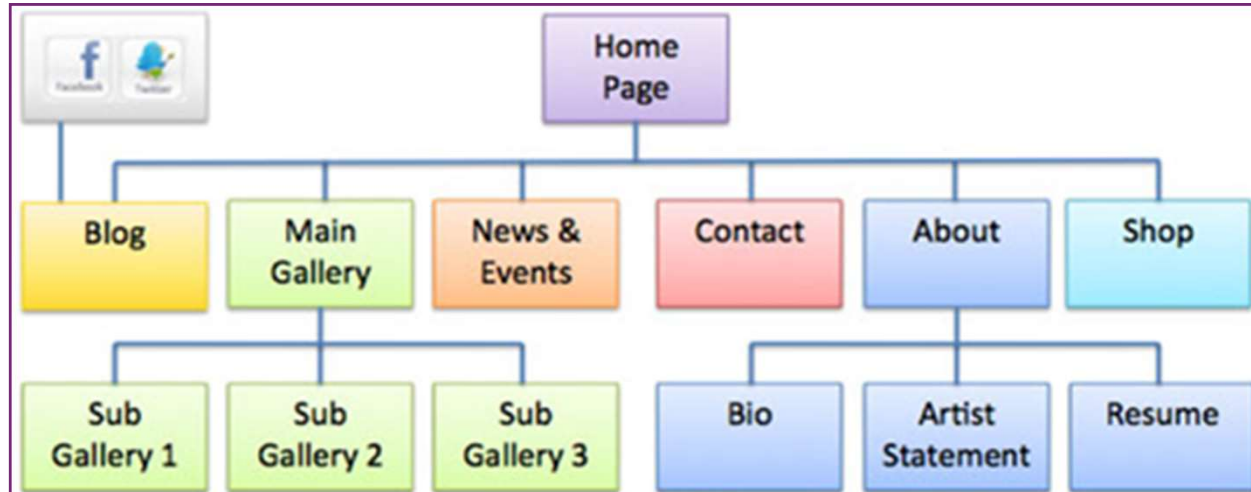
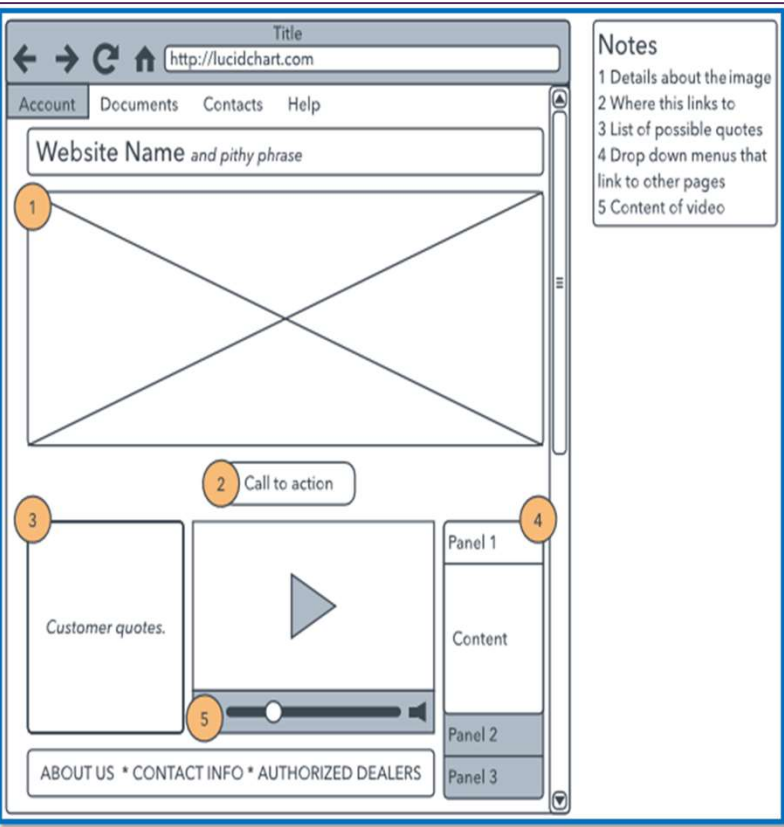
This is the planning stage for your digital product. It is everything which happens before production begins.



Mood board:

A collection of images, text and materials which are presented in an interesting way. Images are usually in different sizes, and the use of colour is used to engage the audience.

Purpose: A visual presentation either digital or made by hand to help to organise ideas about a topic or theme.



Website wireframe: Also known as a page schematic or blueprint, is a visual guide that represents the basic framework of a website. Wireframes are created for the purpose of arranging elements (different parts) of a media product for a particular purpose.

Structure chart: **What?** They show the main parts of a system, main people in an organisation or main pages of a website. The lines show the links between the different people, pages and different content. **Why?** For planning and showing a visual plan, which shows the whole website at the same time.



Practical Skills & Techniques – Competent use of Serif Web Plus and Draw Plus or Fireworks

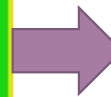
PRODUCTION

This is the making stage for your digital product. It is everything which happens before production begins.



POST-PRODUCTION

This is the stage where you will edit and develop your website following feedback and review. Review of the product against the requirements.



Practical Skills & Techniques –

- 1. Planning skills:** Sketches, Wireframes, Storyboards, Mood boards, Structure charts, Outline, Interactivity
- 2. Creating content:** Creating and gathering assets, Creating buttons, Graphics, Icons, Elements, Preparing assets including cropping, Scaling, resizing and optimising images, Image manipulation, Trimming audio, Manipulating objects, Importing and applying textures.
- 3. Combining, shaping and refining content:** Structure and design of pages, Adding interactive features, Developing backgrounds and scenery, Sound, Multimedia
- 4. Review of progress and development:** annotated practical work and/or written content, development of skills and techniques, responding to audience/user feedback, identifying strengths and areas for development, actions and targets for future production work, reference to professional working practices, use of terminology appropriate to the media field.



Website elements:

1. Logo
2. Banner
3. Buttons
4. Images
5. Text
6. Links
7. Colour
8. Formatting
9. Video
10. Animation
11. Image Gallery



Assessment guidance

- 1. Demonstrate Limited (L1 Pass) / Demonstrate Basic (L1 Merit)** – Carry out and apply knowledge, understanding and/or skills in a practical situation.
- 2. Identify (L1 Pass / Merit)** – lists / state the main features or purpose of something.
- 3. Demonstrate Appropriate / Relevant (L2 Pass)** – Select and use skills in ways that reflect the aim.
- 4. Describe (L2 Pass)** – Give a clear, account in their own words, showing recall (and application) of relevant features and information.
- 5. Demonstrate Effective (L2 Merit)** – Show control over techniques, equipment and processes to meet the details and broad aims of a requirement efficiently.
- 6. Explain (L2 Merit)** – Provide details and give reasons and/or evidence to support an argument.
- 7. Demonstrate Comprehensive / Imaginative (L2 Distinction)** – Full, covering a range of factors.
- 8. Analyse (L2 Distinction)** – Examine methodically and in detail, typically in order to interpret.

Stages of planning & development

- 1. Pre-production:** Sketches, Wireframes, Storyboards, Mood boards, structure charts
- 2. Production:** Creating and gathering assets, Preparing assets including cropping, resizing and optimising images, trimming audio, manipulating objects, Importing and applying textures.
- 3. Post-production:** Testing and refining a prototype, Accessibility and usability, Feedback, review and development, Exporting files for distribution

Glossary of key terms

- 1. Accurate:** Produce work competently, fit for purpose without significant error.
- 2. Apply** – Put knowledge, understanding or skills into action in a particular context.
- 3. Assess** – Assess formally based on appropriate evidence or information with the intention of prompting change if necessary.
- 4. Audience** – the recipients of information or the consumers of media.
- 5. Communicate** – To convey ideas or information to others.
- 6. Creative** – Using techniques, equipment and processes to express ideas or feelings in new ways.
- 7. Evaluate** – Bring together all information and review it to form a conclusion, drawing on evidence, including strengths, weaknesses, alternative actions, relevant data or information.
- 8. Explore** – Try out the qualities of materials, techniques or processes through practical investigation, with some record of results.
- 9. Independent** – Capable of carrying out tasks from given information.
- 10. Justify** – Give reasons or evidence to support an opinion
- 11. Outline** – Summarise or indicate the principal features of something or a brief description or explanation with main points.
- 12. Purpose** – the reason why the media product was created.
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- 14. Reflect** – Think carefully and review information and/or performance, includes articulating ideas, concepts, activities, findings or features.
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KS 4 IT & Computing: BTEC Creative Media Production



START HERE

Year
10

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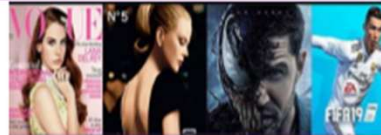
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Unit 2 – Developing Digital Media Production Skills (Coursework)

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ASSESSED: Internally

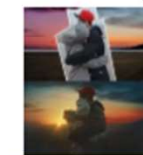


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- interactive (websites, apps and games)

ASSESSED: Internally



Year
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"We prepare our pupils for our GCSE Creative Media Production course by building on what they have learnt in Year 9".

Unit 3 – Responding to a brief (Exam)

You will apply everything you have learned in the coursework units 1 and 2 to a real-life scenario. You will learn:

- how to respond
- plan the response
- apply the skills and techniques to create a media product
- justify the process
- reflect and evaluate

ASSESSED: Externally



What do we create?

It could be anything like:

- ✓ Magazines
- ✓ Animations
- ✓ Websites
- ✓ Videos
- ✓ Games



BTEC Tech Award Creative Media Production

60% Coursework 40% Exam

BBC





Focus: Interactive Media Sector

Word

Meaning

1	(Set) brief	The scenario and requirements set by the exam board which is the focus of the exam and for which the product will be created.
2	Product	The product (website) you will create to meet the brief and requirements.
3	Interactive	A combination of digital elements which allow for user interaction.
4	(Target) Audience	The recipients of information or the consumers of media. (This information will be provided in the brief).
5	Purpose	The reasons why the media product was created. (This information will be provided in the brief).
6	Research	Investigation into and study of materials and sources in order to establish facts and reach new conclusions for a given problem within a particular field.
7	Structure	The arrangement of and relationship between the different, elements or parts of a product or system.
8	Ideas	A concept, though or suggestion as a solution to a problem.
9	Assets (media)	Content that is stored digitally, including photos, videos, text, spreadsheets, or slide decks. Plain-text files (such as Note pad files), Graphics (such as logos and other brand assets).
10	Website	A website is a collection of webpages & related content that is identified by a domain name and published on a web server.

