Sur name	Centre Number	Candidate Number
First name(s)		0

GCSE EDUQAS

Mock Test Papers - Paper2 -Test2

MATHEMATICS – Component 2
Calculator-Allowed Mathematics
FOUNDATION TIER

2 hours 15 minutes

ADDITIONAL MATERIALS An additional formulae sheet.
A calculator will be required for this examination.
A ruler, protractor and a pair of compasses may be required.

INSTRUCTIONS TO CANDIDATES

Use black ink or black ball-point pen.
Do not use gel pen or correction fluid.
You may use a pencil for graphs and diagrams only.
Write your name, centre number and candidate number in the spaces at the top of this page.
Answer **all** the questions in the spaces provided.
If you run out of space, use the additional page(s) at the back of the booklet, taking care to number the question(s) correctly.
Take π as 3·142 or use the π button on your calculator.

INFORMATION FOR CANDIDATES

You should give details of your method of solution when appropriate.
Unless stated, diagrams are not drawn to scale.
Scale drawing solutions will not be acceptable where you are asked to calculate.
The number of marks is given in brackets at the end of each question or part-question.
You are reminded of the need for good English and orderly, clear presentation in your answers.

For Examiner's use only		
Question	**Maximum Mark**	**Mark Awarded**
1.	5	
2.	6	
3.	2	
4.	4	
5.	7	
6.	4	
7.	3	
8.	6	
9.	6	
10.	10	
11.	6	
12.	5	
13.	4	
14.	4	
15.	4	
16.	4	
17.	5	
18.	4	
19.	3	
20.	5	
21.	5	
22.	7	
23.	6	
24.	5	
	120	
Total		

Formula list

Area and volume formulae

Where r is the radius of the sphere or cone, l is the slant height of a cone and h is the perpendicular height of a cone:

Curved surface area of a cone = πrl

Surface area of a sphere = $4\pi r2$

Volume of a sphere $\frac{4}{3}\pi r3$

Volume of a cone $\frac{1}{3}\pi r2h$

Kinematics formulae

Where a is constant acceleration, u is initial velocity, v *is final velocity,* s *is displacement from the* position when $t = 0$ and t is time taken:

$$v = u + at$$

$$s = ut + \frac{1}{2}at2$$

$$v2 = u2 + 2as$$

Examiner only

1. The cost of various items sold at a shop are shown below.

Item	Cost
Notebook	£2.75
Folder	£4.20
Pencil	£1.10
Marker	£0.80
Ruler	£1.50
Eraser	£0.65

(a) Find the total cost of buying a folder, a pencil, and a ruler. [1]

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(b) Aisha bought six notebooks. She paid for them with a £20 note.

How much change should she get? [2]

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(c) Liam bought two different items.
He paid for them with a £10 note and received £3.50 change.
Which two items did he buy?
You must show all your working [2]

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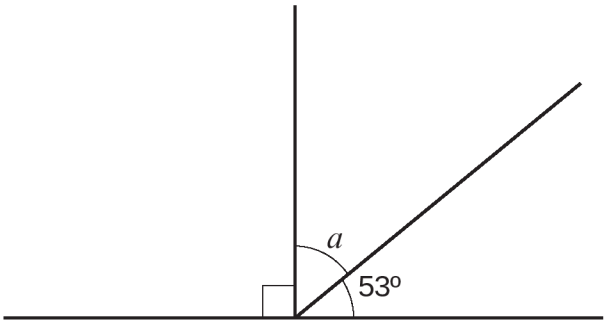
Items are ..... and .....

