Reflection Worksheet

Year 11

Half-Term 3

English, Maths, Science, History, and Geography

LIBERTY
ACADEMY
CHURCH OF ENGLAND

People I Can Talk To

Wherever we are, it can be helpful to know who we can talk to. This might be helpful if we are worried about something, excited about something, feeling confused or even just want to chat. In the boxes below, draw a picture of yourself surrounded by people you can talk to at school.

This Is Me

Post-16 Transition Planning

How to Use This Worksheet

Planning for post-16 transition should begin in Year 9, enabling students to think about what their strengths and weaknesses are and what career paths they are interested in. This worksheet is designed to be a working document that can be added to throughout KS4, in preparation for leaving school.

Name:	**Date:**
My interests/passions/hobbies:	**My qualities:**
Careers that interest me:	**Things I don't like:**
Location:	**Colleges near me:**

Subject:	Predicted grade:	Potential options:	
		Highlight the appropriate level	
		Level 1	2 x GCSEs 1-3
		Level 2	3/4 x GCSEs 4-9
		Level 3	5 x GCSEs 4-9
		Apprenticeship	
		Preferred placement/options:	

Concerns about leaving school:

Action to be taken:

Employment	Yes/No/Partially
Have you received any career information, advice and guidance in the last year?	
Do you have an up to date vocational profile or CV?	
In the last year, have work tasters and/or work placements been offered in line with the interests and skills identified in the vocational profile?	
Is the curriculum supporting the development of skills that you will need in the workplace? Life skills, PSHE, etc.	
[illegible]	[illegible]
Where do you see yourself living in the future and with whom?	
What would your parents like you to do after Year 11?	
Are you aware of the housing register?	
What are your parents or foster carers' expectations for you after college?	
Are you learning skills at school and at home that will help with living independently in the future?	
Community Inclusion	**Yes/No/Partially**
Do you have a circle of friends inside and outside of school?	
How are you forming friendships inside and outside of school?	
Are you aware of opportunities that are available in your local area? Clubs, teams, social events, etc.	

Have you ever volunteered to support an event/charity in your local area?	
Health	**Yes/No/Partially**
Are you registered with a local GP & Dentist?	
Are you aware that there is support available for after you leave school?	
Do you feel the curriculum supports you to have/lead a healthy lifestyle?	
Do you feel that you have support for your mental wellbeing?	

Job Interview Practice Questions

1. Tell me about yourself.
2. Describe your work experience.
3. Why do you want this job?
4. What are your strengths and weaknesses?
5. Have you ever had a problem with a coworker? How did you solve it?
6. Where do you see yourself in five years?
7. What did you do at your last job?
8. How do you work under pressure?
9. Why did you leave your last job?
10. What three words describe you?
11. How would you deal with a difficult customer?
12. Where did you hear about this business/company?
13. What makes a good employee?
14. What does being a hard worker mean to you?
15. Do you work better alone or with others?
16. Do you need any reasonable accommodations for this job?
17. Tell me about an achievement you are proud of.
18. Are you available to work during the week or weekend?
19. What do you like about this business/company?
20. Do you have any questions for me?

GCSE

C700U10-1A

S24-C700U10-1A

THURSDAY, 23 MAY 2024 – MORNING

ENGLISH LANGUAGE – Component 1

20th Century Literature Reading and Creative Prose Writing

Resource Material for use with Section A

SECTION A: 40 marks

Read carefully the passage below.

This story is set in Australia.

They did not live in the town of Calwarra but about five miles out of it, along one of those dusty roads that seemed to go on forever but led into the bush, to nowhere really. Their turning was marked only by a rickety signpost. Most of the time it was a remote place where you contended with heat, with drought, with ants and foot rot in the sheep but for a few weeks of the year the farm was a hive of activity when they brought in the harvest of grain.

Alice lived alone with her father, Jack Cogdon, on the farm. He tended to retreat into his work on the land and he was a strong and mostly unemotional man. He was determined to tame the unforgiving land and he worked hard to make a living from the farm. He had started with very little but slowly and surely he built up a successful business. He expected Alice to help in the house and around the farm but he was kind in his way and loved his daughter.

Female relatives had offered to give Alice a home with them in the town, and one aunt even arrived to argue her case.

'You can't look after a girl, Jack,' she had said. 'Girls aren't like boys. They need other women. They need someone to advise them on things. A father can't, no matter how well-intentioned.'

Her father fought back.

'She's my child. This is her home. Damn it – a father's got a right to his own child, hasn't he?'

The aunt changed her argument. 'She'll never forgive you if you keep her cooped up here. You're spoiling her chances. If she came to town with me, she'd grow up knowing how to make friends, to run a home. Things like that.'

He was silent for a moment. Then he said, 'She'll get all the experience she needs right here, where she belongs.'

'But it's no life for a girl, Jack. See reason.'

He paused again before coming up with the reply that ended the argument.

'All right,' he said. 'Ask her. You ask her whether she wants to stay here or go with you. They say we must consult children nowadays, don't they? All right. If she says she'll go with you, then you can take her.'

The aunt realised, as did her brother, that there was no point in posing the question. And so she gave up the argument, muttering dire warnings as to what happened to girls who stayed on farms and never had the chance of a proper education.

Time passed and to the secret disappointment of his sister, he managed well. Thwarted in her plans, only once did she ever compliment him, and grudgingly at that.

'She's turning out well, Jack,' she had said when they met at a family wedding. 'It can't have been easy for you.'

But he had found it easier than he had thought. He drove her into town to school each morning and was never late in picking her up in the afternoon, whatever was happening on the farm. He bought her clothes, leaving the choice up to her, and she was always well turned out. He had waited grimly for the teenage rebellion, for arguments over staying out late, about accepting lifts home from boys who had just passed their driving tests but none of this came. Her friends – the ones he met – seemed pleasant and well-mannered. They were the children of other farmers, or of people from town, so there were no surprises there. They had parties, of course, but she was able to stay in town with friends, and she was always back on

time. With a pang, he realised one day that, almost unnoticed, she had grown into a quiet, uncomplaining person. The thought filled him with pride.

At school she was particularly good at art and was encouraged by her teacher to think of going on to art school.