Practical Skills & Techniques –

- Idea Log:** Research, Generate ideas, target audience, Existing related products, Content, Style and Structure
- Planning skills:** Sketches, Wireframes, Storyboards, Mood boards, Structure charts, Outline, Interactivity
- Creating content:** Creating and gathering assets, Creating buttons, Graphics, Icons, Elements, Preparing assets including cropping, Scaling, resizing and optimising images, Image manipulation, Trimming audio, Manipulating objects, Importing and applying textures.
- Combining, shaping and refining content:** Structure and design of pages, Adding interactive features, Developing backgrounds and scenery, Sound, Multimedia

Codes & conventions

1. **URL**
2. **Homepage**
3. **Masthead / Banner**
4. **House style**
5. **Navigation**
6. **Copy / text**
7. **Images**
8. **Multimedia**
9. **External links**
10. **Social media links**
11. **White space**
12. **Above the fold content**
13. **Tables / charts**
14. **Interactive**

Target Audience

1. **Primary**
2. **Secondary**
3. **Audience Groupings:**
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 4. Socio-economic
 5. Lifestyle

Word power

Interactive	Prefix: Inter Implies: to do things, between, among or together From: French actif (12c.) and Latin activus	Production	Prefix: Produce Implies: "a coming into being", "that which is produced" From: French produccioun (13c.) and Latin productio
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Ideas Log

- 1. Introduction / Requirements of the brief** - What are you being asked to create? Who is the target audience? What is the purpose of the product? What are your strengths? What are your main skills? Software experience?
- 2. Target Audience** - Who is your primary audience? Who is the secondary audience(s)? How is the brief relevant to them? How will you engage the target audience?
- 3. Initial ideas – 2 or 3 different ideas** - Think of 3 ideas for products you could create – either 3 different websites or 1 video idea, 1 leaflet/brochure idea and 1 website idea.
 - For each explain the idea – layout, what you would include, the strengths and weaknesses of each idea, how each one would engage the audience
- 4. Research – Link to other products / trends** - Explain the research you carried out before this exam session.
 - Which websites did you look at? What ideas did you get from your research? What are the current trends in this area? How has the research and current trends influenced your design?
- 5. My chosen idea and justification** - how it meets the requirements, Why did you choose this idea? How is it the most appropriate to meet the brief and needs of the target audience? Why is it most appropriate for you to create?
- 6. Development – Content, Style, Production** – Explain the product you will create – design aspects. Explain how it will be made – What text, images, other features will need to be gathered/created? What software will be used? How will it be put together?

Product requirements (Interactive)

Produce an interactive media product. You should:

- create 2 pages, screens or levels
- include original assets, use appropriate interactive features, include appropriate navigation between pages, screens or levels
- save the final media product in an appropriate digital format.

Exam Structure

1. Activity 1: Ideas Log (2-hours, 15-marks)

- Carry out research to support you in generating ideas in response to the brief.
- Complete an ideas log on the development of your chosen idea for a media product in response to the brief.
 - initial ideas and how your ideas will meet the brief with reference to; the target audience, how your ideas will communicate the client's message,
 - how existing media products have influenced your ideas,
 - the content of your idea, how it will be structured into pages and how the content meets the requirements of the brief, the style that will be used in your idea.
- You will be assessed on your interpretation of the brief, development of ideas and consideration of target audience.

2. Activity 2: Planning Material (3-hours, 15-marks)

- You must develop your ideas by producing (annotated) planning material (structure chart, wireframes, mind map) in order to visualise the content and style of your media product.
- Produce the layout and design for the pages, include:
 - the positioning of text, images and any other assets
 - notes on design features
 - notes on interactivity, navigation, movement and sound.

3. Activity 3: Final Media Product (4-hours, 30-marks)

- Use your ideas from Activity 1, planning material from Activity 2 and material, assets you have collected/generated, create your media product in response to the brief.
- Save your product in an appropriate digital file format.
- You will be assessed on the skills and techniques used in your production and on how closely your product meets the requirements of the brief.

TOTAL FOR TASK = 60 MARKS



Assessment guidance

- L1 Pass** – Identify and respond to some requirements. Generate and outline a simple idea for a media product. Attempt at creating planning documents which show limited understanding. Use basic skills and techniques to carry out the practical tasks. The final product may be incomplete, lack content and only partially meets the clients requirements.
- L2 Pass** – Respond competently to the brief. Generate and describe an appropriate idea for a media product. Produce relevant, complete and workable planning documents which evidence understanding of the production process. Gather appropriate content. Use competent skills and techniques to carry out practical tasks. The final product will contain suitable content, meets the clients needs and appeal to the target audience. Some content may be lacking in terms of quality or relevance.
- L2 Distinction** – Respond effectively to the brief. Generate and explain a highly effective idea for a media product. Produce complete, highly detailed and relevant planning documents suitable for use as working documents which show clear understanding of the production process. Gather effective content. Use adept skills and techniques to carry out practical tasks. The final product will be imaginative and technically efficient in order to meet all of the client's needs and appeal to the target audience.

Stages of planning & development

- Pre-production:** Sketches, Wireframes, Storyboards, Mood boards, structure charts
- Production:** Creating and gathering assets, Preparing assets including cropping, resizing and optimising images, trimming audio, manipulating objects, Importing and applying textures
- Post-production:** Testing and refining a prototype, Accessibility and usability, Feedback, review and development, Exporting files for distribution

Glossary of key terms

- Accurate:** Produce work competently, fit for purpose without significant error.
- Apply** – Put knowledge, understanding or skills into action in a particular context.
- Assess** - Assess formally based on appropriate evidence or information with the intention of prompting change if necessary.
- Audience** - the recipients of information or the consumers of media.
- Communicate** - To convey ideas or information to others.
- Creative** - Using techniques, equipment and processes to express ideas or feelings in new ways.
- Evaluate** - Bring together all information and review it to form a conclusion, drawing on evidence, including strengths, weaknesses, alternative actions, relevant data or information.
- Explore** - Try out the qualities of materials, techniques or processes through practical investigation, with some record of results.
- Independent** - Capable of carrying out tasks from given information.
- Justify** - Give reasons or evidence to support an opinion
- Outline** - Summarise or indicate the principal features of something or a brief description or explanation with main points.
- Purpose** – the reason why the media product was created.
- Production techniques** – the processes which are used to create and combine the different elements to create meaning for audiences.
- Reflect** - Think carefully and review information and/or performance, includes articulating ideas, concepts, activities, findings or features.
- Refine** - Improve initial work, taking feedback into account.
- Review** - Assess formally based on appropriate evidence or information with the intention of instituting change if necessary.
- Select** - Choose the best or most suitable option related to specific criteria or outcomes.



Business Plan:

- **Exploring different ideas:** innovation, gap in the market, resources & skills available, costing & pricing, potential customers.
- **Aims of the micro enterprise:** Financial aims, non financial aims (ethical, customer satisfaction, supporting community)
- **Identifying the target market:** market segment, appeal to the market, unique selling point, establishing sustainable sales.
- **Methods of communication with the customers:** selection of promotion methods, cost effectiveness, designing appropriate promotion materials.
- **Resources required:** Financial, physical & Human resources.
- **Financial planning:** Cash flow forecast & Break even calculations
- **Risk assessment & contingency plans:** Plan B in case of financial resources drying up, lack of skills, unexpected cost of production, quality control issues, lack of customer interest, competitors & their actions.

Word Power

Entrepreneur

Implies: a person who organizes and manages any enterprise, especially a business

From: French verb "Entreprendre" meaning "to undertake"

Evaluating your plan & pitch implies using feedback & review to identify possible changes to the pitch.

Important

Use of market research to identify the gap in the market.

SMART Objectives

S - Specific

M - Measurable

A- Agreed Upon

R- Realistic

T – Time limit

Effective pitch

- **Presentation skills:** professional behaviour, positive attitude, well rehearsed, visual aids
- **Communication skills:** body language, eye contact, language & tone, business terminologies, listening & handling questions from the audience.

Assessment guidance

1. **Identify (L1 Pass)** – Identify 3 potential ideas for micro-enterprise ideas, prepare an outline plan & pitch it for the chosen final idea demonstrating communication & presentation skills. Also identify the elements of the plan & own skills in pitching contributing to success.
2. **Outline (L1 Merit)** – Outline 3 potential ideas for micro-enterprise ideas, prepare an outline plan & pitch it for the chosen final idea demonstrating appropriate communication & presentation skills. Also outline the elements of the plan & own skills in pitching contributing to success.
3. **Explain (L2 Pass)-** Describe 3 potential ideas for micro-enterprise ideas, prepare a realistic plan & pitch it for the chosen final idea demonstrating a range of appropriate communication & presentation skills. Also describe the elements of the plan contributing to the success of the pitch & review the success of the pitch using examples of own skills & feedback.
4. **Discuss (L2 Merit)** –Describe 3 potential ideas for micro-enterprise ideas, prepare a detailed well structured plan & deliver a confident pitch it for the chosen final idea demonstrating good communication & presentation skills. Also analyse the success of the plan & pitch giving detailed examples & suggested improvements.
5. **Assess (L2 Distinction)** –Describe 3 potential ideas for micro-enterprise ideas, prepare a comprehensive & realistic plan & deliver an effective pitch it for the chosen final idea demonstrating excellent communication & presentation skills. Also evaluate the success of the plan & pitch & recommend how improvements to the plan & pitch could be made.



	Word	Meaning
1	Market Force	Effect on what is being manufactured.
2	Life Cycle	Issues relating to a product over its life time
3	Legislative	Relating to the law
4	Sustainable	Able to be maintained at a certain rate or level
5	Fashion	Popular at a certain time
6	Renewable	Can be replaced with less environmental damage

Word Power	
Sustainable	Old French <i>sostenir</i> - hold up, bear, suffer, endure
Technology	Greek <i>tekhnologia</i> - systematic treatment

Market Forces

- market pull
- technological push
- cultural and fashion trends

New and Emerging Materials and Technologies

- modern materials
- smart materials
- composite materials
- design/production technologies
- artificial intelligence (AI)
- additive manufacturing
- robotic manufacturing and assembly
- cloud computing technologies



Life Cycle Analysis

- lifecycle of a complete product
- lifecycle of specific materials used in a product
- lifecycle of components used in a product



Legislative Design Requirements

- evidence of product safety
- signs and symbols for materials products and safety issues
 - o Protecting designs and the links to inspirational / iconic products, i.e.
- intellectual property

Sustainable Design

- renewable versus non-renewable material and energy sources, i.e.
 - ☐ impacts of extracting non-renewable resources, i.e.
 - ☐ resource depletion
 - ☐ transportation from source
 - ☐ waste from conversion to usable form
- types of renewable resources, i.e.
 - ☐ energy sourcing
 - ☐ eco-materials
 - ☐ recycled materials
- energy efficiency



- consideration of 6R's, i.e.
 - ☐ recycle ☐ refuse
 - ☐ reuse ☐ reduce
 - ☐ repair ☐ rethink
- use of materials at end of life, i.e.
 - ☐ recycling
 - ☐ reusing
 - ☐ upcycling
- disposal of non-recyclable materials (e.g. appropriate disposal for environmental protection)
- sustainable engineering initiatives
 - o environmental pressures, i.e.
- ethical and socially responsible design

Design and Technology: R105 Revision

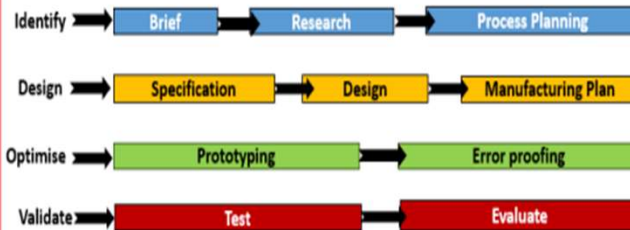
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	Word	Meaning
1	Design cycle	The design cycle is a series of tools used by designers to help them create and evaluate solutions in response.
2	Tolerance	Engineering tolerance is the permissible limit or limits of sizes.
3	Durability	the ability of a physical product to remain functional, without requiring excessive maintenance or repair,

Word Power	
Manufacture	Latin <i>manu factum</i> 'made by hand'
Sustainability	Modern English 1965 'capable of being continued at a certain level'
Anthropometrics	Ancient Greek <i>ánthrōpos</i> 'human' + <i>métron</i> 'measure'

Key Concepts

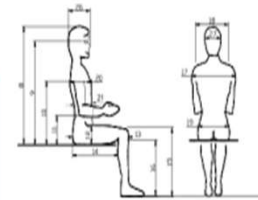


- A Design Brief is a **statement of how you are going to solve the Design Problem**.
- Research findings and Client feedback can be used to create a **Process Plan**.
- A Design Specification is a **list of requirements your product has to meet in order to be successful**.
- After a Specification has been developed, the **designing** of the product will begin.
- Once the final design has been chosen, a **Manufacturing Plan** is then created.
- Prototyping** is the creation of a **model** or "**mock-up**" of a product after the Design Process
- Error Proofing** is ensuring that the product cannot be assembled or used in an incorrect way
- Testing and Evaluation** happens because designers need to ensure the product is successful before being released, and is competitive with the market.

