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

GCSE EDUQAS

Mock Test Papers - Paper2 -Test1

MATHEMATICS – Component 2

Calculator-Allowed Mathematics

FOUNDATION TIER

2 hours 15 minutes

ADDITIONAL MATERIALS 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 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.	**3**	
2.	**5**	
3.	**4**	
4.	**4**	
5.	**5**	
6.	**3**	
7.	**6**	
8.	**5**	
9.	**6**	
10.	**7**	
11.	**3**	
12.	**10**	
13.	**7**	
14.	**9**	
15.	**4**	
16.	**4**	
17.	**5**	
18.	**3**	
19.	**4**	
20.	**5**	
21.	**8**	
22.	**6**	
23.	**4**	
Total	**120**	

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. Complete each sentence using the best expression from the box below. [3]

impossible	unlikely	an even chance	likely	certain

(a) It is ..... that a human will live to be 200 years old.

(b) It is .....that the sun will rise tomorrow.

(c) Jamie flips a fair coin. It is ..... that it will land on heads.

Examiner only

2.

Nuts:
£12.50 per kilogram

Chocolate:
£1.20 per 100 grams

Crisps:
£0.75 per packet

Jamie and Alex are shopping for snacks.

(a) Jamie buys 0.4 kilograms of nuts, 200 grams of chocolate, and 3 packets of crisps.
How much does Jamie pay?

[2]

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Jamie pays .....

(b) Alex buys 0.6 kilograms of nuts and 300 grams of chocolate.
How much change should Alex have if he pays with a £20 note?

[3]

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Alex change is .....

Examiner only

3. *(a)*

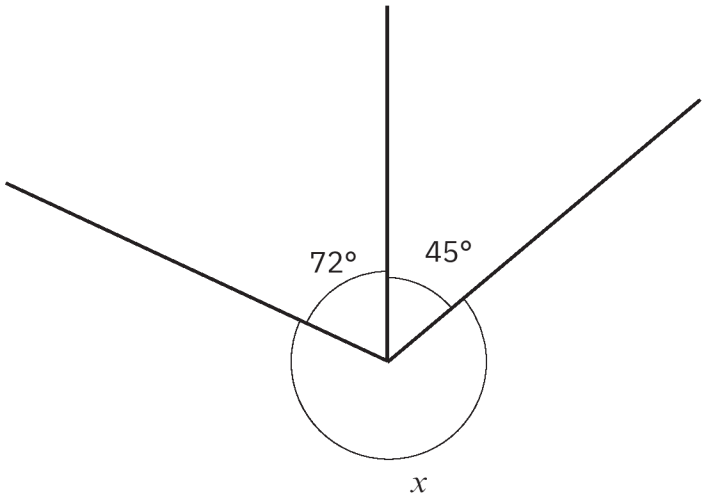

Diagram not drawn to scale

Calculate the value of x. [2]

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x = ... °

(b)

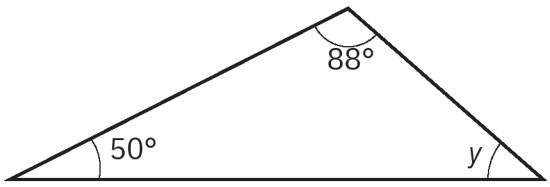

Diagram not drawn to scale

Calculate the value of y [2]