'You could get in,' she said. 'You could get a place in Melbourne, or even Sydney. And afterwards you could go to London or Paris. Somewhere like that.'

The girl's eyes shone but who would ever pay for it? There was hardly any money as it was.

'Look,' said the teacher. 'I'm not just saying this. You could be an artist.'

'Thank you,' said Alice. She was not used to compliments and was not sure how to respond.

'Have you spoken to your father about it? Have you discussed your future?' the teacher asked.

Alice looked at the floor. They had not talked about it. Nothing had been said.

The teacher knew of course. She knew that Jack Cogdon was one of those lonely, pathetic cases, a farmer depending on his daughter to cook and keep house. Some girls were suited to that life but this one had talent; this one should be spared that life.

Alice mentioned it at supper one night, after she had placed the plate of stew and vegetables before him and taken her place at the table.

'I've got to think about what I'm going to do when I finish school,' she said.

He was taken aback but he smiled at her weakly.

She was silent for a moment, then said, 'Miss Williams thinks I should try for art school. Melbourne maybe.'

He dug his fork into his stew, avoiding her gaze.

'Why not?' he said. 'You do what you want to do. It's your life.'

That was all he said, but she knew he was unsettled. For the rest of the meal, he seemed anxious, although he tried to convey an impression of normality. She knew of course what he was feeling. If she left, then he could never retire. He would work the farm until he was no longer capable of it, and then it would be sold. He would move to town, to one of those houses that were filled with retired farmers who did nothing all day and hankered after their lost farms. What he wanted, of course, was for her to marry a farmer's son, who would take over from him. Somebody, in fact, like the youngest Paget boy who had two older brothers and would never have a chance of his own place. By all accounts, he was a farmer through and through.

Jack said something to Mr Paget over a beer in a bar where they met occasionally.

'I'll have to give up one day, I suppose. I'm not as lucky as you. With your sons.'

The other man smiled. 'They can be tough to handle. You've had it easy, Jack.'

He paused, awkwardly. This was the unspoken tragedy among farmers. No son.

Jack said, 'Your youngest boy, though. What's he going to do?'

The other man shook his head. 'He's under my feet at the moment but he's a farmer – bone deep.'

For a few moments neither man said anything. Then Jack looked up from his glass of beer.

'He might get on with my Alice. They might hit it off,' he laughed.

The other man smiled. 'They could do worse, couldn't they?'

GCSE

C700U10-1

S24-C700U10-1

THURSDAY, 23 MAY 2024 – MORNING

ENGLISH LANGUAGE – Component 1

20th Century Literature Reading and Creative Prose Writing

1 hour 45 minutes

ADDITIONAL MATERIALS

Resource Material for use with Section A.

A WJEC pink 16-page answer booklet.

INSTRUCTIONS TO CANDIDATES

Use black ink or black ball-point pen. Do not use gel pen or correction fluid.

Answer **all** questions in Section A.

Select **one** title to use for your writing in Section B.

Write your answers in the separate answer booklet provided, following the instructions on the front of the answer booklet.

Use both sides of the paper. Write only within the white areas of the booklet.

Write the question number in the two boxes in the left-hand margin at the start of each answer,

for example | 0 | 1 |.

Leave at least two line spaces between each answer.

You are advised to spend your time as follows:

Section A – about 10 minutes reading
– about 50 minutes answering the questions

Section B – about 10 minutes planning
– about 35 minutes writing

INFORMATION FOR CANDIDATES

Section A (Reading): 40 marks

Section B (Writing): 40 marks

The number of marks is given in brackets at the end of each question or part-question.

SECTION A: 40 marks

Read carefully the passage in the **separate Resource Material** for use with **Section A**.
Then answer **all** the questions below.

0 1 **Read lines 1–5.**

List **five** things you learn about the farm in these lines. [5]

0 2 **Read lines 6–10.**

What impressions does the writer create of the father in these lines? [5]

You must refer to the language used in the text to support your answer, using relevant subject terminology where appropriate.

0 3 **Read lines 11–35.**

What impressions does the writer create of the aunt in these lines? How does the writer create these impressions? [10]

You must refer to the language used in the text to support your answer, using relevant subject terminology where appropriate.

0 4 **Read lines 36–55.**

How does the writer present the relationship between Jack and his daughter, Alice, in these lines? [10]

You must refer to the language and structure used in the text to support your answer, using relevant subject terminology where appropriate.

0 5 **To answer this question, read lines 56–83 and consider the passage as a whole.**

The teacher describes Jack as "one of those lonely, pathetic cases, a farmer depending on his daughter to cook and keep house".

To what extent do you agree with this view of Jack? [10]

You should write about:

- your thoughts and feelings about how Jack is presented in lines 56–83 and in the passage as a whole
- how the writer has created these thoughts and feelings.

You must refer to the text to support your answer.

SECTION B: 40 marks

In this section you will be assessed for the quality of your **creative prose writing** skills.

24 marks are awarded for communication and organisation; 16 marks are awarded for vocabulary, sentence structure, spelling and punctuation.

You should aim to write about 450–600 words.

Choose **one** of the following titles for your writing: [40]

Either,

1 1 a) Write a story which begins:

It was my first day at this school...

Or,

1 1 b) My Finest Hour.

Or,

1 1 c) Write about a time when you felt you had to tell a lie.

Or,

1 1 d) The Choice.

The space below can be used to plan your work.

END OF PAPER

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HEARTWOOD
LEARNING TRUST

LIBERTY ACADEMY

GCSE Mathematics

Tier: Foundation

Paper ID code: Paper 1 – 1MA1/1F

Name			
Teacher			
Score		**Grade**	

Key revision areas identified by QLA Process		**Sparx Code**
1		
2		
3		

Instructions

- Use **black** ink or ball-point pen.
- If pencil is used for diagrams/sketches/graphs it must be dark (HB or B).
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided
  – there may be more space than you need.
- You must **show all your working.**
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- **Calculators may be used.**
- If your calculator does not have a π button, take the value of π to be 3.142 unless the question instructs otherwise.

Information

- The total mark for this paper is 80
- The marks for **each** question are shown in brackets
  – use this as a guide as to how much time to spend on each question.

