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To do this, follow the relevant steps below.

### Adobe Reader or Adobe Acrobat

- Adobe Reader is a free PDF viewer, from Adobe. To install a copy of Adobe Reader, go to <https://get.adobe.com/uk/reader/>.
- Once Adobe Reader is installed, open your PDF.
- Go to File>Print.
- Under 'Page Sizing & Handling', select 'Size'.
- From here, make sure that 'Actual Size' is selected.
- Print this page as a test, making sure that the shape below is the correct size once printed.
- If the test print is correct, print your PDF.

### Foxit Reader

- Go to File>Print.
- Set the 'Scaling' to 'None'.
- Print this page as a test, making sure that the shape below is the correct size once printed.
- If the test print is correct, print your PDF.

### Web Browser

- If printing from a web browser, such as Chrome, Firefox or Microsoft Edge make sure that your printer is set to print at 100%, either by unticking 'Fit to Page' or selecting 'Actual Size'.
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- If the test print is correct, print your PDF.



# GCSE Maths (Calculator)

## Practice Foundation Paper 3

### **AQA Specification**

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Time: 1 hour 30 minutes (80 Marks)

Name: \_\_\_\_\_

Class: \_\_\_\_\_



1. Circle the number which is a prime number.

[1 mark]

- A) 7      B) 1      C) 9      D) 16

2. Which is the correct value of  $4^3$ ?

[1 mark]

- A) 12      B) 16      C) 64      D) 48

3. Circle the expression which is 3 times larger than  $p$ .

[1 mark]

- A)  $3 + p$       B)  $3p$       C)  $\frac{p}{3}$       D)  $3 - p$

4. a. Simplify  $3b^3 \times 2b^5$

[1 mark]

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b. Expand and simplify  $(x + 5)(x - 3)$

[2 marks]

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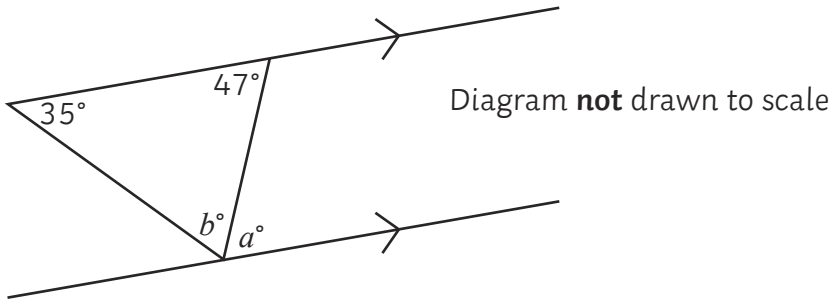
c. Fully factorise  $8a^2 + 4a$

[2 marks]

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5.



a. Write down the size of the angle marked  $a$ , giving a reason for your answer.

[2 marks]

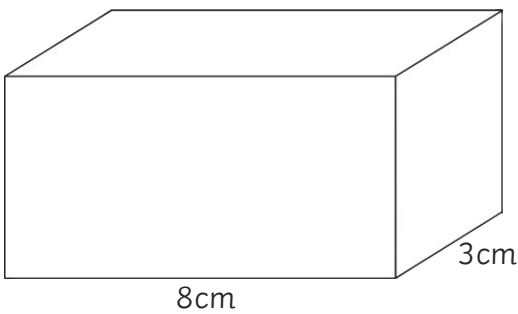
\_\_\_\_\_

b. Calculate the size of the angle marked  $b$ . Give a reason for your answer.

[3 marks]

\_\_\_\_\_

6. The cuboid has a volume of  $120\text{cm}^3$ .



a. Calculate the height of the cuboid.

[2 marks]

\_\_\_\_\_

b. Hence calculate the surface area of the cuboid, including the units of your answer.

[3 marks]

\_\_\_\_\_



7. The population,  $p$ , of a city is 12 000 correct to the nearest 1000 people. Write down the error interval for the population of the city.

[3 marks]

\_\_\_\_\_

8. Manisha sits outside her house for half an hour and counts the number of cars of particular colours that pass by. The table below shows her results.

Colour	Frequency
red	14
white	27
blue	21
black	35
other	43

- a. Work out the probability that the next car to pass Manisha's house will be a blue car.

[1 mark]

\_\_\_\_\_

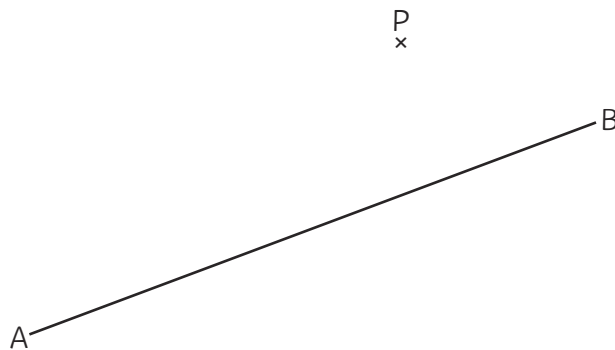
- b. The following day, Manisha's brother counts 400 cars passing the house. Estimate how many of those cars would be blue.