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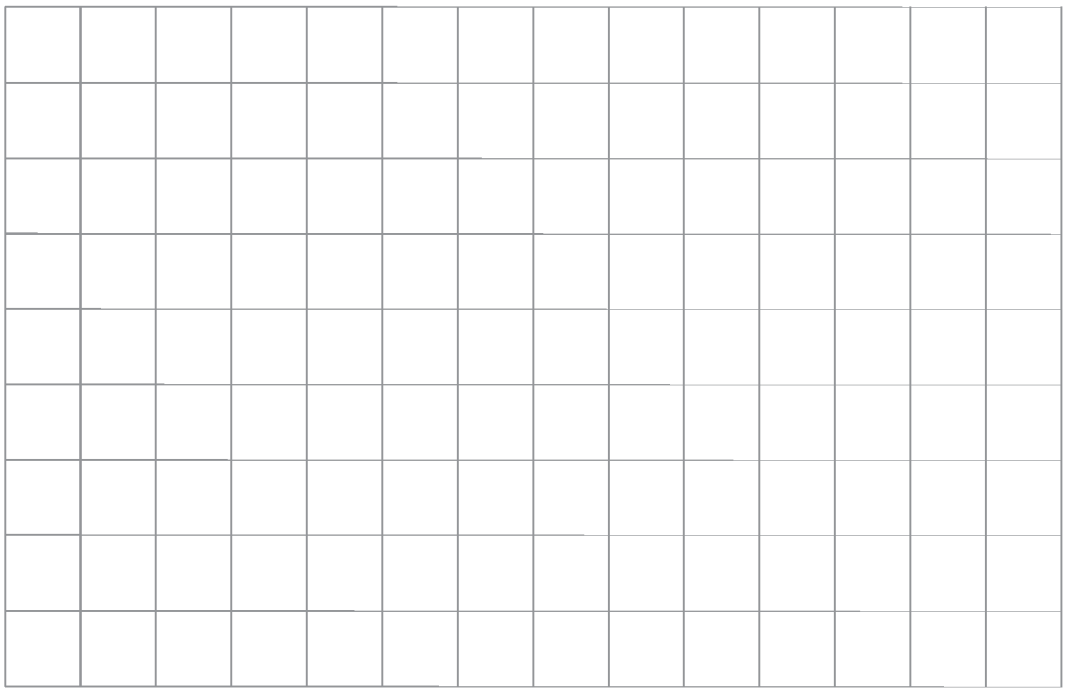
y = ... °

Examiner only

4. *(a)* (i) On the 1 cm square grid below, draw a rectangle that has an area of 30 cm2. [1]



(ii) Write down the perimeter of the rectangle you have drawn in part (i). [1]

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.....cm

Examiner only

(b) The diagram shows a sketch of triangle DEF.

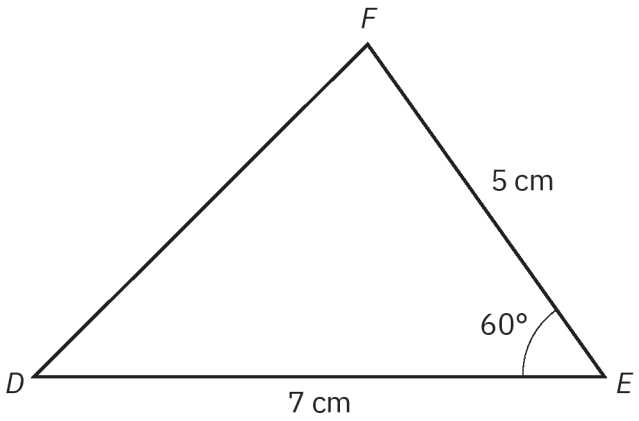

Diagram not drawn to scale

Use a ruler and protractor to complete an accurate drawing of triangle DEF.
Line DE has been drawn for you. [2]

D E

Examiner only

5. Jordan travels to and from school by train.

Each day, he buys a return ticket costing £9.00.

The train company also offers the following tickets:

Day ticket	Unlimited travel, all day	£7.50
Weekly ticket	Unlimited travel for 7 days	£28.00

(a) How much would Jordan save each day by buying a day ticket instead of a return ticket? [1]

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(b) Jordan usually goes to school 5 days a week.
How much would he save each week by buying a weekly ticket instead of return tickets?

[2]

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(c) Next week, Jordan will only go to school for 4 days.

What is the cheapest way he can travel to school next week and how much will it cost? [2]

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Examiner only

6. Chris and Dana have fewer than 15 stickers each.

Chris says to Dana:

"If you had 3 fewer stickers, we would have the same number of stickers."

"But, if you had 8 fewer stickers, I would have double the number of stickers you have."

How many stickers do they each have?
You must show all your working.

[3]

Chris has ..... stickers, and Dana has ..... stickers.

Examiner only

7. *(a)* Simplify each of the following.

(i) $y \times y$ [1]

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(ii) $9x + 5 - 2x + 4$ [2]

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(b) Here is a formula.

$$v = k \times x + 2$$

(i) Find the value of v when k=4k, x=2 [1]

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v = ...

(ii) Find the value of k when v=14 and x=5 [2]

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k = ...

Examiner only

8. Tina and Leo are building miniature models.

(a) Tina is making a model airplane using the ratio 1:24.