Advice

- Read each question carefully before you start to answer it.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1 Simplify $e + e + e + e + e$

.....

(Total for Question 1 is 1 mark)

2 Write $\frac{3}{4}$ as a decimal.

.....

(Total for Question 2 is 1 mark)

3 Change 60 millimetres into centimetres.

..... centimetres

(Total for Question 3 is 1 mark)

4 Write down a multiple of 8 that is between 25 and 35

.....

(Total for Question 4 is 1 mark)

5 Angle A is 53°

What type of angle is angle A?

.....

(Total for Question 5 is 1 mark)

6 Samina works in a shop that sells pens.

The table shows the number of blue pens and the number of red pens Samina sold in each of three months.

Month	Blue pens	Red pens
April	33	20
May	40	14
June	27	15

(a) Work out the total number of blue pens and red pens Samina sold in June.

Samina says,

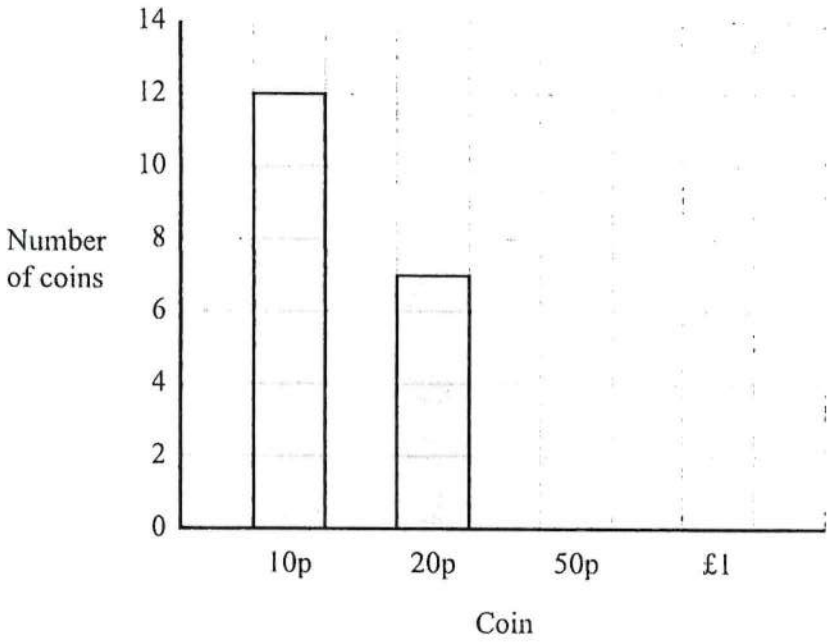
"In these three months, in total, I sold more than twice as many blue pens as red pens."

(b) Is Samina correct?
You must show how you get your answer.

(Total for Question 6 is 4 marks)

7 There are only 10p coins, 20p coins, 50p coins and £1 coins in a bag.

The bar chart shows information about the number of 10p coins and the number of 20p coins in the bag.



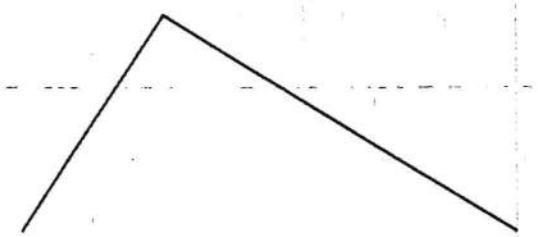
There are eight 50p coins in the bag.
There are three £1 coins in the bag.

(a) Use this information to complete the bar chart.

(b) Show that the total amount of money in the bag is less than £10

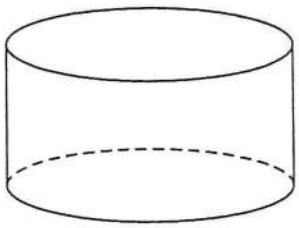
(Total for Question 7 is 5 marks)

8 The diagram shows two sides of a kite.



(a) On the grid, complete the kite.

(b) What is the mathematical name of this solid shape?



.....

(Total for Question 8 is 2 marks)

9 Greg is x years old.

Greg is 5 years older than Katy.

(a) Write down an expression, in terms of x, for Katy's age.

.....

Carl is twice as old as Greg.

(b) Write down an expression, in terms of x, for Carl's age.

.....

(c) Solve $4y = 12$

$y =$ .....

(Total for Question 9 is 3 marks)

10 (a) Write 23 619 to the nearest 1000

.....

(b) Work out an estimate for the value of 5.9×98.1

.....

(Total for Question 10 is 3 marks)

11 (a) Work out $\frac{5}{8} - \frac{1}{4}$

.....

(b) Work out $\frac{2}{5}$ of 40

.....

(Total for Question 11 is 4 marks)

12 Here is part of a train timetable from Liverpool to Birmingham.

Liverpool	0807	0847	0907
Runcorn	0825	0903	0926
Crewe	0853	0922	0955
Stafford	0911	0951	1014
Wolverhampton	0930	–	1031
Birmingham	0950	1034	1050

(a) Which train should take the least time to go from Liverpool to Crewe?
You must show how you get your answer.

Rose gets to the station in Wolverhampton at 0925
She wants to catch the next train to Birmingham.

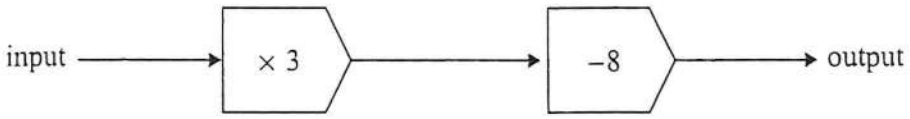
This train is delayed by 35 minutes.

(b) How many minutes does Rose have to wait for the train?

..... minutes

(Total for Question 12 is 5 marks)

13 Here is a number machine.



(a) Find the output when the input is 6

.....

(b) Find the input when the output is −11

.....

(Total for Question 13 is 3 marks)

14 A road has a length of 1.6 kilometres.

The road is shown on a map with a scale of 1 : 20 000

Work out the length, in centimetres, of this road on the map.