Examiner only

2. (a) Find the size of each of the angles marked a, b and c [4]



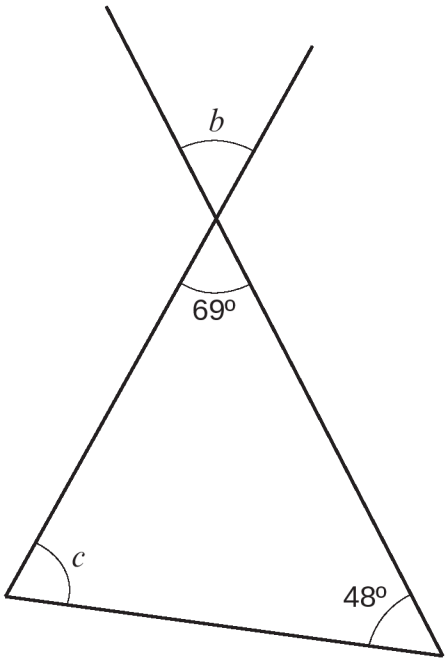


Diagram not drawn to scale

a = ... ° b = ... ° c = ... °

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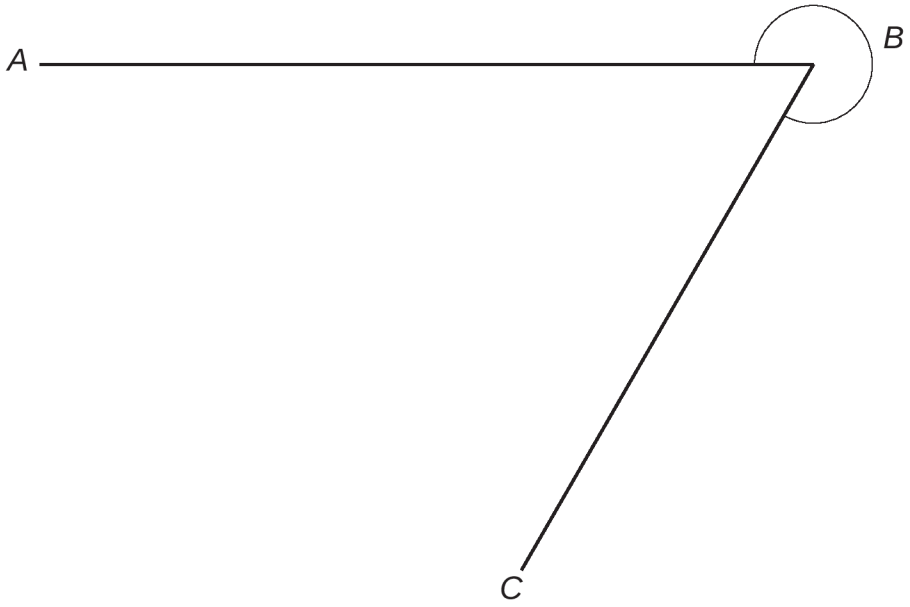
(b) The interior angles of a triangle are 70°, 55° and 55°.
Circle the correct mathematical name of this triangle. [1]

Equilateral Right-angled Isosceles Obtuse-angled Scalene

Examiner only

(c) Measure the size of the reflex angle *A B C* shown below. [1]



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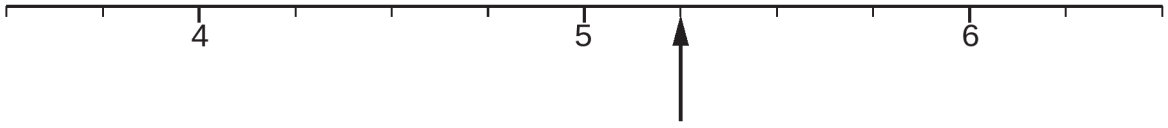
Reflex angle *A B C* = ... °

3. (a) Part of a number line is shown below.

Which number is the arrow pointing at? [1]



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(b) Circle the **two** lengths below that are equal. [1]

2500mm 250cm 25m 250m 2.5km

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Examiner only

4. (a) Write the following statement using the correct mathematical symbol. [1]

0.45 is greater than 0.38

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(b) Give calculations to show that the following statement is correct. [3]

25% of 120 is the same as $\frac{1}{4}$ of 120

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Examiner only

5. Roman has the nine cards shown below.

8	12	16	18	25	28	30	36	49

You must only use the numbers on these cards.
You must show all your working.