Specification Points	Meaning
Aesthetics	What the product will look like, style, colour, etc.
Customer	Who the Target Market is, how it will appeal to them, what Anthropometrics and Ergonomics will be used, etc.]
Cost	Cost to make, as well as cost to sell
Environment	Where it will be used
Safety	How it will be safe to use, what standards and regulations it will have to meet
Size	What dimensions it will be, as well as components and parts
Function	What the purpose of the product will be, and what Features it will have
Materials	What is will be made from
Manufacture	How it will be made

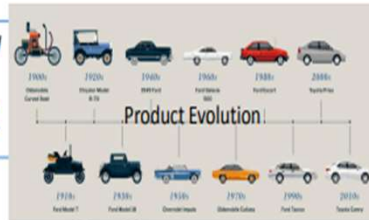
Product requirements are what a product has to meet/ must do. Common requirements are:

- Features** – what makes a product unique and sellable
- Performance** – how well it completes its function
- Target Market** – how it appeals to its customers
- Working Environment** – how it is suitable for where it will be used
- Constraints** – what is must do or must not do
- Ergonomics** – how its comfortable and safe to use
- Lifecycle** – what environmental impact it makes (and how that can be reduced)



Anthropometrics is the study of measurements of the human body
Ergonomics is the application of anthropometrics in order to make products and places efficient, comfortable and safe to use

Technology Push is when new developments in materials and technologies improve existing products/ create new ones
Market Pull is when consumers demand improvements/new products. Often found by conducting market research



Sales and Supply of Goods Act 1994



European Conformity Symbol shows that a product has consistently met the minimum requirements of the EU

Trade Descriptions Act

False or misleading information must not be given out about products. E.g. accurate information must be given out who made the product

Consumer Protection Act 1987

The right to claim compensation if a defective product causes death, damage or injury

The Waste Electrical and Electronic Equipment Regulations 2013

The government regulate the amount of electronics going to landfill as the chemicals and electronics can harm the environment and wildlife
 Companies must provide electronic disposal for their products



One-off Production
 This is the manufacture of one item
 This item can be custom made/ designed (bespoke manufacture)



Batch Production
 This is where small quantities of identical items are made (10s-1000s)
 To ensure all items are identical, jigs, moulds and templates to aid workers
Just-in-time production (JIT)
 This is when products made to order, but can be used in conjunction with any other scale of production



Mass Production (High-Volume Production)
 This is where large quantities of products are made (10,000s-100,000s)
 There are often assembly lines (for the main product) and sub-assembly (for small pieces and components)



Continuous Production
 This is when large quantities of products are produced (100,000s +)
 However, unlike Mass Production this is **never ending** production e.g. power plants



What is AO2 about?

AO2: Refine work by exploring ideas, selecting and experimenting with appropriate media, materials, techniques and processes.

To achieve this objective, you must:

- Show development throughout;
- Explore the subject area in detail;
- Show clear progression and understanding of areas that you are developing with reasoning why;
- Include samples of all work, even the samples with which you are not pleased, they show learning and improvement.

Keywords

Refine Materials	Explore Techniques	Experiment	Media Process
Refine	To make changes to improve. Synonym: Improve, perfect, fine-tune.		
Explore	To enquire into, discuss in detail Synonym: investigate, consider, enquire.		
Experimenting	To try out new ideas and materials. Synonym: Test, trial, research.		

Definitions

Media (or medium) – the material used in the piece of art. Media is the plural of medium. It can refer to the background.

Technique – The ways in which an artist creates their art pieces. They use a range of materials and skills.

Experimentation – allows artists to practice and trial different techniques to ensure they are suitable for the chosen final piece. They also help to develop artists' skills.

Push Yourself Further

- Solve problems independently when you approach them.
- Visit places that will support your development.
- As well as techniques with which you are confident, experiment with techniques you may not have used before.

Show clear links to your artists.

Links to other AO's

AO1	Experimenting in response to your chosen artists.
AO3	Recording your ideas and observations as you experiment and as your ideas develop. Recording your decisions.
AO4	Your experimentation and refinement of ideas should lead to a skilful, personal and meaningful response.

How will I achieve it?

AO3 should be seen as an integral part of your creative journey and not a separate thing.

I do I show this in my work:

- Refine a dominant idea by trying various compositions
- Refined techniques in a variety of media
- Have you developed an idea, not just used your first idea?
- Clearly demonstrate purposeful trialling of materials supported by notes
- Attempts to mimic the style/technique of an artist in your own work
- Selection and rejection of ideas
- Problem solving
- Showing stages of development



Refinement
means to improve. To add, tweak, amend, change or develop your work to make it better.



What is AO3 about?

AO3: Record ideas, observations and insights relevant to intentions as work progresses.

To achieve this objective, you must:

- Use drawing to show understanding of the subject;
- Complement your investigations with relevant detailed annotation;
- Document all aspects of your progress and process;
- Use primary and secondary experience and research and discuss this in detail.

Keywords

record Journals	observe Plans	intentions Evidence	progress Evidence
Record	To set down in writing or another permanent form for future reference reference. Synonym: document, take note.		
Observations	To closely observe and monitor, the ability to notice things of significant detail. Synonym: examine, inspect, study.		
Insights	An accurate and deep understanding. Synonym: awareness, perception, appreciation.		

Definitions

Record – to keep an account in writing.

Evidence – Material or documentation of a specific subject.

Intentions – The plan(s) of something you would like to do or achieve.

Push Yourself Further

- Keep a diary or journal of all your thoughts, sketches, visits and reflections. Submit this as some of your evidence.
- Annotate examples and texts with detailed reflective notes.
- Be varied in your approach to research and texts. Use traditional art sources and experiment with other craft and design aspects.

Links to other AO's

AO1	Your Artist research pages will include writing that records your observations, intentions and ideas as well as your own work in their style.
AO2	As you refine your work you should be adding notes to explain your thoughts.
AO4	The journey towards your personal response should be clearly recorded in your sketchbook and show coherent links back to your influencing artists.

How will I achieve it?

AO3 should be seen as an integral part of your creative journey as recording can take place at any point and will be evidenced throughout the whole of your coursework.

Through Writing:

- Mind maps
- Bullet points
- Notes
- Longer paragraphs

Through Drawing:

- Observational drawing
- Sketches
- Working drawings
- Models
- Drawing with scissors
- Drawing with wire
- 3D pen drawings
- Drawing or editing on computer programs



Cameras are an excellent way to record ideas and observations from primary sources. They are also an excellent tool to document the progress of a piece of work through different stages.



	Word	Meaning
3	Source	The place something comes from
4	Function	The natural purpose
5	Excess	An amount that is more than acceptable, expected, or reasonable
6	Simple	Easy to understand or do; not difficult
7	Complex	Involving a lot of different but related parts
8	Nutrients	Any substance that plants or animals need in order to live and grow
9	Dietary	Relating to your diet

Word Power

Macronutrient
Prefix – macro – large
Stem – nutrient – from Latin nūtriēns (to nourish)

Carbohydrates

The main **function** of carbohydrates is to provide energy for the body.



STARCH



Potatoes, rice, pasta, bread and yams. These are also known as **complex carbohydrates** as they are made up of many simple sugars joined together.

SUGAR



All sugars, treacle and syrups, honey, jam and marmalade. These are also known as **simple carbohydrates** because they are either simple sugars (glucose) or double sugars (sucrose).

Excess?

If the diet contains more carbohydrate than the body needs, it will be turned into fat and stored in the body. This can lead to **obesity**.



If too much sugar is eaten, this can lead to **tooth decay**.



Fibre

DIETARY FIBRE



Found in cell walls of fruits, vegetables and cereals. This is also called a complex carbohydrate as it is made up of many simple sugars joined together. Fibre is important as it keeps the **digestive system** healthy by helping the food waste travel through the body more easily.

If you don't eat enough fibre, this can cause **constipation**, which can eventually lead to cancer of the bowel.

Fibre can reduce your chances of getting **heart disease** and type 2 **diabetes**.

The recommended amount of fibre for adults is 30g per day.



Protein

Protein is needed for growth, repair, maintenance and energy. Some groups of people need more protein than others.



Protein is found in foods such as meat, fish, milk and eggs.

You can also get protein from plant-based foods such as peas, beans, lentils, nuts, seeds and cereals.



Proteins are made up of **amino acids**. These are linked together to make a chain. There are 20 amino acids.



Fats

Fat is an essential part of the diet. Fat is important in the body because:

- It keeps the body **warm**.
- It provides **energy**.
- It **protects** and cushions internal organs by covering them in fat.
- It provides **fat-soluble vitamins**.



ANIMAL FATS

Animal fats are usually **solid** at room temperature. Animal fats may be butter, lard, suet, cream, cheese. Animal fats are usually **saturated**.



VEGETABLE FATS

Vegetable fats (**oils**) are usually **liquid** at room temperature. Vegetable fats may be sunflower oil, olive oil, rapeseed oil, nuts. Vegetable fats are usually **unsaturated**.





	Word	Meaning
1	Soluble	Able to be dissolved to form a solution
2	Source	The place something comes from
3	Function	The natural purpose
4	Hydration	The process of making your body absorb water or other liquid
5	Nutrients	Any substance that plants or animals need in order to live and grow
6	Essential	Necessary or needed
7	Haemoglobin	A substance in red blood cells that combines with and carries oxygen around the body, and gives blood its red colour

Word Power

Micronutrient

Prefix – micro – very small

Stem – nutrient – from Latin nūtriēns (to nourish)

Vitamins

Vitamins can be split in two sections:

FAT SOLUBLE (A and D) – dissolve in fat and travel around the body in the bloodstream. They can store in the liver for future use.

WATER SOLUBLE (B group and C) – dissolve in water and easily absorbed by the body. They cannot be stored in the body, so they need to be replenished regularly.

	Source	Function
A	Eggs, oily fish, milk, spinach and orange fruit and vegetables such as carrots, peppers, sweet potatoes, mangoes, apricots.	Helps sight in poor light and strengthens the immune system. Needed for healthy skin and mucous membranes.
B group	Bread, eggs, meat, chicken, milk, potatoes.	Keeps the skin, eyes and nervous system healthy. Needed to release energy from food.
C	Milk, butter, oily fish, eggs, breakfast cereals, margarine and the sun.	Helps the body absorb the minerals needed for healthy bones – calcium and phosphorus.
D	Fruits and vegetables, especially oranges, blackcurrants, broccoli, strawberries and red peppers.	Helps the body absorb iron. Keeps the body cells healthy and helps the healing process.

Minerals

	Source	Function
Calcium (Ca)	Nuts, bread, breakfast cereals, cheese, milk, green leafy vegetables, oily fish, soya and tofu.	Builds strong bones and teeth. Controls muscle function and heartbeat. Helps blood clotting.
Sodium (Na)	Salt, cheese, bacon, bread, smoked fish, ready meals, salted nuts.	Essential to balance fluids in the body, such as the blood. Excess sodium leads to high blood pressure, stroke and heart attacks.
Iron (Fe)	Red meat, cabbage, kale, lentils, tofu, quinoa, egg yolks.	Makes the haemoglobin in red blood cells that carries oxygen around the body.

Hydration

Our body is nearly two-thirds water, so drinking enough fluid to stay hydrated is important. Water is essential for life, and it is important to get the right amount of fluid to be healthy.