(i) A wing on the model has a length of 3.2 cm.
What is the length of the wing on the actual airplane? [1]

..... cm

(ii) The actual airplane has a wingspan of 1.68 meters.
Tina tries to calculate the wingspan of the model.
Here is her method.

$1.68 \text{ m} \div 24 = 0.07 \text{ m}$

Is Tina's method correct?

Yes ☐ No ☐

Explain how you decide. [1]

(b) Leo is building a model ship.
He then paints his model.

It takes him twice as long to build his model as it does to paint it.

(i) Complete the ratio. [1]

build : paint= ..... : .....

(ii) Leo takes a total of 144 hours to build and paint his model.

How many hours does it take Leo to build his model? [2]

Examiner only

9. The table shows some of the values of $y = x + 4$ for $-3 \leq x \leq 3$.

x	−3	−1	1	3
$y = x + 4$		3		7

(a) Complete the table above. [1]

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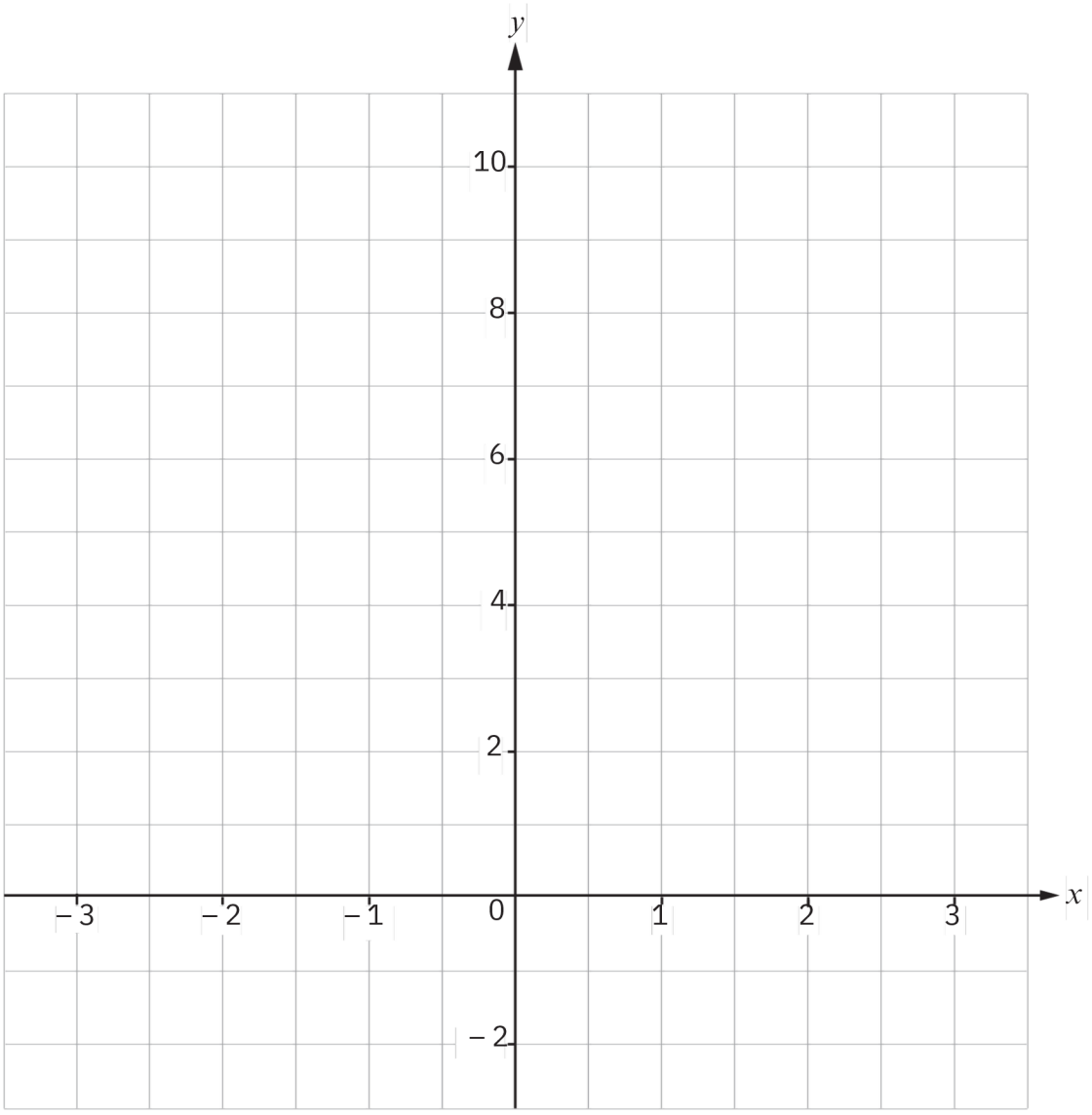
(b) On the grid below, draw the graph of $y = x + 4$ for $-3 \leq x \leq 3$ [2]