(a) (i) Calculate the sum of the two prime numbers. [2]

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(ii) Calculate the product of the two square numbers. [2]

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(iii) Find the number which is both a factor of 60 and a multiple of 6. [2]

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(b) Sofia picks one of her nine cards at random.

She says, "I have a chance of picking a card with a cube number on it."

Is Sofia's statement correct?

Yes ☐ No ☐

Show how you decide. [1]

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Examiner only

6. Sophie is building a model of a bridge.

Diagram not drawn to scale

She decides to use a scale of 1 cm represents 2 metres to make her model.

(a) Sophie's model is 50 cm long.

How long is the actual bridge? [2]

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(b) One of the support beams of the actual bridge is 8 metres high.
How high should the support beam be on Sophie's model?
Give your answer in cm.

[2]

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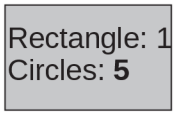
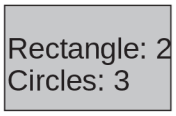
Examiner only

7. The following sequence of patterns is made using rectangles and circles.

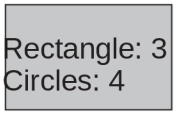
Pattern 1



Pattern 2



Pattern 3



(a) How many rectangles and circles will there be in pattern 5? [2]

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Lines ..... Circles .....

(b) Is it possible for a pattern in this sequence to have 5 rectangles and 6 circles?

Yes ☐ No ☐

Show how you decide. [1]

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Examiner only

8. (a) A Principal wants to put new flooring in one of his classrooms.
He uses flooring that costs £15.75 per m².
The diagram below shows the dimensions of the classroom.

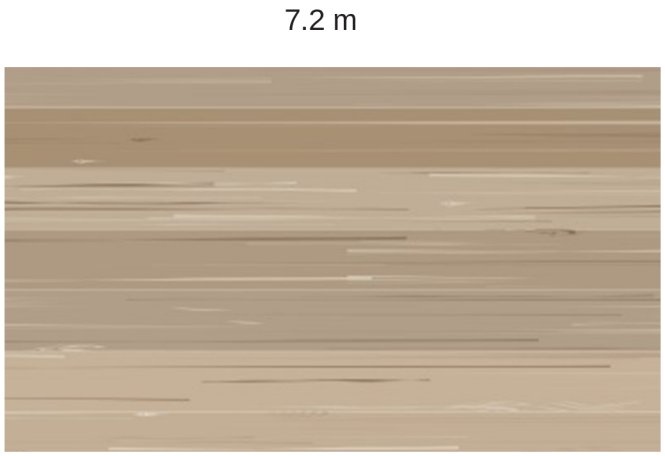

Diagram not drawn to scale

How much will it cost to buy the exact amount of flooring needed to cover the classroom floor? [3]

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(b) The Principal needs to buy tiles for a different classroom with an area of 78.4 m².
The tiles are sold in boxes that each cover an area of 12.4 m².
What is the minimum number of boxes of tiles he needs to buy?

[3]

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Examiner only

9. Below is a recipe to make a batch of 10 cookies.

Makes 10 cookies
- **200g of flour**
- **100g of sugar**
- **80g of butter**
- **1 egg**

(a) Complete the table to show how much of each ingredient would be needed to make 60 cookies. [2]

Makes 60 cookies
- ..... g of flour
- ..... g of sugar
- ..... g of butter
- ..... eggs

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(b) Emma has 2.4 kg of flour and plenty of the other ingredients.