About 2 litres of water is needed a day. It can also be found in milk, fruit juices and foods such as soup, yogurt, fruit and vegetables. Water is a good choice of drink because it hydrates without the provision of energy.

Essential for the survival of the body.

It cools the body by sweating, to prevent cell damage and overheating.

It transports waste products from the body.





Section 1: Venues and Health & Safety

Small venue - Pub



Large venue - Stadium



Outdoor venue - Field



Venue Manager

Asks bands to perform at the venue. Makes sure the venue is safe.

Live Sound Engineer

Makes sure the sound is balanced and not too loud.

Section 2: Production and Promotion

Production – Making music



- Recording studio

Promotion – Making sure people know about the music.



Major Record Label ☺ Lots of money ☹ May change your style

Independent Record Label ☺ Your decisions ☹ Little money

Studio Manager

Books recording sessions.

Promoter

Finds a venue and money for an event.

Section 3: Service Companies and Agencies

Transport Companies

Takes the equipment to the venue for the artist.



Hire companies

You can borrow equipment instead of buying it all.

Royalty Collection Agencies:

PRS (Performing Rights Society)

PPL (Phonographic Performance Limited)

MCPS (Mechanical Copyright Protection Society)

Agent

Finds events for the artist to perform at.

Stylist

Chooses which clothes the artist will wear and how to do their hair or makeup.

Section 4: Unions and Trade Bodies

Unions:	Trade Bodies:
MU (Musician's Union)	MPG (Music Producer's Guild)
BECTU (Broadcasting, Entertainment, Cinematography, Theatre Union)	APRS (Association Professional Recording Services)
Equity	PLASA (Professional Lighting and Sound Association)

Unions help people and give them legal advice.



Section 5: Employment Patterns

Permanent Employed	You have a boss to work for
Self-Employed/Freelance	You decide which jobs you will do
Full Time	Work everyday e.g. Monday - Friday
Part Time	Work some hours/days every week
Casual	Only work when you are needed




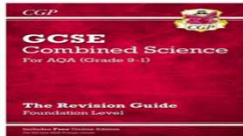


Contract – a document that tells you what you have to do at work, when you have to work and how much you will get paid.

Employer – the 'boss'.

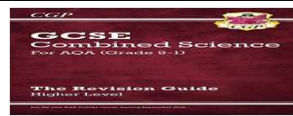
GCSE Science Foundation Paper 1

																	
GCSE Combined Science: Trilogy Specification for first teaching in 2016 (aqa.org.uk)																	
Biology Paper 1 (F)																	
			B1 Cell Biology	4.1 Pages 20-25		Pages 11 -23		Pages 2 -31		Video Pack 4.1							
			B2 Organisation	4.2 Pages 26- 33		Pages 24-41		Pages 32 – 61		Video Pack 4.2							
			B3 Infection and Response	4.3 Pages 34 - 38		Pages 42- 49		Pages 62 – 91		Video Pack 4.3							
			B4 Bioenergetics	4.4 Pages 39 - 41		Pages 50 -56		Pages 92 - 121		Video Pack 4.4							
Chemistry Paper 1 (F)																	
			C1 Atomic Structure and the Periodic Table	5.1 Pages 67 -74		Pages 96- 112		Pages 180 – 189 + Pages 210 - 219		Video Pack 5.1							
			C2 Bonding Structure and the Properties of Matter	5.2 Pages 75 – 83		Pages 113- 122		Pages 190 – 209		Video Pack 5.2							
			C3 Quantitative Chemistry	5.3 Pages 84 – 87		Pages 123 -127		Pages 220 – 229		Video Pack 5.3							
			C4 Chemical Changes	5.4 Pages 88 – 94		Pages 128 – 133		Pages 230 – 249		Video Pack 5.4							
			C5 Energy Changes	5.5 Pages 95 - 97		Pages 134 - 137		Pages 250 - 258		Video Pack 5.5							
Physics Paper 1 (F)																	
			P1 Energy	6.1 Pages 121 – 126		Pages 167 – 179		Pages 318 – 325		Video Pack 6.1							
			P2 Electricity	6.2 Pages 127 – 134		Pages 180 – 192		Pages 326- 355		Video Pack 6.2							
			P3 Particle Model of Matter	6.3 Pages 135 – 137		Pages 193 – 196		Pages 356 – 365		Video Pack 6.3							
			P4 Atomic Structure	6.4 Pages 138 - 142		Pages 197 - 202		Pages 366 - 387		Video Pack 6.4							

GCSE Science Foundation Paper 2

																	
GCSE Combined Science: Trilogy Specification for first teaching in 2016 (aqa.org.uk)																	
Biology Paper 2 (F)																	
			B5 Homeostasis and Response	4.5 Pages 49- 48		Pages 57 - 65		Pages 102 - 121		Video Pack 4.5							
			B6 Inheritance, Variation and Evolution	4.6 Pages 49 - 58		Pages 66- 82		Pages 122 - 161		Video Pack 4.6							
			B7 Ecology	4.7 Pages 59 -64		Pages 83 - 95		Pages 162 - 179		Video Pack 4.7							
Chemistry Paper 2 (F)																	
			C6 The rate and extent of chemical change	5.6 Pages 98- 103		Pages 138-145		Pages 230 - 275		Video Pack 5.6							
			C7 Organic Chemistry	5.7 Pages 104 - 106		Pages 146- 149		Pages 275 - 285		Video Pack 5.7							
			C8 Chemical Analysis	5.8 Pages 107 - 109		Pages 150 - 154		Pages 285 - 295		Video Pack 5.8							
			C9 Chemistry of the Atmosphere	5.9 Pages 110 - 114		Pages 155 - 158		Pages 296 - 305		Video Pack 5.9							
			C10 Using Resources	5.10 Pages 115 - 119		Pages 159 - 166		Pages 306 - 317		Video Pack 5.10							
Physics Paper 2 (F)																	
			P5 Forces	6.5 Pages 143 - 154		Pages 203- 218		Pages 386 - 415		Video Pack 6.5							
			P6 Waves	6.6 Pages 155 - 158		Pages 219 - 228		Pages 416 - 425		Video Pack 6.6							
			P7 Magnetism and Electromagnetism	6.7 Pages 159 - 161		Pages 229 - 231		Pages 426 - 435		Video Pack 6.7							

GCSE Science Higher Paper 1



[GCSE Combined Science: Trilogy Specification for first teaching in 2016 \(aqa.org.uk\)](https://www.aqa.org.uk)

Biology Paper 1 (H)

			B1 Cell Biology	4.1 Pages 20-25		Pages 11- 23		Pages 2 – 31		Video Pack 4.1	
			B2 Organisation	4.2 Pages 26- 33		Pages 24- 42		Pages 32 – 61		Video Pack 4.2	
			B3 Infection and Response	4.3 Pages 34 - 38		Pages 43 -49		Pages 62 - 91		Video Pack 4.3	
			B4 Bioenergetics	4.4 Pages 39 - 41		Pages 50 -57		Pages 92 - 111		Video Pack 4.4	

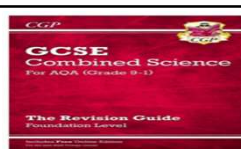
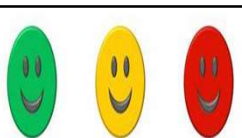
Chemistry Paper 1 (H)

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			C2 Bonding Structure and the Properties of Matter	5.2 Pages 75 – 83		Pages 112 – 122		Pages 194 - 213		Video Pack 5.2	
			C3 Quantitative Chemistry	5.3 Pages 84 – 87		Pages 123 – 128		Pages 224 – 233		Video Pack 5.3	
			C4 Chemical Changes	5.4 Pages 88 – 94		Pages 129 – 137		Pages 234 – 253		Video Pack 5.4	
			C5 Energy Changes	5.5 Pages 95 - 97		Pages 138 - 141		Pages 264 – 273		Video Pack 5.5	

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			P1 Energy	6.1 Pages 121 – 126		Pages 167 – 178		Pages 336 – 355		Video Pack 6.1	
			P2 Electricity	6.2 Pages 127 – 134		Pages 179 – 190		Pages 356 – 375		Video Pack 6.2	
			P3 Particle Model of Matter	6.3 Pages 135 – 137		Pages 191 – 194		Pages 376 – 385		Video Pack 6.3	
			P4 Atomic Structure	6.4 Pages 138 - 142		Pages 195 - 200		Pages 386 - 405		Video Pack 6.4	

GCSE Science Higher Paper 2



[GCSE Combined Science: Trilogy Specification for first teaching in 2016 \(aqa.org.uk\)](https://www.aqa.org.uk)

Biology Paper 2 (H)

			B5 Homeostasis and Response	4.5 Pages 49- 48		Pages 58 – 67		Pages 112 – 133		Video Pack 4.5	
			B6 Inheritance, Variation and Evolution	4.6 Pages 49 – 58		Pages 68 – 82		Pages 134 – 165		Video Pack 4.6	
			B7 Ecology	4.7 Pages 59 -64		Pages 83 - 95		Pages 164 – 183		Video Pack 4.7	

Chemistry Paper 2 (H)

			C6 The rate and extent of chemical change	5.6 Pages 98- 103		Pages 142 - 149		Pages 274 - 293		Video Pack 5.6	
			C7 Organic Chemistry	5.7 Pages 104 – 106		Pages 150 – 152		Pages 294 – 303		Video Pack 5.7	
			C8 Chemical Analysis	5.8 Pages 107 – 109		Pages 153 – 156		Pages 304 - 313		Video Pack 5.8	
			C9 Chemistry of the Atmosphere	5.9 Pages 110 – 114		Pages 157 – 160		Pages 314 – 323		Video Pack 5.9	
			C10 Using Resources	5.10 Pages 115 – 119		Pages 161 - 166		Pages 324 – 335		Video Pack 5.10	

Physics Paper 2 (H)

			P5 Forces	6.5 Pages 143 – 154		Pages 201 - 217		Pages 406 - 345		Video Pack 6.5	
			P6 Waves	6.6 Pages 155 – 158		Pages 218 - 226		Pages 436 – 455		Video Pack 6.6	
			P7 Magnetism and Electromagnetism	6.7 Pages 159 - 161		Pages 227 - 231		Pages 456 – 466		Video Pack 6.7	



[GCSE Combined Science: Trilogy Specification Specification for first teaching in 2016 \(aqa.org.uk\)](https://www.aqa.org.uk)

Biology Paper 2 (H)

			B5 Homeostasis and Response	4.5 Pages 49- 48					Video Pack 4.5	
			B6 Inheritance, Variation and Evolution	4.6 Pages 49 – 58					Video Pack 4.6	
			B7 Ecology	4.7 Pages 59 -64					Video Pack 4.7	

Chemistry Paper 2 (H)

			C6 The rate and extent of chemical change	5.6 Pages 98- 103					Video Pack 5.6	
			C7 Organic Chemistry	5.7 Pages 104 – 106					Video Pack 5.7	
			C8 Chemical Analysis	5.8 Pages 107 – 109					Video Pack 5.8	
			C9 Chemistry of the Atmosphere	5.9 Pages 110 – 114					Video Pack 5.9	
			C10 Using Resources	5.10 Pages 115 – 119					Video Pack 5.10	

Physics Paper 2 (H)

			P5 Forces	6.5 Pages 143 – 154					Video Pack 6.5	
			P6 Waves	6.6 Pages 155 – 158					Video Pack 6.6	
			P7 Magnetism and Electromagnetism	6.7 Pages 159 - 161					Video Pack 6.7	

GCSE Science – Command Words

Command words are the words and phrases used in exams that tell students how they should answer a question.