..... centimetres

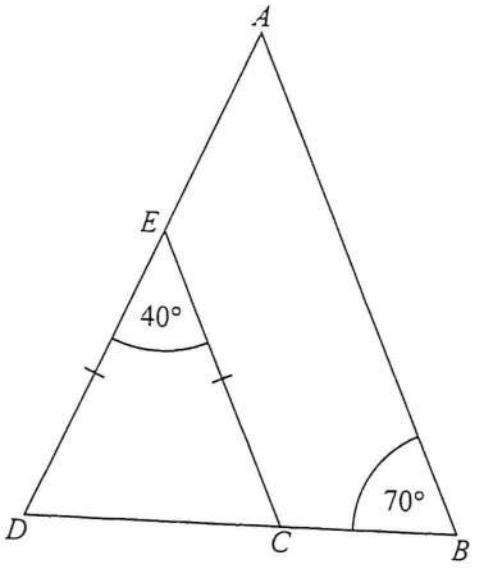
(Total for Question 14 is 3 marks)

15 Work out 1.35×48

.....

(Total for Question 15 is 3 marks)

16



AED and *BCD* are straight lines.
$ED = EC$

Show that *EC* is parallel to *AB*.
Give a reason for each stage of your working.

(Total for Question 16 is 4 marks)

17 Sam wants to use this recipe to make 15 pancakes.

Ingredients for 10 pancakes
100 g flour
200 m*l* milk
40 g butter
2 eggs

Sam has

200 g flour
250 m*l* milk
70 g butter
5 eggs

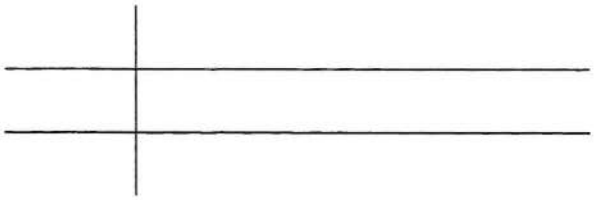
Does Sam have enough flour, enough milk, enough butter and enough eggs to make 15 pancakes?
You must show all your working.

(Total for Question 17 is 3 marks)

18 Here are the heights, in cm, of 12 children.

146	135	142	150	138	149
152	146	137	154	147	144

Show this information in a stem and leaf diagram.



Key:

(Total for Question 18 is 3 marks)

19 Find the highest common factor (HCF) of 54 and 120

.....

(Total for Question 19 is 2 marks)

20 There are only red counters, white counters, blue counters and green counters in a bag.

Chris is going to take at random a counter from the bag.

The table shows the probability that he will take a red counter and the probability that he will take a white counter.

Colour	red	white	blue	green
Probability	0.3	0.1		

There are twice as many blue counters as there are green counters in the bag.

(a) Work out the probability that Chris will take a blue counter.

There are 45 red counters in the bag.

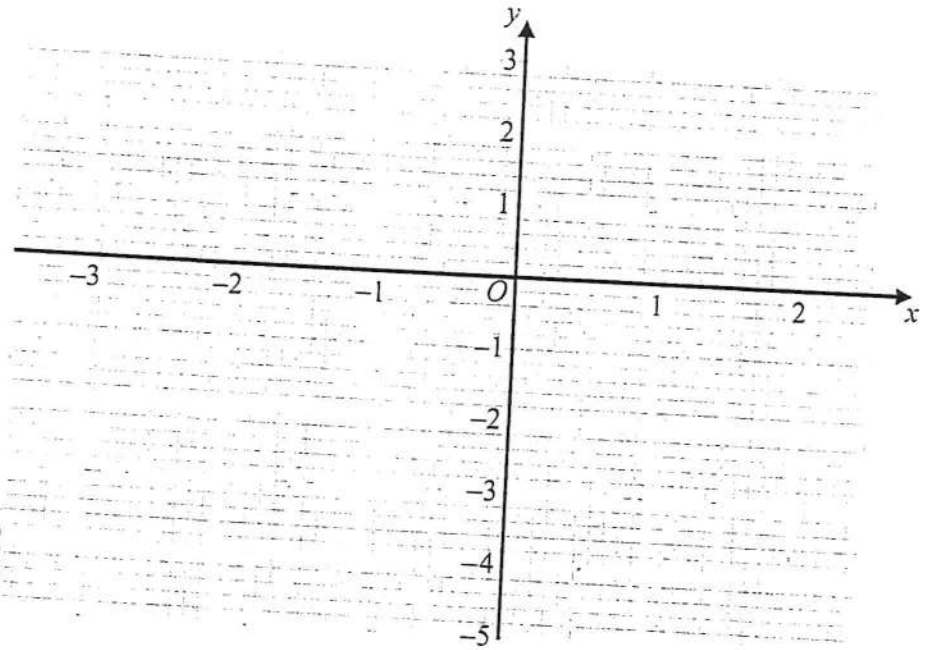
(b) Work out the total number of counters in the bag.

(Total for Question 20 is 5 marks)

21 (a) Complete the table of values for $y = x^2 + x - 4$

x	-3	-2	-1	0	1	2
y	2		-4			

(b) On the grid, draw the graph of $y = x^2 + x - 4$ for values of x from -3 to 2



(c) Write down the coordinates of the turning point of the graph of $y = x^2 + x - 4$

(.....,.....)

(Total for Question 21 is 5 marks)

22 There are 280 chocolates in a box.
There are only dark chocolates, milk chocolates and white chocolates.

$\frac{1}{7}$ of the 280 chocolates are dark chocolates.

The number of milk chocolates : the number of white chocolates = 1 : 3

The number of white chocolates : the number of dark chocolates = n : 1

(a) Work out the value of n.
You must show all your working.

n = ...

10 milk chocolates from the box are eaten.

(b) Does this affect your answer to part (a)?
Give a reason for your answer.

.....

.....

.....