Examiner only

(c) Write down the coordinates of the y -intercept of the line $y = x + 4$. [1]

(....., ...)

(d) Draw the graph of $x = 2$ on the grid on page 12. [1]

(e) Write down the coordinates of the point where the graphs $y = x + 4$ and $x = 2$ cross. [1]

(....., ...)

Examiner only

10. *(a)* The price of one bottle of juice sold at Riverdale Market is made up as shown:

Profit 8%

Production and delivery 72%

Taxes 20%

The price of one bottle of juice is 240p.

What exact amount is paid in taxes for each bottle of juice sold at Riverdale Market? [2]

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Exact amount paid in taxes .....p for one bottle

Examiner only

(b) Mr. and Mrs. Patel are buying supplies at FreshMart grocery store.
One litre of milk costs £1.10.
Mr. Patel buys 25 litres of milk for his cafe.
Mrs. Patel buys 35 bottles of juice for an event.

The total cost of Mr. and Mrs. Patel's purchases is £103.50.

What is the cost of one bottle of juice at FreshMart grocery store? [5]

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one bottle of juice costs £.....

Examiner only

11. A grocery store sells bottles of the same olive oil in 3 sizes.

£2.25

£3.40

£4.50

Which size of bottle offers the best value for money?

400 ml ☐ 700 ml ☐ 1 L ☐

Show how you decide. [3]

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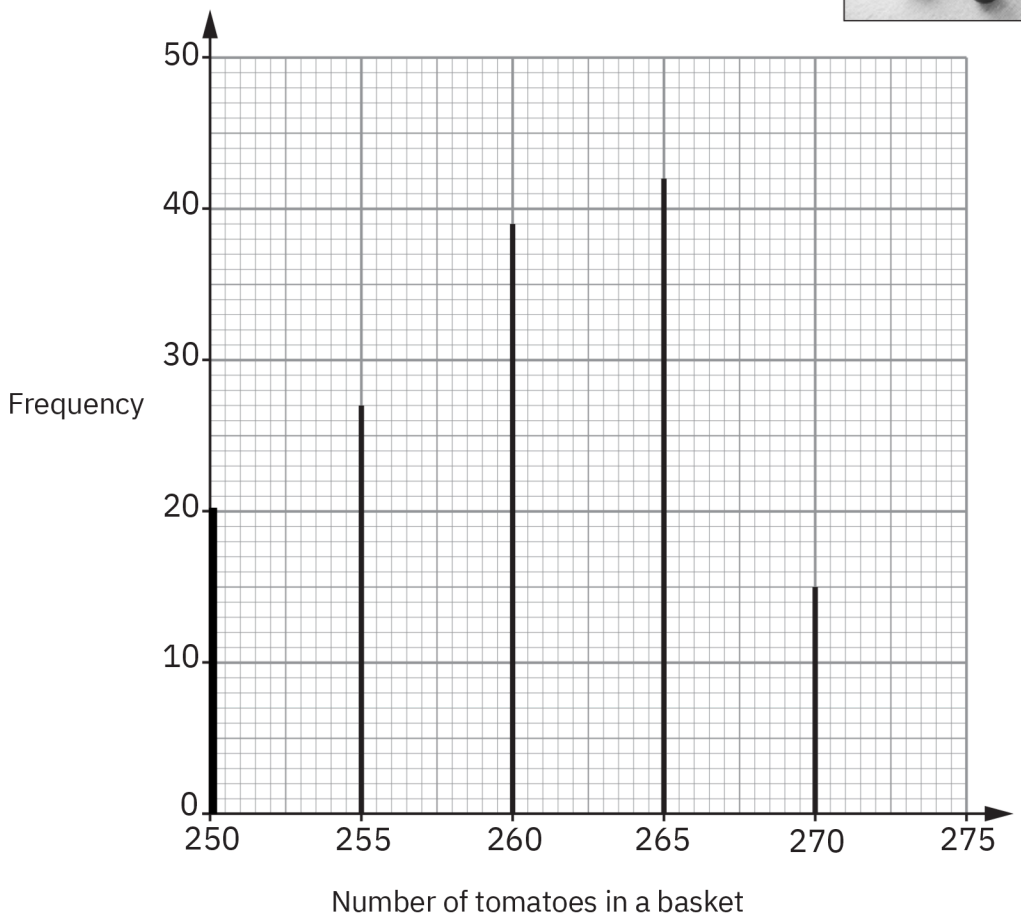
Turn over.