Balance Students need to balance a chemical equation.	Calculate Students should use numbers given in the question to work out the answer.	Choose Select from a range of alternatives.	Compare This requires the student to describe the similarities and/or differences between things, not just write about one.	Complete Answers should be written in the space provided, for example, on a diagram, in spaces in a sentence or in a table.
Define Specify the meaning of something.	Describe Students may be asked to recall some facts, events or process in an accurate way.	Design Set out how something will be done.	Determine Use given data or information to obtain and answer.	Draw To produce, or add to, a diagram.
Estimate Assign an approximate value.	Evaluate Students should use the information supplied, as well as their knowledge and understanding, to consider evidence for and against when making a judgement.	Explain Students should make something clear or state the reasons for something happening.	Give Only a short answer is required, not an explanation or a description.	How/What/When/Where/Which/Who/Why These can be used for more direct questions.
Identify Name or otherwise characterise.	Justify Use evidence from the information supplied to support an answer.	Label Provide appropriate names on a diagram.	Measure Find an item of data for a given quantity.	Name Only a short answer is required, not an explanation or a description. Often it can be answered with a single word, phrase or sentence.
Plan Write a method.	Plot Mark on a graph using data given.	Predict Give a plausible outcome.	Show Provide structured evidence to reach a conclusion.	Sketch Draw approximately.
Suggest This term is used in questions where students need to apply their knowledge and understanding to a new situation.	Use The answer must be based on the information given in the question. Unless the information given in the question is used, no marks can be given. In some cases, students might be asked to use their own knowledge and understanding.	Write Only a short answer is required, not an explanation or a description.		

GCSE SCIENCE – Exam Technique




The FIFA logo features a stylized soccer ball with blue and yellow segments, and the word "FIFA" in blue capital letters below it. To the left of the ball is the text "© 1977 FIFA®".

F – Formula

I – Insert what you know

F – Fix the Equation

A – Answer



A black and white illustration of a megaphone. The text "Busking FOR CHANGE" is written on the megaphone's body. "Busking" is in a cursive script, while "FOR CHANGE" is in bold, blocky capital letters.

B – Box the command word

U – Underline the key words

S – Scribble down ideas

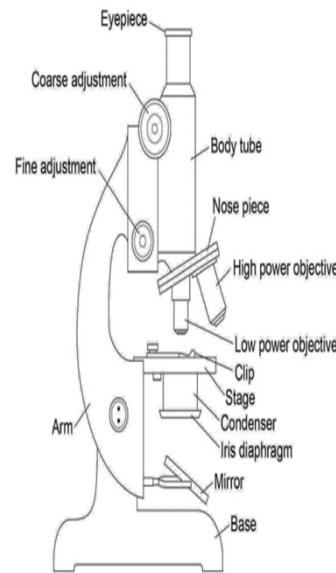
C – Compose your answer

C – Check your answer

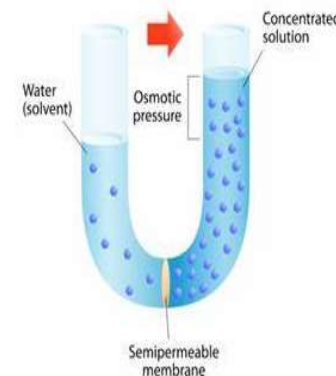
GCSE SCIENCE Required Practical - BIOLOGY

Microscopy

1. Put the slide on the microscope stage.
2. Turn the nose piece to select the lowest power objective lens (this is usually $\times 4$ objective lens). The end of the objective lens needs to almost touch the slide.
3. Turn the coarse adjustment knob to move the lens towards the slide. Look from the side (not through the eyepiece) when you are adjusting the lens.
4. Now look through the eyepiece. Slowly turn the coarse adjustment knob in the direction to increase the distance between the objective lens and the slide. Do this until the cells come into focus.
5. Slightly turn the fine adjustment knob to bring the cells into a clear focus. Use the low power objective lens (totalling $\times 40$ magnification) to look at the cells.
6. When you have found some cells, turn the nose piece to switch to a higher power lens ($\times 100$ or $\times 400$ magnification).
7. You will have to use the fine adjustment knob again to bring the cells back into focus.
8. Make a clear, labelled drawing of some of the cells. Make sure that you draw and label any component parts of the cell. Use a pencil to draw the cells.
9. Write the magnification underneath your drawing. Remember to multiply the objective magnification by the eyepiece magnification.



Osmosis



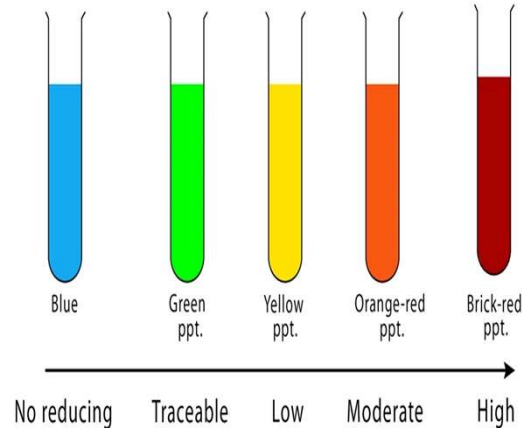
Osmosis

1. Use a cork borer to cut five potato cylinders of the same diameter.
2. Use the knife to trim off any potato skin on each potato cylinder. Then trim each potato cylinder so that they are all the same length.
3. Accurately measure the mass of each potato cylinder.
4. Accurately measure the length of each cylinder.
5. Record your measurements in a table
6. Measure 10 cm³ of each concentration of sugar or salt solution and put into boiling tubes. Label each boiling tube clearly.
7. Measure 10 cm³ of the distilled water and put into the fifth boiling tube. Label the boiling tube clearly.
8. Add one potato cylinder to each boiling tube.
9. Leave the potato cylinders In the boiling tubes for a chosen amount of time.
10. Remove the potato cylinders from the boiling tubes and carefully blot them dry with the paper towels.
11. Measure the new mass and length of each potato cylinder again. Record your measurements for each concentration in your table.

GCSE SCIENCE Required Practical - BIOLOGY

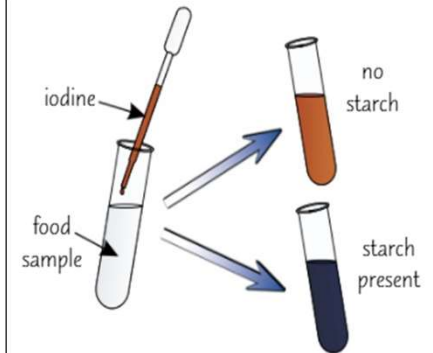
The Benedict's test for sugars

1. Set up your traditional water bath set up using a Bunsen burner.
2. Put some of the food sample into a test tube.
3. Add a few drops of Benedict's solution to the sample in the test tube.
4. Put the test tube in the water bath at a minimum of 80 °C for about 5 minutes.
5. Note down any colour change in your table of results



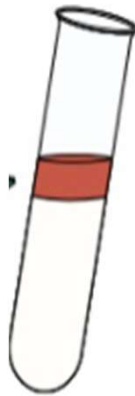
The Iodine test for starch

1. Put some of the food sample into a test tube.
2. Add a few drops of Iodine solution.
3. Note down any colour change in your table of results.



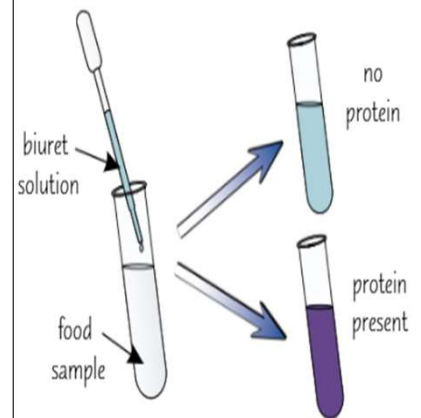
Test for lipids

1. Put some of the food sample into a test tube.
 2. Add a few drops of distilled water.
 3. Add a few drops of ethanol.
- Care: Ethanol is highly flammable. Keep the solution away from any flames.
4. Shake the solution gently.
 5. Note what you see in your table of results.



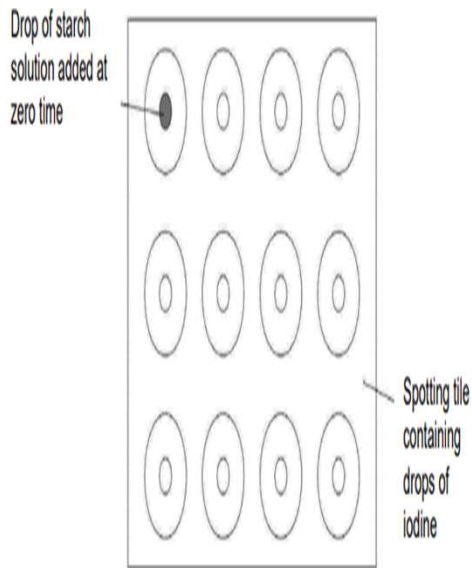
Test for Proteins

1. Put some of the food sample into a test tube.
2. Add 1 cm³ of Biuret solution A and 1 cm³ of Biuret solution B to the test tube. Care: Biuret solution contains copper sulphate, which is poisonous, and sodium hydroxide, which is corrosive. Handle the solution with care. Wash immediately if you spill it on your skin, and wipe up any spills.
3. Shake the tube gently to mix.
4. Note any colour change in your table of results.



GCSE SCIENCE Required Practical - BIOLOGY

Enzymes

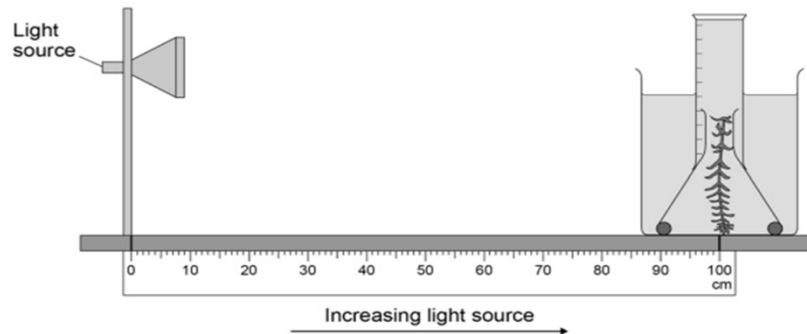


1. Heat your water bath to 35 °C.
2. Put 2 cm³ of each buffered solution into individual, separate test tubes. Label each tube with the pH of the solution.
3. Label 5 test tubes 'Starch' and add 4 cm³ of starch solution into each tube.
4. Put a thermometer in one of the starch test tubes to monitor the temperature. Leave the thermometer in this tube throughout the experiment.
5. Add 10 cm³ of Amylase solution into another test tube. Label the tube 'amylase'.
6. Put all the test tubes into the water bath.
7. Allow the solutions to reach 35 °C.
8. While the solutions are reaching the required temperature, put one drop of Iodine solution into each depression on your spotting tile. Put a drop of starch solution in the first depression of the tile. This is your 'zero time' mixture. You will use this as a comparison of colour for your test buffers. Starch gives a blue-black colour with iodine, and the iodine stays brown if all the starch has broken down to glucose.
9. When all the tubes have reached 35 °C take one of the tubes of starch from the water bath and add the 2 cm³ of your first pH buffered solution. Stir the mixture with a glass rod.
10. Use the pipette to add 2 cm³ of amylase solution to the mixture. Start the stopclock as soon as you add the amylase. Keep stirring the mixture with the glass rod.
11. After 10 seconds, remove one drop of the mixture with a glass rod.
12. Put this drop on the second depression of your spotting tile.
13. Rinse the glass rod with water.
14. Every 10 seconds, use the glass rod to remove one drop of the mixture. Put each drop onto the iodine solution in the next depression on the spotting tile. Remember to rinse the glass rod with water after putting each drop on the spotting tile.
15. Keep sampling every 10 seconds until the iodine does not change colour.
16. Record your results