What is the greatest number of batches of 10 cookies Emma can make? [3]

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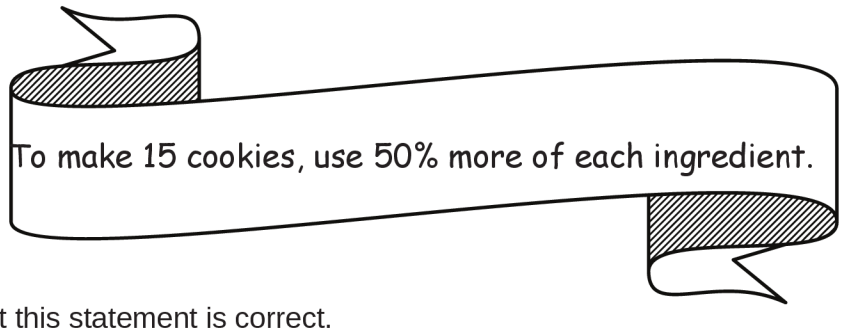
Emma can make ..... batches of 10 cookies.

Examiner only

(c) This note is written underneath the original recipe.



Show that this statement is correct. [1]

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Examiner only

10. (a) Simplify $8f + 3g + 2f - 6g$. [2]

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(b) Expand $9(m + 9)$ [1]

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(c) Find the value of 8x -4y when x = 4.8 and y = 1.6 [2]

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(d) Solve $\frac{k}{2} + 8 = 10$ [2]

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Examiner only

(e) The rectangle below has length a and width b.

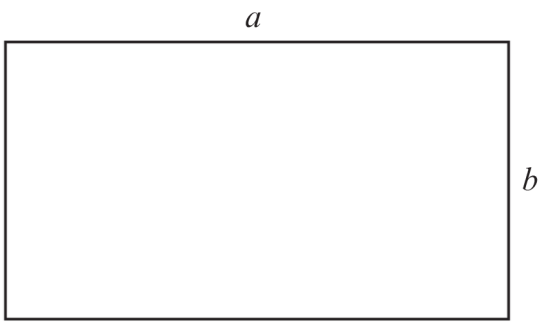

Diagram not drawn to scale

Three rectangles congruent to the one above are arranged, without overlapping, to create the large rectangle below.

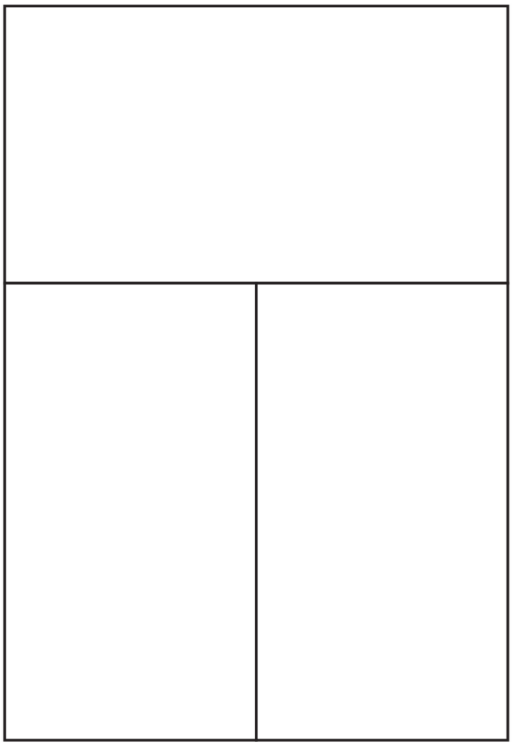

Diagram not drawn to scale

Find an expression for the perimeter of this large rectangle **in terms of b.**
Simplify your answer. [3]

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Turn over.

Examiner only

11. Maya has a box that contains a number of identical marbles of different colors.

The table below shows the probability of randomly choosing a marble that is red, green, yellow, or purple.

Colour	Red	Green	Yellow	Purple
Probability	0·25	0·35	0·2	0.2

(a) Maya claims:

"There are other marbles that are not red, green, yellow, or purple in the box."

Explain why she is incorrect. [1]

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(b) A marble is chosen at random from the box.