Examiner only

12. Tina grows vegetables to sell at her local farm stand.

(a) The vertical line graph shows information about the baskets of tomatoes Tina sold last week.



(i) How many baskets of tomatoes did Tina sell last week? [1]

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(ii) What fraction of the baskets of tomatoes Tina sold last week contained more than 265 tomatoes? [2]

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Examiner only

(b) Tina sells her tomatoes in boxes.
The frequency table shows the number of tomatoes in 130 boxes.

Number of tomatoes	Frequency
40	6
42	16
44	32
46	34
48	24
50	18

(i) Find the range of the number of tomatoes in a box. [1]

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(ii) Find the median number of tomatoes in a box. [2]

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(iii) Calculate the mean number of tomatoes in a box. [3]

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(iv) Tina says:
"The modal number of tomatoes in a box is more than the mean number of tomatoes in a box."
Is Tina correct?

Yes ☐ No ☐

Show how you decide. [1]

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Examiner only

13. *(a)* Alex wants to draw a pie chart to show his leisure activities.
The table shows:

- All his leisure activities for last week,
- The percentage of leisure time he spends on some activities,
- The sizes of some of the angles for the pie chart (rounded correctly to the nearest whole number).

Activity	Percentage	Angle
Reading	30%	108°
Watching T.V	40%	
Video Games	10%	36°
Sports	5%	18°
Other		

(i) Alex spent 3 hours playing sports last week.

Work out the total number of hours he spent on his leisure activities last week. [1]

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(ii) Complete the percentage column in the table above. [1]

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(iii) Complete the angle column in the table above. [2]

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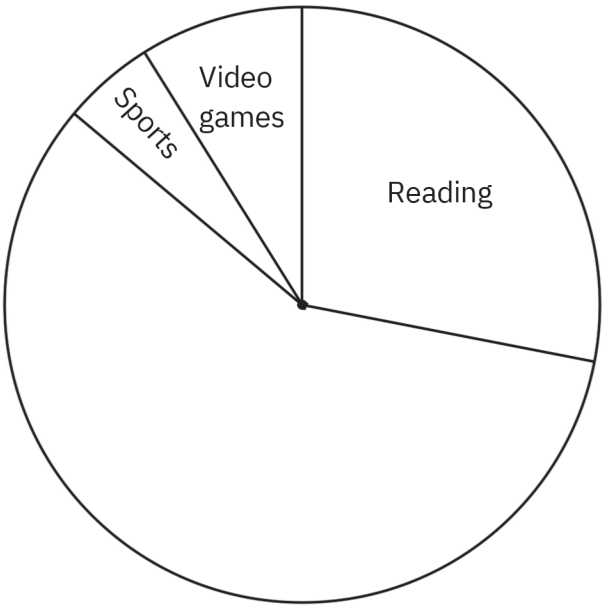
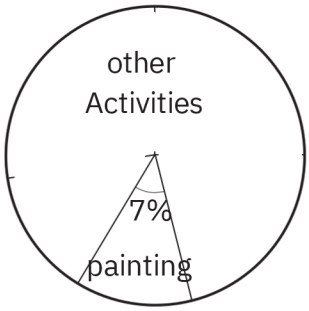
Examiner only

(iv) Complete the pie chart to show the information in the table. [1]



(b) Jamie draws a pie chart to show her leisure activities for the same week.



Last week, Jamie spent 4 hours painting.

Who spent more hours last week on leisure activities?

Alex ☐ Jamie ☐

Show how you decide. [2]

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Examiner only

14. Ivy used the following recipe to make a drink to sell at a school event.

For each glass of drink:

- use the juice of 1 lemon,
- use the juice of 1 lime,
- add enough soda to fill the glass to 350 ml.