GCSE SCIENCE Required Practical - BIOLOGY

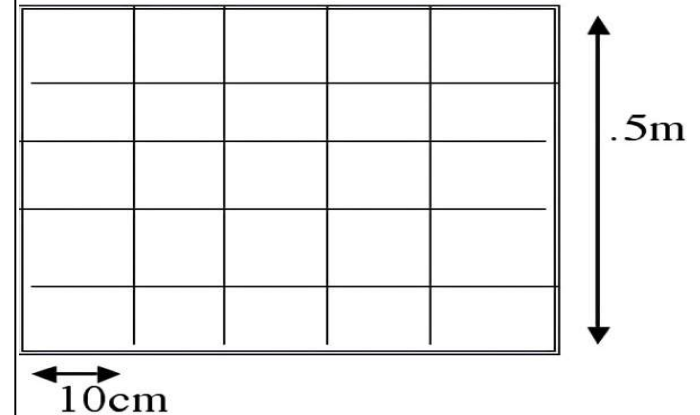
Photosynthesis

1. Put your 10 cm piece of pond weed (cut edge at the top) into a beaker of water.
2. Cover the pondweed with an inverted filter funnel – raised off the bottom of the beaker with plasticine.
3. Fill the measuring cylinder with water and gently position as in the diagram.
4. Use the ruler to position the beaker of pondweed 1 metre away from the light source.
5. Start the stopwatch and: a. count and record the number of bubbles released in three minutes b. record the volume of gas produced and collected in the measuring cylinder in the same three minutes.
6. Record your results in a table
7. Move the light source so that the pondweed beaker is 80 cm away.
8. Refill the measuring cylinder with water and gently position as in the diagram. Then repeat steps 5 and 6.
9. Repeat for distances of 60, 40 and 20 cm.

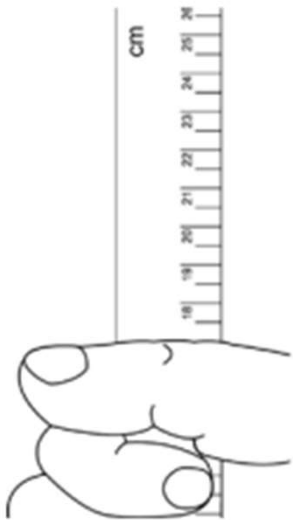
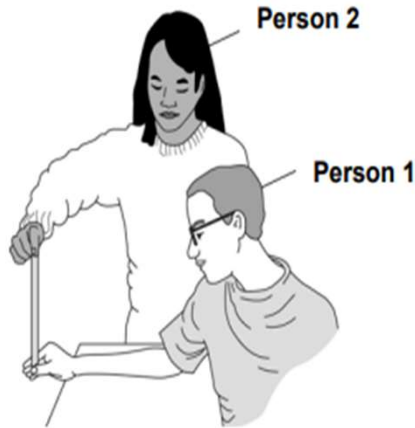


Field experiments quadrat

1. Put the 30 m tape measure in a line from the base of a tree to an open area of ground.
2. Put the quadrat against the transect line. One corner of the quadrat should touch the 0 m mark on the tape measure.
3. Count the number of plants inside the quadrat.
4. Use the light meter to measure the light intensity at this position.
5. Record your results in a table



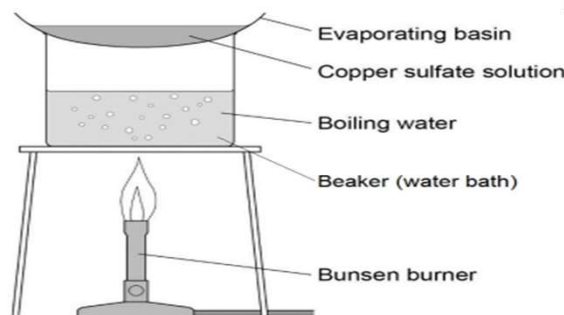
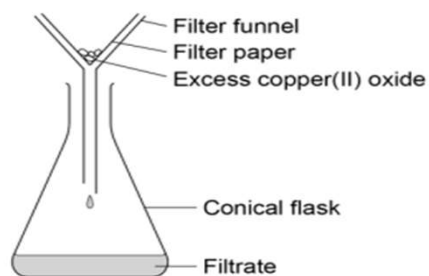
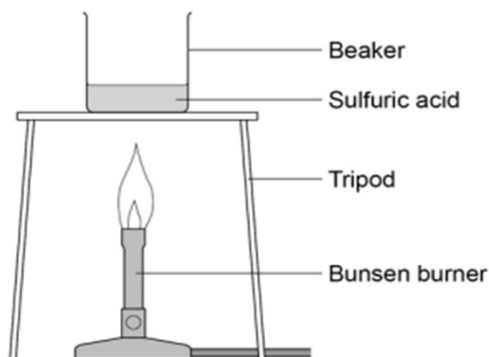
GCSE SCIENCE Required Practical - BIOLOGY



Reaction time

1. Work with a partner to do this test. Choose who will be person 1 and who will be person 2.
2. Each of you should use your dominant hand to do this experiment. If you are right handed then your dominant hand is your right hand.
3. Person 1 sits down on the chair, with good upright posture and eyes looking across the room.
4. Person 1 puts the forearm of their dominant arm across the table with their hand overhanging the edge.
5. Person 2 holds a ruler vertically with the bottom end (the end with the 0 cm mark) in between person 1's thumb and first finger. They will tell person 1 to prepare to catch the ruler.
6. Person 1 catches the ruler with their thumb and first finger as quickly as possible when it drops.
7. Record the number on the ruler that is level with the top of person 1's thumb first finger. They will tell person 1 to prepare to catch the ruler.
8. Have a short rest, then repeat the test several times.
9. Record your results.
10. Repeat the test with Person 2 catching the ruler and Person 1 dropping it.
11. Record Person 2's results on the table.
12. Use a conversion table to convert your ruler measurements into reaction times.
13. Make the change that you are investigating to change human reaction time.
14. Repeat steps 1-9 for each person and record the results in your data table.

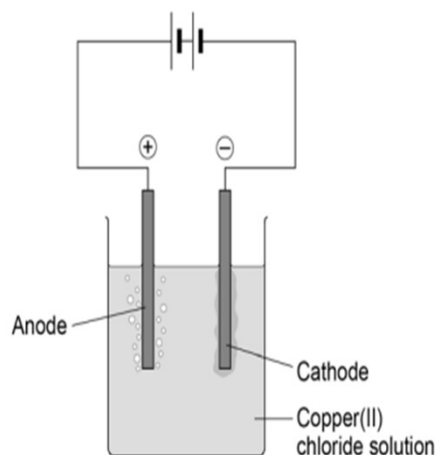
GCSE SCIENCE Required Practical - CHEMISTRY



Making Salts

1. Measure 40 cm³ sulfuric acid and put it into the 100 cm³ beaker.
2. Set up the Bunsen burner, tripod, gauze and heatproof mat. Put the beaker on the gauze and heat the acid gently until it is almost boiling. Turn off the Bunsen burner.
3. Remove the glass beaker from the tripod. Use the spatula to add a small amount of copper (II) oxide powder to the hot acid. Stir with the glass rod. The copper (II) oxide will disappear and the solution will turn clear blue.
4. Add some more copper (II) oxide and stir again.
5. Keep adding the copper (II) oxide until some of it remains after stirring.
6. Allow the apparatus to cool completely.
7. Set up the filter funnel and paper over the conical flask. Filter the contents of the beaker.
8. Pour the filtrate from the conical flask into the evaporating basin.
9. Set up a water bath using the 250 cm³ beaker on the tripod and gauze.
10. Evaporate the filtrate gently using the water bath.
11. When crystals start to form, stop heating the water bath.
12. Pour the remaining solution into the crystallising dish.
13. Leave the crystallising dish in a cool place for at least 24 hours.
14. Remove the crystals from the concentrated solution with a spatula. Gently pat the crystals dry between two pieces of filter paper.

GCSE SCIENCE Required Practical - CHEMISTRY



Electrolysis

1. Pour approximately 50cm³ copper (II) chloride solution into the beaker.
2. Add the petri dish lid and insert the carbon rods through the holes. The rods must not touch each other.
3. Attach crocodile leads to the rods. Connect the rods to the dc (red and black) terminals of a low voltage power supply.
4. Select 4 V on the power supply and switch on.
5. Look at both electrodes and record your initial observations.
6. Use forceps to hold a piece of blue litmus paper in the solution next to the anode (positive electrode) and identify the element.
7. Rinse the electrochemical cell apparatus and collect a new set of electrodes.

Repeat steps 1–7 using the other solution sodium chloride and complete the following tasks to show your understanding of the chemistry of electrolysis.

Temperature changes

1. Measure 30 cm³ dilute hydrochloric acid and put it into the polystyrene cup.
2. Stand the cup inside the beaker. This will make it more stable
3. Use the thermometer to measure the temperature of the acid. Record your result in a table
4. Measure 5 cm³ sodium hydroxide solution.
5. Pour the sodium hydroxide into the polystyrene cup. Fit the lid and gently stir the solution with the thermometer through the hole.
6. Look carefully at the temperature rise on the thermometer.
7. When the reading on the thermometer stops changing, record the highest temperature reached in the table.
8. Repeat steps 4–7 to add further 5 cm³ amounts of sodium hydroxide to the cup each time, recording your temperature reading in the results table.
9. Repeat until a maximum of 40 cm³ of sodium hydroxide has been added.
10. Wash out all the equipment and repeat the experiment for your second trial.

GCSE SCIENCE Required Practical - CHEMISTRY

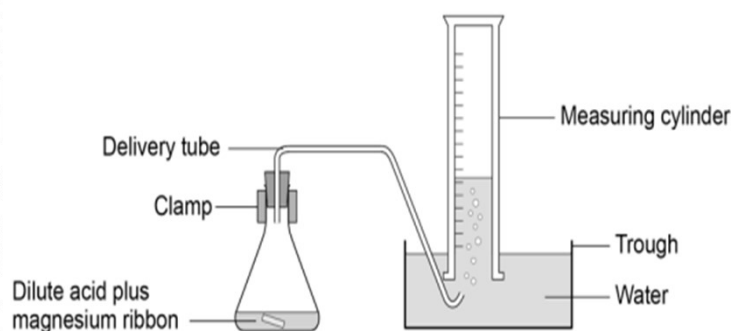
- Rates of reaction: How does the concentration of an acid affect the rate of reaction?

1. Measure 50 cm³ of 1.0 mol/dm³ hydrochloric acid using one of the measuring cylinders. Pour the acid into the 100 cm³ conical flask.

2. Fit the bung and delivery tube to the top of the flask.

3. Half fill the trough or bowl with water.

4. Fill the other measuring cylinder with water. Make sure it stays filled with water when you invert it into the water trough and that the delivery tube is positioned correctly.



- Rates of reaction: How does the concentration of sodium thiosulphate affect the rate of reaction?

1. Measure 10 cm³ sodium thiosulfate solution and put it into the conical flask.

2. Measure 40 cm³ of water. Add the water to the conical flask.

3. This dilutes the sodium thiosulfate solution to a concentration of 8 g/dm³.

4. Put the conical flask on the black cross.

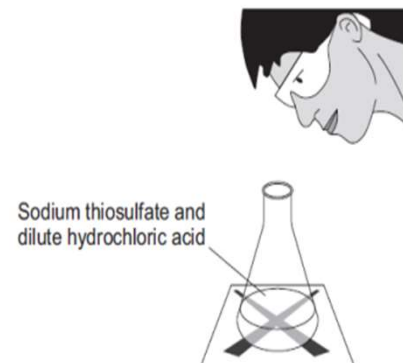
5. Measure 10 cm³ of dilute hydrochloric acid.