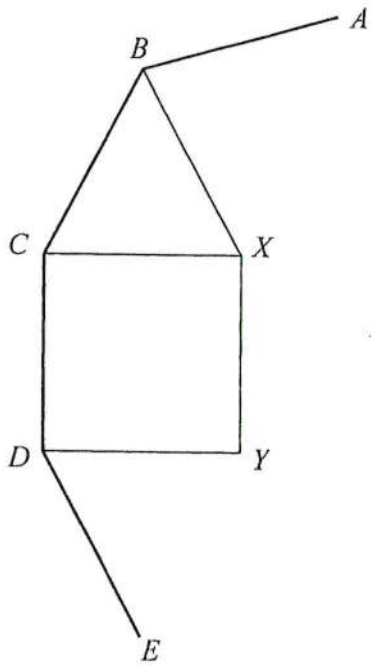
(Total for Question 22 is 6 marks)

23 Work out $5.7 \times 10^2 + 9.8 \times 10^3$
Give your answer in standard form.

.....

(Total for Question 23 is 3 marks)

24 *AB*, *BC*, *CD* and *DE* are four sides of a regular polygon with n sides.



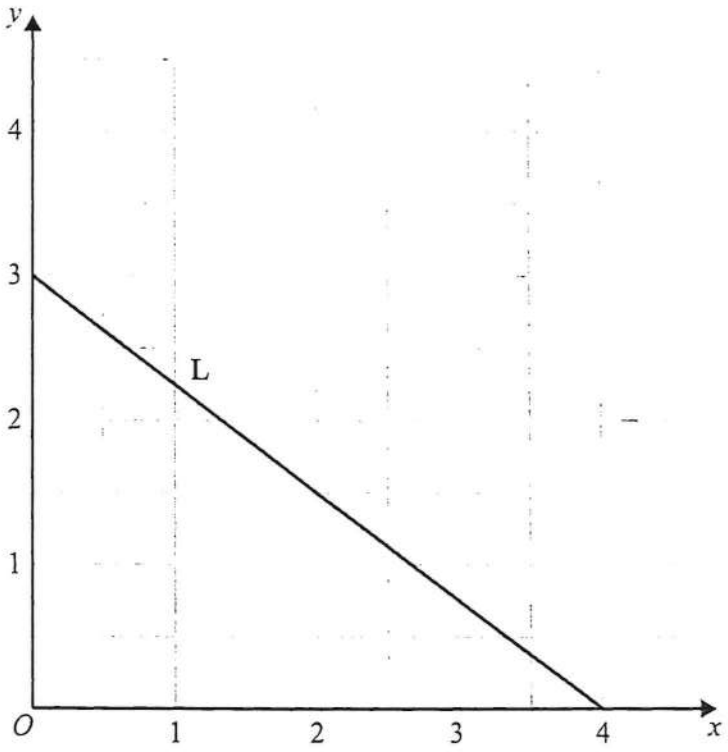
BCX is an equilateral triangle.
CDYX is a square.

Work out the value of n.
You must show all your working.

$n =$ .....

(Total for Question 24 is 4 marks)

25 The straight line **L** is shown on the grid.



Find an equation for **L**.
Give your answer in the form $y = mx + c$

.....

(Total for Question 25 is 3 marks)

Turn over for Question 26

26 $\mathbf{c} = \begin{pmatrix} 7 \\ 4 \end{pmatrix}$ $\mathbf{d} = \begin{pmatrix} 2 \\ -1 \end{pmatrix}$

Work out $2\mathbf{c} + 3\mathbf{d}$
Give your answer as a column vector.

$\begin{pmatrix} \ldots\ldots \\ \ldots\ldots \end{pmatrix}$

(Total for Question 26 is 2 marks)

TOTAL FOR PAPER IS 80 MARKS

AQA

Please write clearly in block capitals.

Centre number | | | | | | Candidate number | | | | |

Surname _____

Forename(s) _____

Candidate signature _____

I declare this is my own work.

GCSE
COMBINED SCIENCE: TRILOGY

F

Foundation Tier
Physics Paper 1F

Thursday 22 May 2025 Morning Time allowed: 1 hour 15 minutes

Materials
For this paper you must have:
- a ruler
- a scientific calculator
- the Physics Equations Sheet (enclosed).

Instructions
- Use black ink or black ball-point pen.
- Pencil should only be used for drawing.
- Fill in the boxes at the top of this page.
- Answer **all** questions in the spaces provided.
- If you need extra space for your answer(s), use the lined pages at the end of this book. Write the question number against your answer(s).
- Do all rough work in this book. Cross through any work you do not want to be marked.
- In all calculations, show clearly how you work out your answer.

For Examiner's Use	
Question	Mark
1	
2	
3	
4	
5	
6	
TOTAL	

Information
- The maximum mark for this paper is 70.
- The marks for questions are shown in brackets.
- You are expected to use a calculator where appropriate.
- You are reminded of the need for good English and clear presentation in your answers.

Do not write outside the box

0 1 There are different isotopes of the element lead.

0 1 . 1 What is the difference between the atoms of different isotopes of lead?

[1 mark]

Tick (✓) **one** box.

The number of electrons ☐

The number of neutrons ☐

The number of protons ☐

0 1 . 2 The isotope lead-210 is radioactive.

What is meant by 'lead-210 is radioactive'?

[1 mark]

Tick (✓) **one** box.

Lead-210 forms many different compounds. ☐

Lead-210 has unstable nuclei. ☐

Lead-210 melts at a low temperature. ☐

Do not write outside the box

0 1 . 3 The isotope lead-210 emits beta radiation.

What is beta radiation?

[1 mark]

Tick (✓) **one** box.