She squeezed:

- 70 ml of juice from each lemon,
- 240 ml of juice from each lime.

Ivy sold 80 glasses of her drink.
The bottles of soda she used each contained 2.5 litres.

(a) How many bottles of soda did Ivy need to open?
You must show all your working. [5]

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.....bottles

Examiner only

(b) All the soda was donated, so it cost Ivy nothing.
She only paid for the fruit that she used.
The lemons cost £1.20 for a bag of 5.
The limes cost 70p each.
Ivy made 50% profit on each glass she sold.

(b) What was the selling price of each glass of Ivy's drink?

[4]

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Selling price of each glass .....

Examiner only

15. The diagram shows a vegetable plot in the shape of a trapezium.

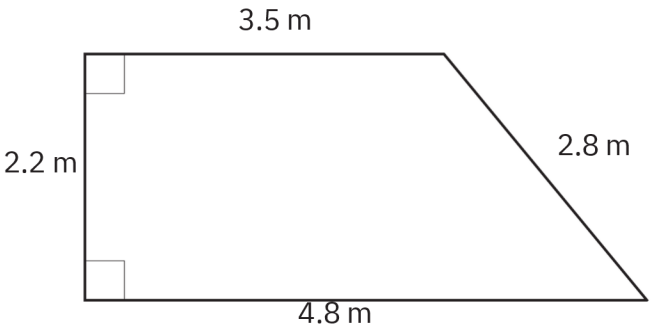

Diagram not drawn to scale

It costs £1.50 per m2 to treat the plot with fertiliser.

Show that it costs less than £18 to treat the plot with fertiliser. [4]

Examiner only

16. A coastal rescue team has a speedboat and a hovercraft.

Use:
1 knot = 1.852 km/h
1 mile = 1.609 km

Both vehicles leave the same port at the same time to assist a stranded fisherman.

The speedboat travels at a constant speed of 45 knots.

The hovercraft travels at a constant speed of 80 km/h.

The fisherman is rescued by the faster vehicle 20 minutes after departure.

Which vehicle rescued the fisherman and how many kilometers did it travel from the port?

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Rescue vehicle was .....

which travelled ..... km

Examiner only

17. *(a)* Solve $8x - 2 = 8 + 2x$. [2]

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(b) Jamie, Kelly, and Morgan are working on a math challenge.

- Jamie takes y seconds to complete it.
- Kelly takes 8 seconds more than Jamie.
- Morgan takes three times as long as Kelly.
- Morgan takes 144 seconds to finish the challenge.

Use an algebraic method to find how long Jamie takes to solve the challenge. [3]

You must show all your working.

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Jamie takes ..... seconds

Examiner only

18. Liam's uncle buys a rare stamp for him on the day he is born.

The stamp costs £250.
The value of the stamp is expected to increase by 4% each year.
What value is the stamp expected to have on Liam's 5th birthday?
Give your answer correct to the nearest penny.

[3]

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Expected value of the stamp £.....

Examiner only

19. The circumference of a circle is 31.4 cm.

Find the area of this circle.
You must show all your working. [4]

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Area of circle = ... cm2

Examiner only

20. A bus company sells single and return tickets..

2 single tickets and 3 return tickets cost a total of £14.50.
1 single ticket and 4 return tickets cost a total of £13.00.
Use an algebraic method to find the total cost of 2 single tickets and 2 return tickets.

[5]

Total cost of 2 single tickets and 2 return tickets. = £.....

Examiner only

21. *(a)* The diagram shows the side view of a design for a ramp leading to a park.

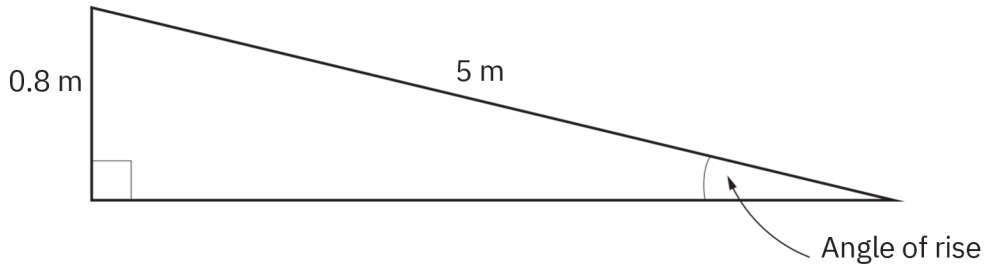


Diagram not drawn to scale

For the design to be approved, the angle of rise must not be more than 5°.