Calculate the probability that this marble is either red or purple [1]

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Examiner only

(c) Maya uses the box of marbles for a game at her school fair.

In the game, each person pays £1 to choose a marble at random from the box.
The marble is then returned to the box.

A player wins a prize worth £3.50 if a green marble is chosen.

150 people each played the game once.

How much profit would you expect Maya to make? You must show all your working.

[4]

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Turn over.

Examiner only

12. (a) A train leaves Liverpool at 10:15 a.m.
It arrives at Bristol at 2:45 p.m.
How long does the journey take?
Give your answer in hours and minutes.

[2]

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..... hours ..... minutes

(b) Train X and Train Y both leave the station at 9:00 a.m.
Train X returns to the station every 45 minutes.
Train Y returns to the station every 36 minutes.
At what time will both trains next return to the station at the same time?

[3]

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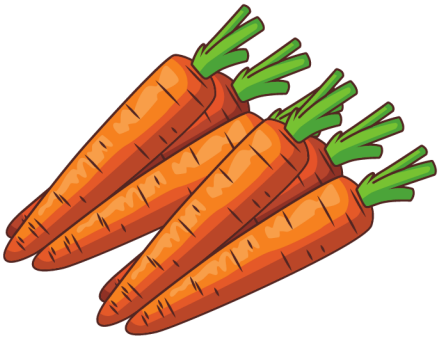
Examiner only

13.



Ben buys 1.5 kg of carrots and 4 kg of onions.
These cost a total of £7.40.
1 kg of onions costs £1.50.
What is the cost of 1 kg of carrots?

[4]

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1 kg of carrots costs .....

Examiner only

14. (a) Calculate the value of $\frac{4.6 \times 8.9}{9.4 + 4.6}$

Give your answer correct to 1 decimal place. [2]

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(b) Write 91 345 correct to 2 significant figures. [1]

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(c) Write 9 800 000 in standard form. [1]

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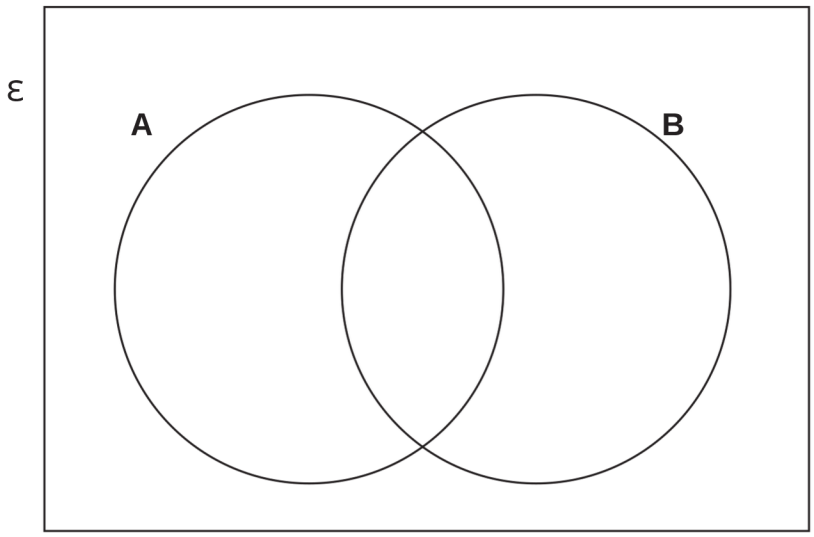
15. The universal set (ε) contains the numbers 21, 22, 23, 24, 25, 26, 27, 28, 29, and 30.

Examiner only

A is the set of prime numbers.
B is the set of even numbers.

(a) Show this information on the Venn diagram below.

[2]



(b) A number is selected at random from the universal set ε.

Find the probability that the number selected is a prime number but not an even number.