Electromagnetic radiation emitted from nuclei ☐

High speed electrons ejected from nuclei ☐

Particles that consist of two neutrons and two protons ☐

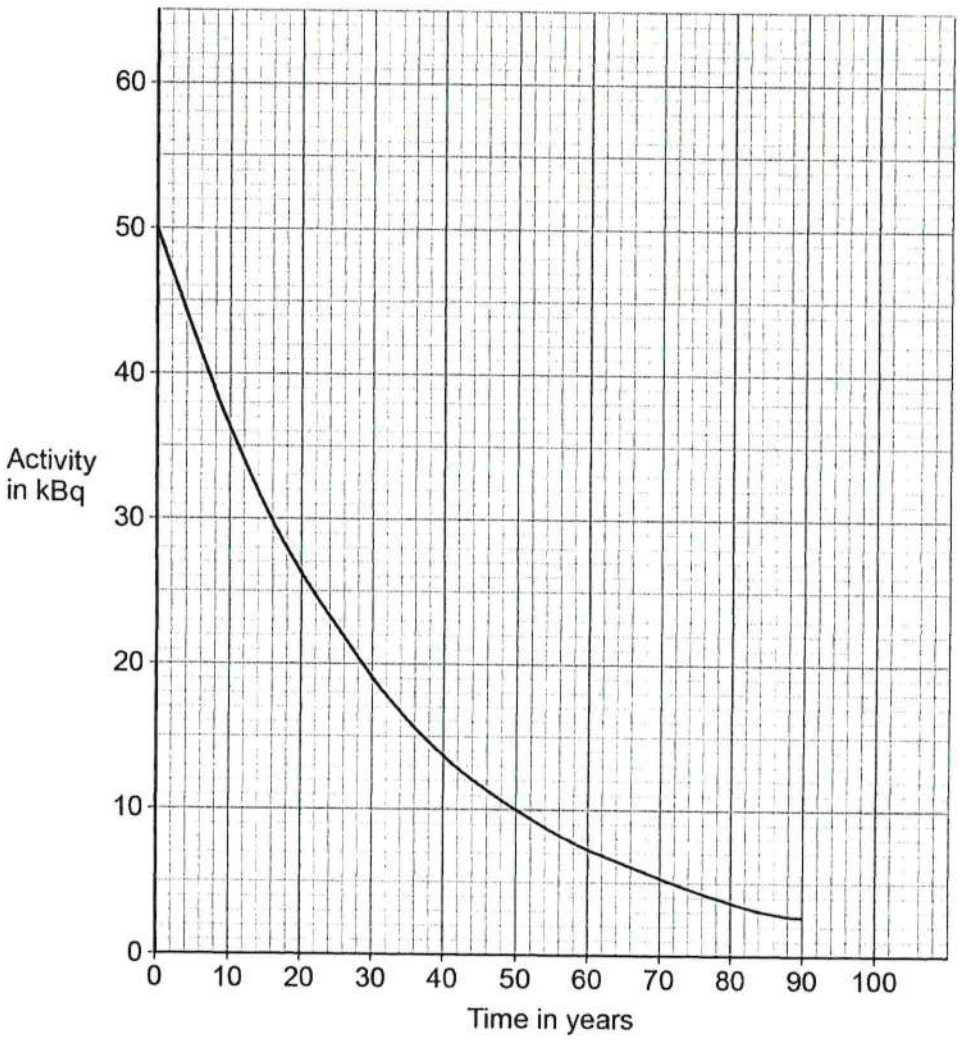
Question 1 continues on the next page

The paint in an old painting contains the isotope lead-210.

The lead-210 in the paint can be used to estimate the age of the painting.

Figure 1 shows how the activity of the lead-210 in the paint changes with time.

Figure 1



0 1 . 4 What was the initial activity of the lead-210 in the paint?

Use **Figure 1**.

[1 mark]

Activity = _____ kBq

Do not write outside the box

0 1 . 5 Calculate the activity of the lead-210 in the paint after one half-life.

[1 mark]

Activity = _____ kBq

0 1 . 6 What was the estimated age of the painting when the activity was 10 kBq?

Use **Figure 1**.

[1 mark]

Age = _____ years

The paint also contains other radioactive substances.

0 1 . 7 A scientist removed the other radioactive substances before measuring the activity.

The activity would be greater if the other radioactive substances were **not** removed.

How would the estimate of the age of the painting be different if the activity was greater?

Use **Figure 1**.

[1 mark]

Tick (✓) **one** box.

The estimated age would be lower ☐

The estimated age would be the same ☐

The estimated age would be greater ☐

Do not write outside the box

The other radioactive substances in the paint emit different types of radiation.

0 1 . 8 Complete the sentence.

Choose the answer from the box.

[1 mark]

alpha	beta	gamma

The type of radiation with the greatest range in air is _____.

0 1 . 9 Complete the sentence.

Choose the answer from the box.

[1 mark]

alpha	beta	gamma

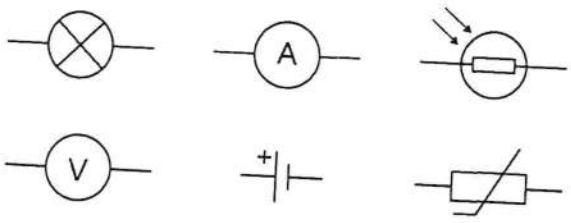
The type of radiation that is the least penetrating is _____.

9

0 2 **Figure 2** shows circuit symbols for some electrical components.

Do not wri outside th box

Figure 2



A student connects a circuit to measure the current in a filament lamp.

The student uses:

- an ammeter
- a cell
- a filament lamp.

0 2 . 1 Draw a circuit diagram for a circuit the student could use to measure the current in a filament lamp.

You should use **three** of the circuit symbols from **Figure 2**.

[3 marks]

Do not write outside the box

0 2 . 2 Which component is the source of energy for the circuit? **[1 mark]**

Tick (✓) **one** box.

Ammeter ☐

Cell ☐

Filament lamp ☐

0 2 . 3 There is a current of 1.5 A in the filament lamp for a time of 30 s.

Calculate the charge flow in the filament lamp.

Use the equation:

charge flow = current × time

[2 marks]

Charge flow = _____ C

0 2 . 4 The current in the filament lamp is 1.5 A when the potential difference across the filament lamp is 12 V.

Do not write outside the box

Calculate the resistance of the filament lamp.

Use the equation:

$$\text{resistance} = \frac{\text{potential difference}}{\text{current}}$$

Choose the unit from the box.

[3 marks]

Ω	°C	W

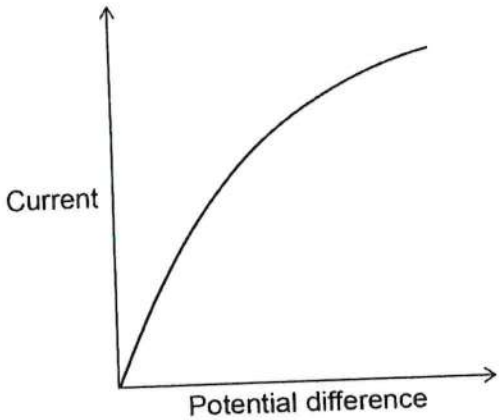
Resistance = _____ Unit _____

Question 2 continues on the next page

Do not write outside the box

Figure 3 shows how the current varies with potential difference for the filament lamp.