Use calculations to show that the design should be approved. [3]

Examiner only

(b)

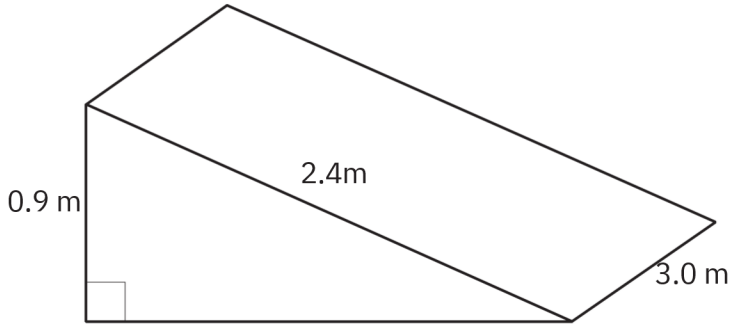


Diagram not drawn to scale

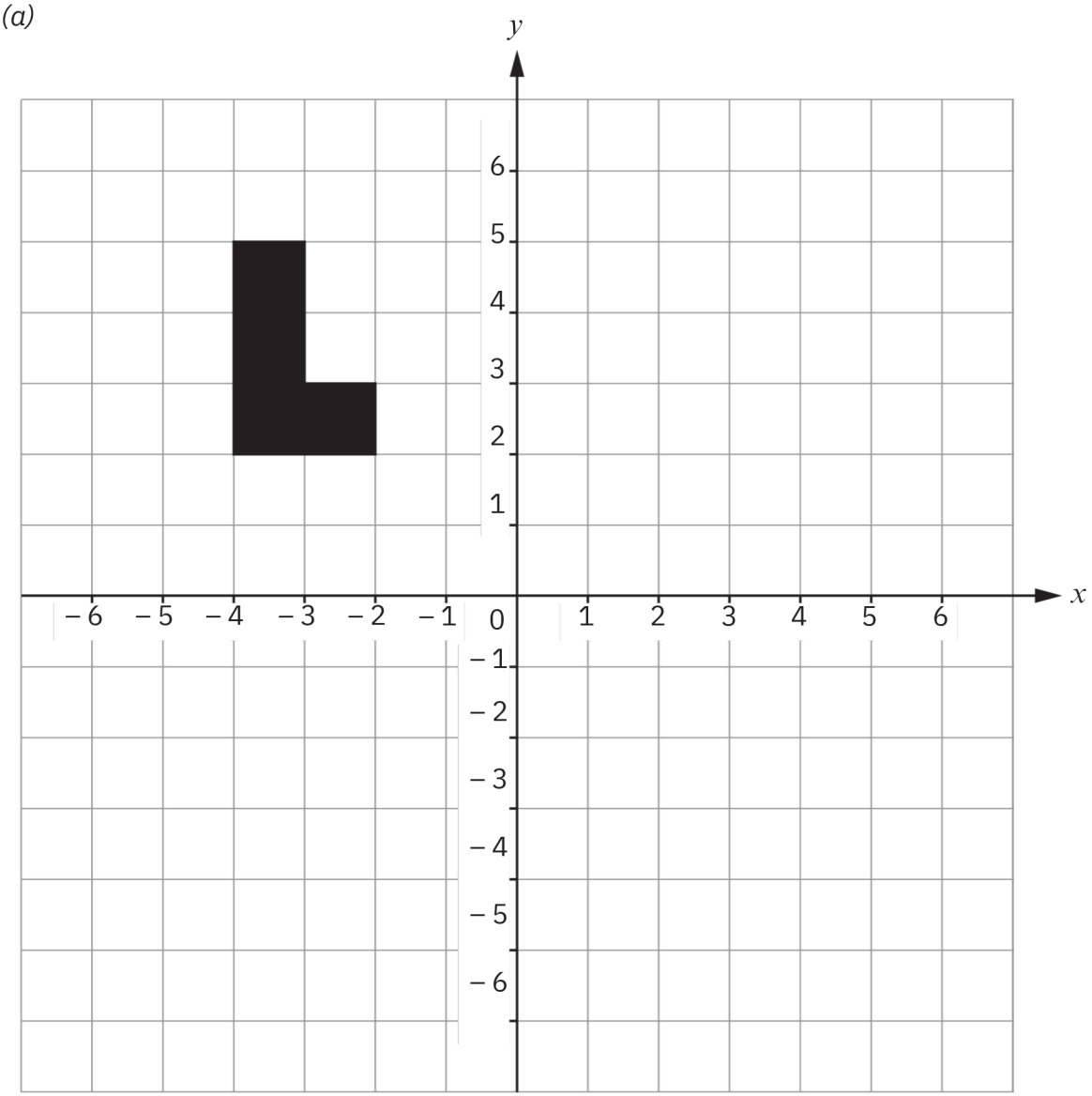
The diagram shows a concrete ramp leading to a different building.
The ramp was not approved and needs to be completely removed.