[2]

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Examiner only

16. (a) The original price of a car is £8500.
It is sold at a 6. 5% discount. [3]
Calculate the discounted price.

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Discounted price = £ .....

(b) Anshu buys a bike.
She sells it for four times what she paid for it.
What percentage profit has Anshu made? [1]

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Percentage profit = ... %

Examiner only

17. Sophia and Liam each buy a thin pizza.

Sophia's pizza has a radius of 4 inches.

Liam's pizza has a radius of 6 inches.

Sophia eats one third of her pizza.
Liam eats one half of his pizza.

Sophia's slice

Liam's slice

Diagram not drawn to scale

Who eats the slice of pizza with the greater area?

Sophia ☐ Liam ☐

You must show all your working. [5]

Examiner only

18. (a) A cylindrical glass contains 800cm3 of water.
The glass has an internal radius of 2.5cm.

Calculate the height of the water in the glass.

[3]

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(b) the square root of 625 [1]

Examiner only

19. Liam, Zoe, and Max share some money.

Zoe gets 4 times as much as Liam.
Max gets one third as much as Zoe.

(a) Write down the ratio of the amounts of money that they each get.
Give your answer in its simplest form. [2]

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Liam : Zoe : Max = ... : ..... : .....

(b) What fraction of the money does Max get? [1]

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Examiner only

20.

Ava buys a truck for £20,000 and expects to use it for 1,500 hours each year.
The truck will decrease in value at a yearly rate of 15% of its value at the end of the previous year.
Use this information to calculate the decrease in value of Ava's truck when it has been used for 9,000 hours.

[5]

Examiner only

21. A circular fan makes 60 complete turns each minute.

(a) How many degrees does it turn through in one second? [3]

(b) (i) State **one** assumption you have made in your answer to part (a). [1]

(ii) How would your answer to part (a) change if this assumption was not correct? [1]

Examiner only

22. (a) Solve $5x + 8 = 19 + 6x$. [2]

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(b) Solve $7x + (2x - 5) = 9$.

Give your answer as a fraction. [3]

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Examiner only

(c) Factorise 8x + 4 .

[1]

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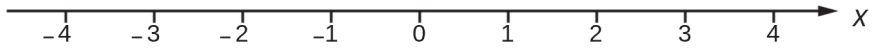
(d) Represent the inequality x >− 1 on the number line below. [1]