6. Put this acid into the flask. At the same time swirl the flask gently and start the stopwatch.

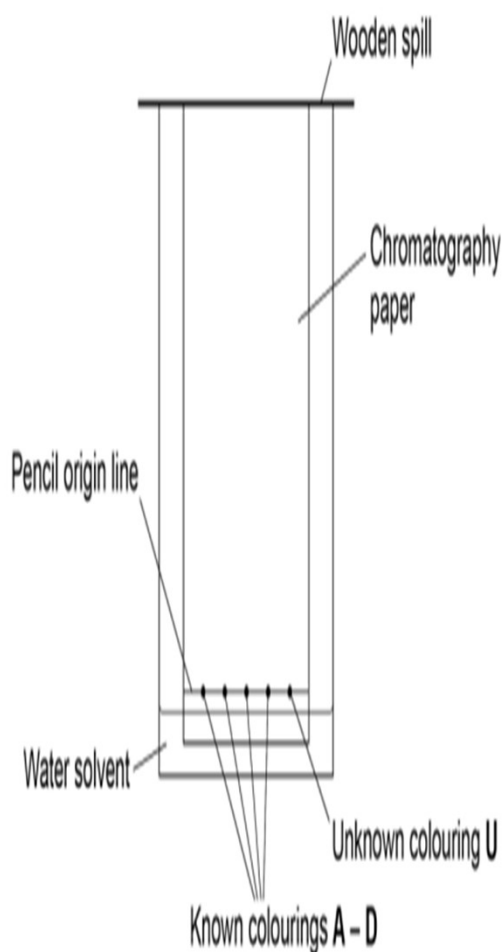
7. Look down through the top of the flask when you can no longer see the black cross. Record the time in seconds.

8. Repeat steps 1–7 changing the concentration of sodium thiosulfate each time as below.

9. Repeat steps 1–7 changing the concentration of sodium thiosulfate each time as below.



GCSE SCIENCE Required Practical - CHEMISTRY

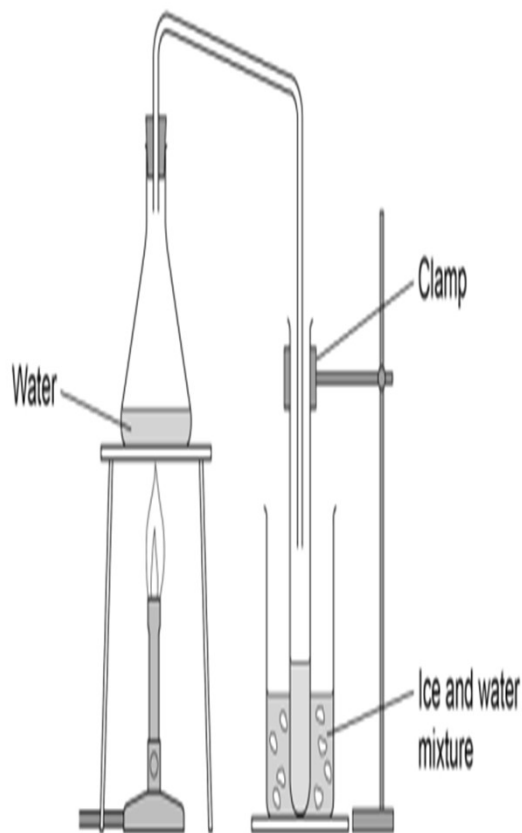


• Chromatography

1. Use a ruler to draw a horizontal pencil line 2 cm from the bottom short edge of the chromatography paper. This is your origin line.
2. Mark five pencil spots at equal intervals across the origin line. Make sure you keep at least 0.5 cm away from each edge of the paper.
3. Use a glass capillary tube to put a small spot of each colouring A, B, C and D on four of the pencil spots. Use a different tube for each colouring. Use the fifth tube to put a small spot of the unknown mixture U on the fifth pencil spot. Try to make sure each spot is no more than 2-3 mm in diameter. Label each spot in pencil.
4. Pour water into the beaker to a depth of no more than 1 cm.
5. Clip the top short edge of the chromatography paper to the wooden spill. The top end is the end furthest from the spots.
6. Carefully rest the wooden spill on the top edge of the beaker. The bottom edge of the paper should dip into the water solvent.
7. Wait for the water solvent to travel at least three quarters of the way up the paper. Do not disturb the beaker during this time.
8. Carefully remove the paper from the beaker. Draw another pencil line on the dry part of the paper as close to the wet edge as possible. This is called the solvent front line.
9. Hang the paper up to dry thoroughly.
10. Measure the distance in mm between the two pencil lines. This is the distance travelled by the water solvent.
11. For each of food colour A, B, C and D measure the distance in mm from the start line to the middle of the spot. **Calculate the R_f value for each of the known colours. Use the equation:**

$$R_f = \frac{\text{distance moved by solute}}{\text{distance moved by solvent}}$$

GCSE SCIENCE Required Practical - CHEMISTRY



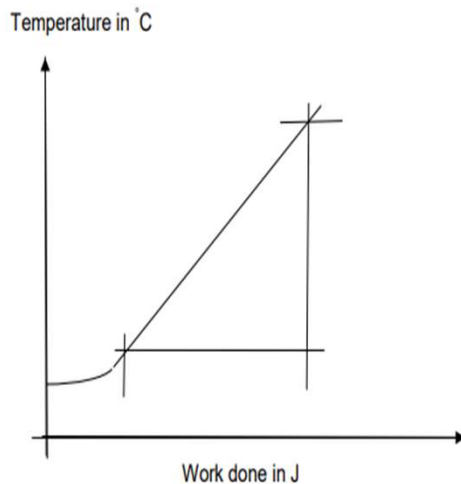
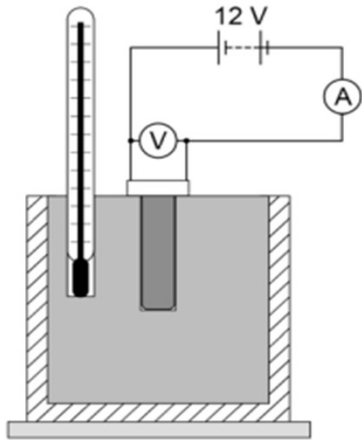
- **Water purification: Purifying a sample of water by distillation**

1. Place the water sample in the conical flask. Set up the apparatus for distillation as shown in the diagram.
2. Heat the water using the Bunsen burner until it boils. Then reduce the heat so that the water boils gently.
3. The distilled water will collect in the cooled test tube. Collect about 1 cm depth of water in this way, then stop heating.
4. Analyse the water you have distilled by determining its boiling point.

- **Water purification: Analysing and purifying a sample of water and making it safe to drink**

1. Use the universal indicator paper to measure the pH of the water sample.
2. Accurately weigh an empty evaporating basin and record to two decimal places.
3. Pour 10 cm³ of water sample 1 into the evaporating basin.
4. Heat the evaporating basin on a tripod and gauze using a Bunsen burner until the solids start to form and the majority of water has evaporated.
5. Weigh the cooled evaporating basin again and calculate the mass of the solids that were dissolved in the water. 6. Record your results in a table

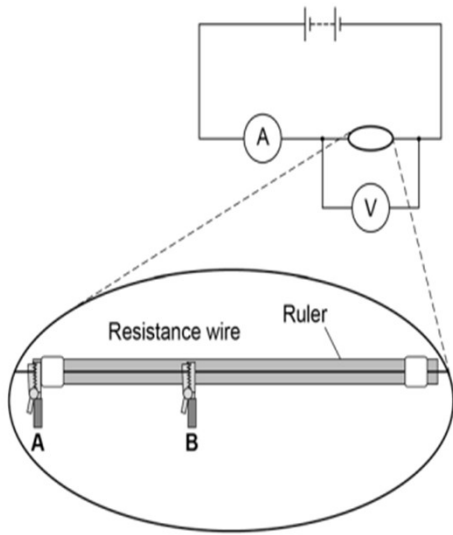
GCSE SCIENCE Required Practical - PHYSICS



• Specific heat capacity

1. Measure and record the mass of the copper block in kg.
2. Wrap the insulation around the block.
3. Place the heater in the larger hole in the block.
4. Connect the ammeter, power pack and heater in series.
5. Connect the voltmeter across the heater.
6. Use the pipette to put a small amount of water in the other hole.
7. Put the thermometer in this hole.
8. Set the power pack to 12 V. Switch on the power pack to turn on the heater.
9. Record the ammeter and voltmeter readings. These shouldn't change during the experiment.
10. Measure the temperature and start the stopwatch.
11. Record the temperature every minute for 10 minutes. Record your results.
12. Calculate the power of the heater in watts. Power in watts = potential difference in volts x current in amps
13. Calculate the energy transferred (work done) by the heater. To do this, multiply the time in seconds by the power of the heater. Record these values in your table.
14. Plot a graph of the temperature in °C against work done in J
15. Draw a line of best fit. Take care as the beginning of the graph may be curved.
16. Calculate the gradient of the straight part of your graph. The gradient = change in temperature rise in °C/change in work done in J
17. The heat capacity of the copper block is calculated using the formula: $\text{Heat capacity} = \frac{1}{\text{gradient}}$ It is the amount of heat energy in J needed to increase the temperature by 1°C.
18. The specific heat capacity of copper is the amount of heat energy in J needed to increase the temperature of 1kg of copper by 1°C. Calculate the specific heat capacity of the copper block using the equation: $\text{Change in thermal energy in J} = \text{mass in kg} \times \text{specific heat capacity in J/kg/°C} \times \text{temperature change}$.
19. Repeat the experiment for the blocks made from aluminium and iron.

GCSE SCIENCE Required Practical - PHYSICS

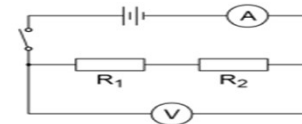


- Resistance: length of a wire at constant temperature

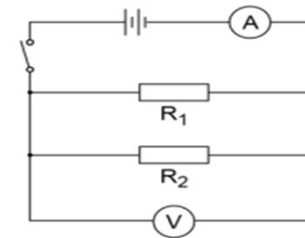
1. Use the circuit diagram to set up and connect the circuit.
2. Connect a lead from the negative side of the ammeter to the crocodile clip at the zero end of the ruler. Connect a lead from the other crocodile clip to the negative side of the battery. Use this lead as a switch to disconnect the battery between readings.
3. Decide the interval distance (eg 10cm) you will investigate and connect the first distance to be tested between crocodile clips A and B.
4. Measure the readings on the voltmeter and ammeter at this distance.
5. Record your results in a table.
6. Move crocodile clip B and record the readings for the different lengths of wire eg 20cm, 30cm etc.
7. Calculate the resistance for each length of wire using the equation: resistance in Ω = potential difference in V / current in A
8. Plot a graph of resistance against length of wire.
9. You should be able to draw a straight line of best fit although it may not go through the origin.

- Resistance: combination of resistors in series and parallel.

1. Use the circuit diagram to set up and connect the circuit for two resistors in series $R_1=R_2$



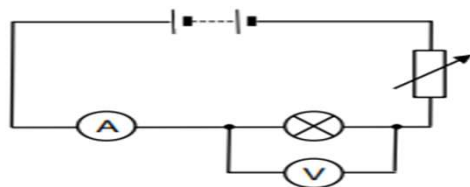
2. Switch on and record the readings of the ammeter and the voltmeter.
3. Calculate the total resistance of the series circuit.
4. Set up the circuit for two resistors in parallel. Use the circuit diagram below. $R_1=R_2$.