The ramp is a triangular prism and is 3.0 m wide.

How many cubic metres of concrete will need to be removed?
You must show all your working. [5]

Examiner only

22. *(a)*



p and **q** are translation vectors with

$$\mathbf{p} = \begin{pmatrix} 3 \\ -5 \end{pmatrix} \qquad \mathbf{q} = \begin{pmatrix} 1.5 \\ 2 \end{pmatrix}$$

Shape *A* is mapped to shape *B* using **p** + 2**q**.

(i) Find the column vector which translates shape *A* to shape *B*. [2]

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Examiner only

(ii) Draw and label shape *B* on the grid on page 32. [2]

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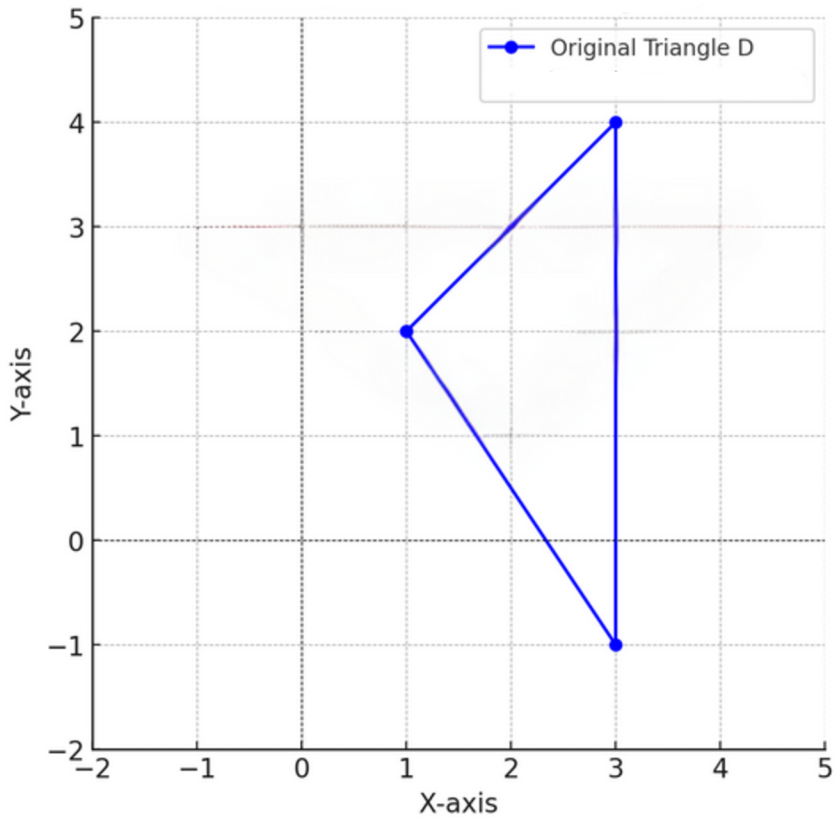
(b) Triangle D has vertices with coordinates (1, 2), (3, 4), (3, -1).
After a single transformation, the vertices of triangle D are mapped to (2, 1), (4, 3), (-1, 3).

Describe the transformation. [2]
You may use this grid to help you.



Transformation:.....

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Examiner only

23. *(a)* Expand and simplify $(2x - 8) (4x + 8)$. [3]

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(b) Factorise $y^2 + 4xy$. [1]

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END OF PAPER