Figure 3



0 2 . 5 Describe the relationship between potential difference and current for the filament lamp.

[2 marks]

0 2 . 6 As the current in the filament lamp increases, the temperature of the filament lamp increases.

What happens to the resistance of the filament lamp as the temperature increases?

[1 mark]

Do not write outside the box

0 2 . 7 In most homes, filament lamps have been replaced with LED bulbs.

Table 1 shows information about a filament lamp and an LED bulb.

Table 1

	Input power in watts	Brightness in arbitrary units
Filament lamp	40	800
LED bulb	8	800

Explain the advantages of using LED bulbs instead of filament lamps.

You should include a calculation in your answer.

[4 marks]

Extra space

16

Turn over for the next question

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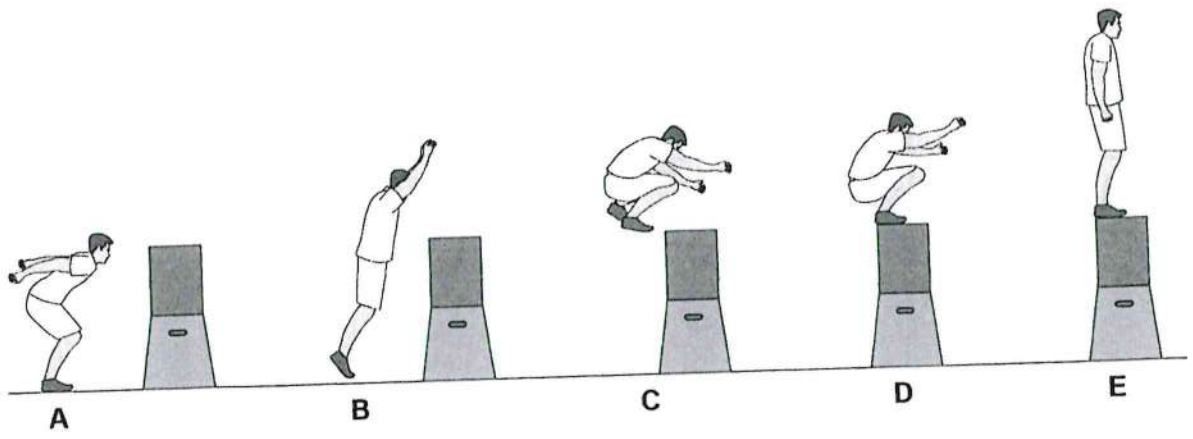
0 3 A person performs a 'vertical box jump'.

Figure 4 shows five different stages, **A**, **B**, **C**, **D** and **E**, of the jump.

Figure 4



0 3 . 1 Complete the sentences.

Choose answers from the box.

[2 marks]

A	B	C	D	E

The person has the least gravitational potential energy at stage _____.

The person has the greatest kinetic energy at stage _____.

Do not write outside the box

0 3 . 2 The person in **Figure 4** has a mass of 60 kg.

The person leaves the ground with a speed of 5.5 m/s.

Calculate the kinetic energy of the person.

Use the equation:

kinetic energy = 0.5 × mass × (speed)^2

[2 marks]

Kinetic energy = _____ J

0 3 . 3 The person has a mass of 60 kg.

The height of the jump is 1.5 m.

gravitational field strength = 9.8 N/kg

Calculate the gravitational potential energy of the person at a height of 1.5 m.

Use the equation:

gravitational potential energy = mass × gravitational field strength × height

[2 marks]

Gravitational potential energy = _____ J

Question 3 continues on the next page

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0 3 . 4 The person jumps onto a box higher than the one in **Figure 4**, on page 12.

To jump onto a higher box, the person's speed when leaving the ground is different.

Explain how the speed is different when jumping onto a higher box.

You should answer in terms of gravitational potential energy and kinetic energy.

[3 marks]

0 3 . 5 Suggest **one** reason why a person is more likely to be injured when falling off a higher box.

[1 mark]

10

0 5 Fossil fuels are burned in car engines and in power stations.

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0 5 . 1 Describe how different energy stores change in a car engine when a fossil fuel is burned.

[2 marks]

0 5 . 2 Some car engines burn a fuel that is produced using plants.

Name a fuel produced using plants.

[1 mark]

0 5 . 3 Some cars do **not** contain an engine that burns a fuel.

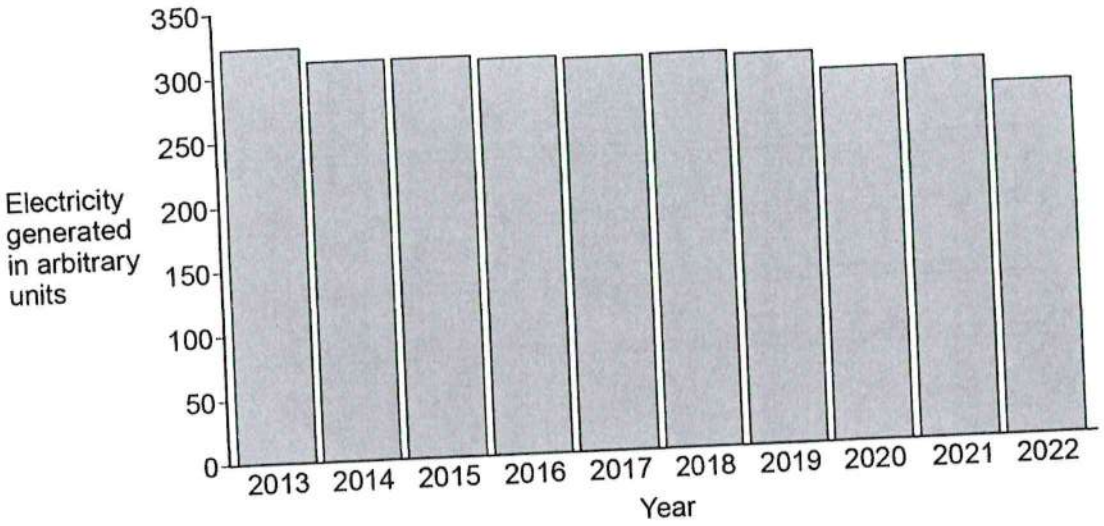
Suggest how cars that do **not** burn a fuel are powered.