5. Record the readings of the ammeter and the voltmeter.
6. Calculate the total resistance of the parallel circuit.
7. What conclusions can you make about the effect of adding resistors • in series • In parallel

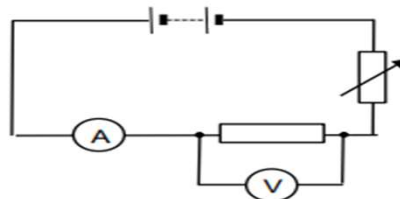
GCSE SCIENCE Required Practical - PHYSICS

• I-V characteristics



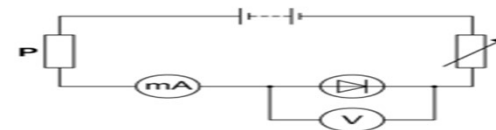
1. Use the circuit diagram as below to set up your circuit.
2. Record the readings on the ammeter and voltmeter in a suitable table.
3. Adjust the variable resistor and record the new readings on the ammeter and voltmeter.
4. Repeat this to obtain several pairs of readings.
5. Swap the connections on the battery/power supply. The ammeter is now connected to the negative terminal and variable resistor to the positive terminal. The readings on the ammeter and voltmeter should now be negative.
6. Continue to record pairs of readings of current and potential difference with the battery reversed.
7. Plot a graph of current against potential difference. As the readings include negative values the origin of your graph will be in the middle of the graph paper. You should be able to draw a line of best fit through the origin. This is the characteristic of a filament lamp

• The characteristic of a resistor



1. Swap the leads on the battery/power supply back to their original positions.
2. Replace the filament lamp with the resistor.
3. Record the readings on the ammeter and voltmeter in a suitable table.
4. Adjust the variable resistor and record the new ammeter and voltmeter readings. Repeat this to obtain several pairs of readings.
5. Swap the connections on the battery/power supply. Now the ammeter is connected to the negative terminal and variable resistor to the positive terminal. The readings on the ammeter and voltmeter should now be negative.
6. Continue to record pairs of readings of current and potential difference with the battery reversed.
7. Plot a graph of current against potential difference. As the readings include negative values the origin of your graph will be in the middle of the graph paper. You should be able to draw a straight line of best fit through the origin. This is the characteristic of a resistor.

The characteristic of a diode



1. Swap the leads on the battery/power supply back to their original positions.
2. If you can, reduce the battery/power supply potential difference to less than 5 V.
3. Connect the extra resistor labelled P.
4. Replace the ammeter with a milliammeter.
5. Replace the resistor used in activity 2 with the diode.
6. Record the readings on the milliammeter and voltmeter in a suitable table.
7. Adjust the variable resistor and record the new milliammeter and voltmeter readings.
8. Repeat this to obtain several pairs of readings.
9. Swap the connections on the battery/power supply. Now the milliammeter is connected to the negative terminal and variable resistor to the positive terminal. The readings on the milliammeter and voltmeter should now be negative.
10. Continue to record pairs of readings of current and potential difference with the battery reversed.
11. Plot a graph of current against potential difference. As the readings include negative values the origin of your graph will be in the middle of the graph paper. You should be able to draw a line of best fit through the origin. This is the characteristic of a diode.

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• Density: Determine the density of a regularly shaped object

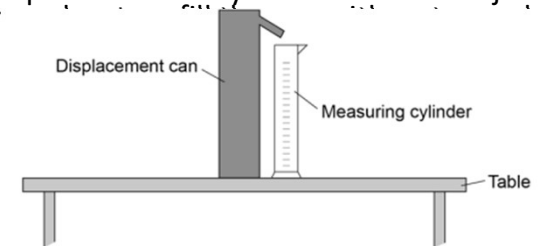
1. For each of your selected objects measure and record the:
 - length
 - width
 - height.
2. Calculate the volume of each object. 3. Record your results in a table.
4. Measure the mass of each object using the digital balance. Record the results in your table.
5. Calculate and record the density of each object using: $\text{density} = \text{mass} / \text{volume}$
6. Standard units of density are kg/m^3 .

Density: Determining the density of a liquid

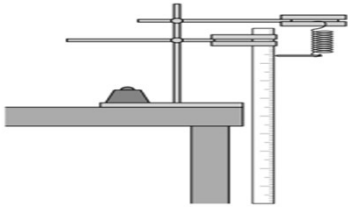
1. Measure the mass of the empty measuring cylinder.
2. Record your results in a table.
3. Pour about 100 cm^3 of the sugar solution into the measuring cylinder. Record the volume accurately.
4. Measure and record the mass of the measuring cylinder and liquid. From this calculate and record the mass of just the liquid.
5. Calculate the density of the liquid.
6. Standard units of density are kg/m^3 .

• Density: Determining the density of an irregularly shaped object

1. Measure the mass of one of the irregular shaped objects.
 2. Record your results in a simple table.
 3. Put the displacement can on your desk. Put an empty beaker under the spout and fill the can with water. Water should be dripping from the spout and you should wait until you see this stop.
 4. Then put a measuring cylinder that you think will give the most accurate reading under the spout instead of the beaker.
 5. Very carefully lower the object into the displacement can so that it is completely submerged. Collect all of the water that comes out of the spout in the measuring cylinder.
 6. Measure the volume of the collected water. This volume is equal to the volume of the object.
 7. Calculate and record the density of the object.
 8. Repeat the activity for some other objects.
- Re



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• Force and extension

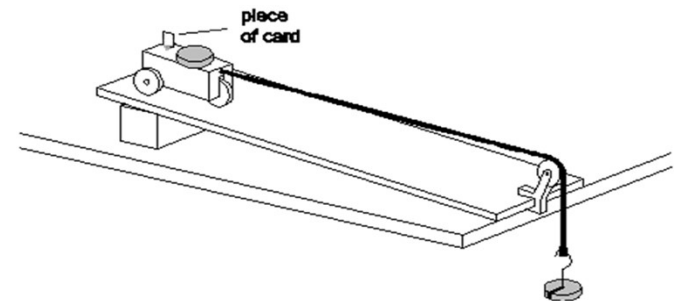
1. Set up your apparatus as in the diagram making sure that:
 - the ruler is vertical. The zero on the scale needs to be at the same height as the top of the spring
 - the splint is attached securely to the bottom of the spring. Make sure that the splint is horizontal and that it rests against the scale of the ruler.
2. Take a reading on the ruler – this is the length of the unstretched spring. Record this reading in your results table.
3. Carefully hook the base of the weight stack onto the bottom of the spring. This weighs 1.0 newton (1.0 N). Don't forget that the mass added will have to be converted to newtons.
4. Take a reading on the ruler – this is the length of the spring when a force of 1.0 N is applied to it.
5. Add further weights. Measure and record the length of the spring each time.
6. Calculate the extension for each weight and record it on the table.

• Acceleration: Measuring the effect of force on acceleration at constant mass

1. Use the ruler to measure intervals on the bench and draw straight lines or place tape across the bench at these intervals.
2. Attach the bench pulley to the end of the bench.
3. Tie a length of string to the toy car or trolley. Pass the string over the pulley and attach the weight stack to the other end of the string.
4. Make sure the string is horizontal and is in line with the toy car or trolley.
5. Hold the toy car or trolley at the start point.
6. Attach the full weight stack (1.0 N) to the end of the string.
7. Release the toy car or trolley at the same time as you start the stopwatch, press the stopwatch (lap mode) at each measured interval on the bench and for the final time at 100 cm.
8. Record the results in your table.
9. Repeat steps 5–8 for decreasing weights on the stack for example, 0.8 N, 0.6 N, 0.4 N, 0.2 N

Acceleration: Measuring the effect of mass on acceleration with a constant force

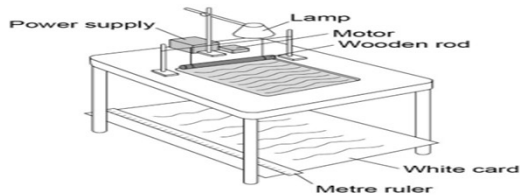
1. Setup the bench, pulley, weight stack and car as in steps 1-5 of activity 1.
2. Use your results from activity 1 to select a weight for the weight stack that will just accelerate the car along the bench.
3. Put a 200g mass on the car.
4. Hold the car at the start point.
5. Attach your chosen weight stack to the end of the string.
6. Release the car at the same time as you start the stopwatch, press the stopwatch (lap mode) at each measured interval on the bench and for the final time at 100 cm.
7. Record the results in the table outline below.
8. Repeat steps 5–8 for increasing more masses on the car.



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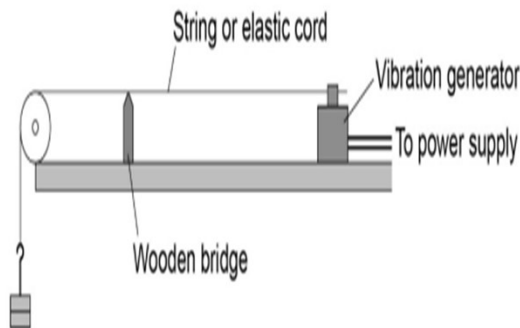
Waves: Observing water waves in a ripple tank

1. Set up the ripple tank as shown in the diagram. Make sure that there is a large sheet of white card or paper on the floor under the tank.
2. Pour water to a depth of about 5 mm into the tank.
3. Adjust the height of the wooden rod so that it just touches the surface of the water.
4. Switch on the overhead lamp and the electric motor.
5. Adjust the speed of the motor to produce low frequency water waves.
6. Adjust the height of the lamp so that the pattern of the waves can be clearly seen on the white card.
7. Place a metre ruler at right angles to the waves shown in the pattern on the card. Measure across as many waves as you can. Then divide that length by the number of waves. This gives the wavelength of the waves. Record this value in the table below.
8. Count the number of waves passing a point in the pattern over a given time (say 10 seconds). Then divide the number of waves counted by 10. This gives the frequency of the waves. Record this value in the table below.
9. Calculate the speed of the waves using the equation: wave speed = frequency \times wavelength
10. Record this value in a table.



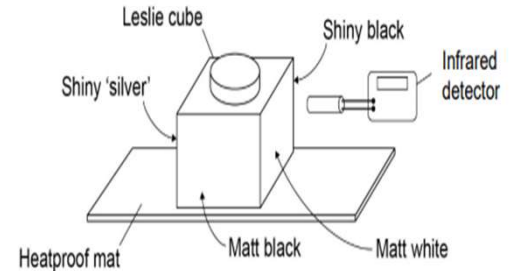
Waves: Observing waves in a solid

1. Set up the apparatus as shown in the diagram.
2. Switch on the vibration generator. The string (or elasticated cord) should start to vibrate.
3. To see a clear wave pattern, adjust the tension in the string or move the wooden bridge to adjust the length of the string. The waves should look like they are not moving.
4. Use a metre ruler to measure across as many half wavelengths as possible (a half wavelength is one loop). Then divide the total length by the number of half waves. Multiplying this number by two will give the wavelength.
5. The frequency of the wave is the frequency of the signal generator (power supply).
6. Calculate the speed of the wave using the equation: wave speed = frequency \times wavelength
7. Repeat steps 2-6 for different frequencies



Radiation and absorption

1. Put the Leslie cube onto the heat-proof mat.
2. Fill the cube with very hot water and put the lid on the cube. Your apparatus should look like this.



3. Use the detector to measure the amount of infrared radiated from each surface. Make sure that the detector is the same distance from each surface