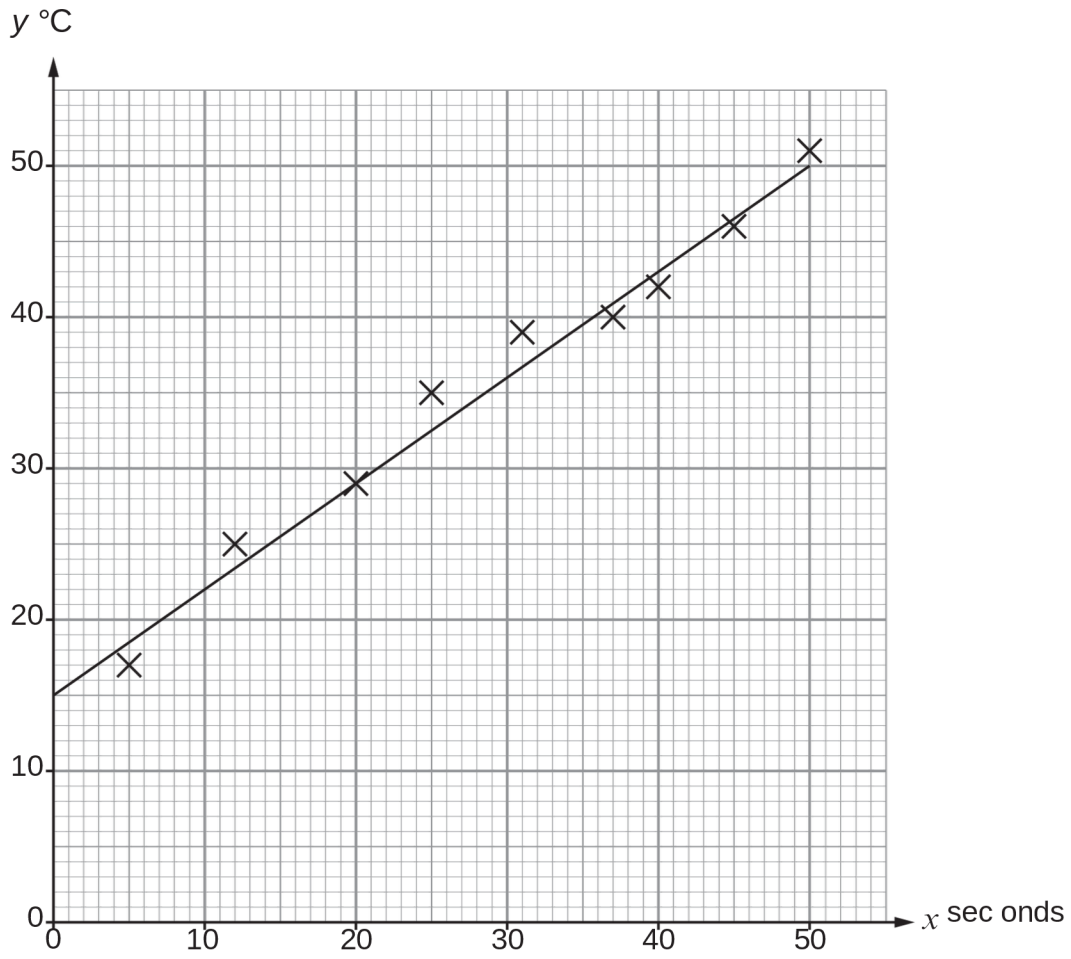


Examiner only

23. In an experiment, a scientist records the temperature, y °C, of an object as it is heated for x seconds.

The scientist thinks that the equation $y = mx + c$ is a good fit for this data.

The diagram shows his results on a scatter graph and his line of best fit.



(a) Estimate the number of seconds for which the object has been heated when its temperature is 27 °C. [1]

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Examiner only

(b) When x = 70 seconds, the scientist measures the value of y to be 52 °C.

Use this information to decide whether the line of best fit is likely or unlikely to give reliable predictions for values of y when x is greater than 50 seconds.

Likely ☐ Unlikely ☐

Explain how you decide. [1]

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(c) The line of best fit passes through the points (0, 15) and (10, 22).
Find the equation of the line of best fit.
Give your answer in the form $y = mx + c$.

[3]

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(d) Explain what the gradient of the line of best fit represents in this context. [1]

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Examiner only

24.

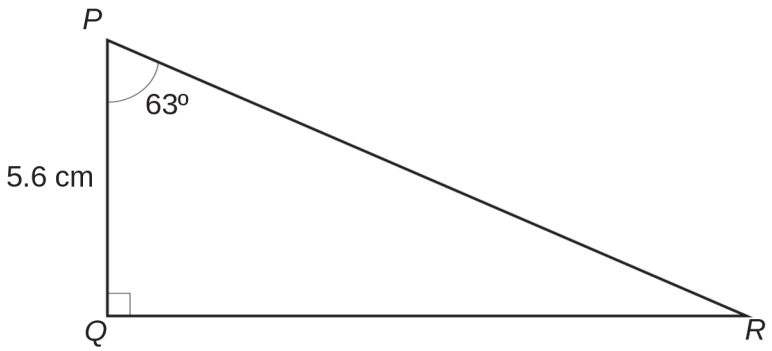

Diagram not drawn to scale

PQR is a right-angled triangle.
PQ = 5.6 cm and *QPR* =63°.

Calculate the area of triangle *PQR*. [5]

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Area = ... cm2

END OF PAPER