[1 mark]

Question 5 continues on the next page

Figure 6 shows how the total amount of electricity generated in the UK has changed with time.

Figure 6



0 5 . 4 The proportion of electricity that is generated using renewable energy resources has increased since the year 2013.

Which conclusion is correct?

Use **Figure 6**. **[1 mark]**

Tick (✓) **one** box.

The amount of fossil fuel that is burned to generate electricity each year has decreased. ☐

The concentration of carbon dioxide in the atmosphere has decreased. ☐

The rate of increase of the mean temperature of the atmosphere has decreased. ☐

Do not write outside the box

0 5 . 5 The UK plans to stop burning fossil fuels to generate electricity.

Explain **one** reason why it will take many years before all electricity is generated using renewable resources.

[2 marks]

0 5 . 6 Renewable energy resources can have a negative impact on the environment.

Give **one** negative environmental impact of hydro-electric power and of wind power.

[2 marks]

Hydro-electric power

Wind power

9

Turn over for the next question

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0 6 A student investigated the specific heat capacity of aluminium.

The student used an electric heater to increase the temperature of an aluminium block.

The student measured the:

- mass of the block
- energy transferred to the block
- temperature change of the block.

Table 2 shows the results.

Table 2

Mass in kilograms	0.75
Energy transferred in joules	13 800
Temperature change in °C	20

0 6 . 1 Calculate the specific heat capacity of aluminium.

Use the Physics Equations Sheet.

[3 marks]

Specific heat capacity = _____ J/kg °C

Do not write outside the box

0 6 . 2 Describe a method the student could have used to obtain the results in **Table 2**.

[6 marks]

Extra space

Question 6 continues on the next page

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0 6 . 3 Wrapping the aluminium block in insulation makes the value for the specific heat capacity of aluminium more accurate.

Which are **two** reasons why?

[2 marks]

Tick (✓) **two** boxes.

- The amount of wasted energy is less. ☐
- The energy transferred to the aluminium block is greater. ☐
- The insulation heats the aluminium block. ☐
- The power of the electric heater increases. ☐
- The temperature increase of the aluminium block is greater. ☐

11

END OF QUESTIONS

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ANSWER IN THE SPACES PROVIDED

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Question number	**Additional page, if required.** **Write the question numbers in the left-hand margin.**

Question number	Additional page, if required. Write the question numbers in the left-hand margin.

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Question number	Additional page, if required. Write the question numbers in the left-hand margin.

Physics Equations Sheet
GCSE Physics (8463)
FOR USE IN JUNE 2025 ONLY

HT = Higher Tier only equations

kinetic energy = 0.5 × mass × (speed)^2	$E_k = \frac{1}{2} m v^2$
elastic potential energy = 0.5 × spring constant × (extension)^2	$E_e = \frac{1}{2} k e^2$
gravitational potential energy = mass × gravitational field strength × height	$E_p = m g h$
change in thermal energy = mass × specific heat capacity × temperature change	$\Delta E = m c \Delta\theta$
power = $\frac{\text{energy transferred}}{\text{time}}$	$P = \frac{E}{t}$
power = $\frac{\text{work done}}{\text{time}}$	$P = \frac{W}{t}$
efficiency = $\frac{\text{useful output energy transfer}}{\text{total input energy transfer}}$	
efficiency = $\frac{\text{useful power output}}{\text{total power input}}$	
charge flow = current × time	$Q = I t$
potential difference = current × resistance	$V = I R$
power = potential difference × current	$P = V I$
power = (current)^2 × resistance	$P = I^2 R$
energy transferred = power × time	$E = P t$
energy transferred = charge flow × potential difference	$E = Q V$
density = $\frac{\text{mass}}{\text{volume}}$	$\rho = \frac{m}{V}$

	thermal energy for a change of state = mass × specific latent heat	$E = m\,L$
	For gases: pressure × volume = constant	$p\,V = constant$
	weight = mass × gravitational field strength	$W = m\,g$
	work done = force × distance (along the line of action of the force)	$W = F\,s$
	force = spring constant × extension	$F = k\,e$
	moment of a force = force × distance (normal to direction of force)	$M = F\,d$
	pressure = $\frac{\text{force normal to a surface}}{\text{area of that surface}}$	$p = \frac{F}{A}$
HT	**pressure due to a column of liquid = height of column × density of liquid × gravitational field strength**	$p = h\,\rho\,g$
	distance travelled = speed × time	$s = v\,t$
	acceleration = $\frac{\text{change in velocity}}{\text{time taken}}$	$a = \frac{\Delta v}{t}$
	(final velocity)^2 – (initial velocity)^2 = 2 × acceleration × distance	$v^2 - u^2 = 2\,a\,s$
	resultant force = mass × acceleration	$F = m\,a$
HT	**momentum = mass × velocity**	$p = m\,v$
HT	**force = $\frac{\text{change in momentum}}{\text{time taken}}$**	$F = \frac{m\,\Delta v}{\Delta t}$
	period = $\frac{1}{\text{frequency}}$	$T = \frac{1}{f}$
	wave speed = frequency × wavelength	$v = f\,\lambda$
	magnification = $\frac{\text{image height}}{\text{object height}}$	
HT	**force on a conductor (at right angles to a magnetic field) carrying a current = magnetic flux density × current × length**	$F = B\,I\,l$
HT	**$\frac{\text{potential difference across primary coil}}{\text{potential difference across secondary coil}} = \frac{\text{number of turns in primary coil}}{\text{number of turns in secondary coil}}$**	$\frac{V_p}{V_s} = \frac{n_p}{n_s}$
HT	**potential difference across primary coil × current in primary coil = potential difference across secondary coil × current in secondary coil**	$V_p\,I_p = V_s\,I_s$