[2 marks]

\_\_\_\_\_

9. Use a ruler and compass to construct the perpendicular to the line segment AB that passes through the point P. You must show all construction lines.

[2 marks]



10. The table shows some information about the average person's monthly spend as a percentage of their total income in 2015.

Item	Percentage
food	7%
rent	28%
bills	18%
clothes	4%
transport	15%
leisure	15%
other items	13%

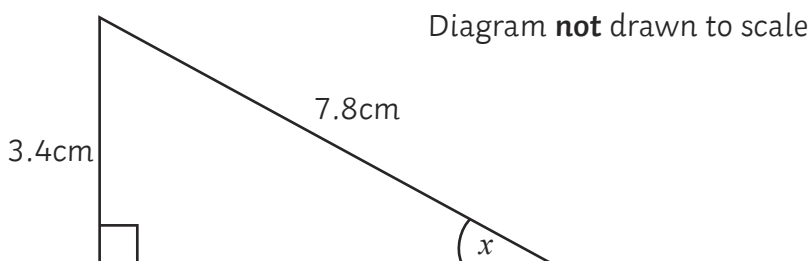
In July 2015, Ben's income was £2200. During this month, he spent £450 on his bills.

Compare the amount Ben spent on his bills in July against the average person's monthly spend on bills in 2015.

[2 marks]

11. Work out the value of  $x$ . Give your answer correct to 3 significant figures.

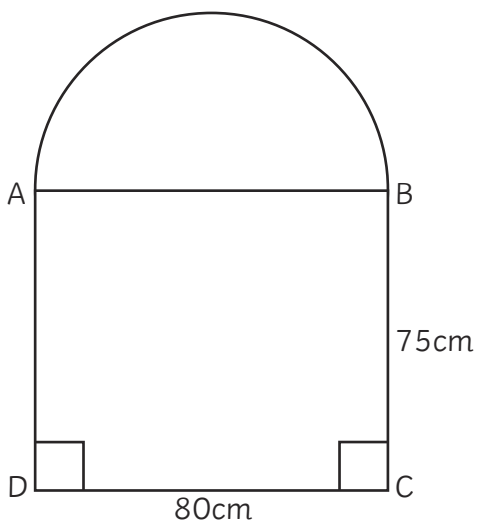
[3 marks]



12. The diagram shows a window.

The arc AB forms a semicircle.

$BC = AD = 75\text{cm}$  and  $DC = 80\text{cm}$ .



Calculate the total area of the window. Leave your answer correct to the nearest whole number.

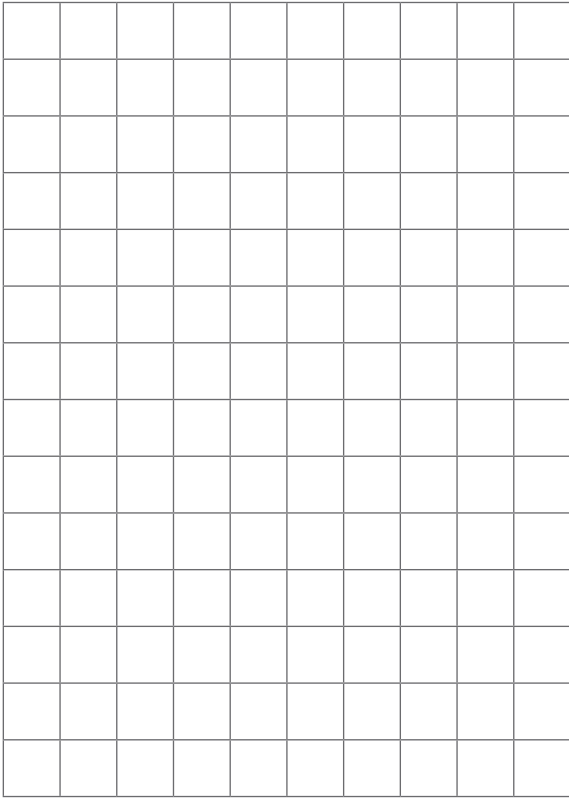
[3 marks]

\_\_\_\_\_  $\text{cm}^2$



13. On the grid below, draw the graph of  $x + y = 7$  for  $-4 \leq x \leq 4$ .

[3 marks]



14. On average, a baby is born in the UK every 75 seconds.

Find the average number of babies born in the UK in 24 hours. You must show all your working.

[2 marks]

15. Akande, Bingwen and Charles share £117.

Charles gets 4 times the amount Akande does, whilst Bingwen gets double the amount Charles does.

How much money does Akande get?

[3 marks]

£ \_\_\_\_\_

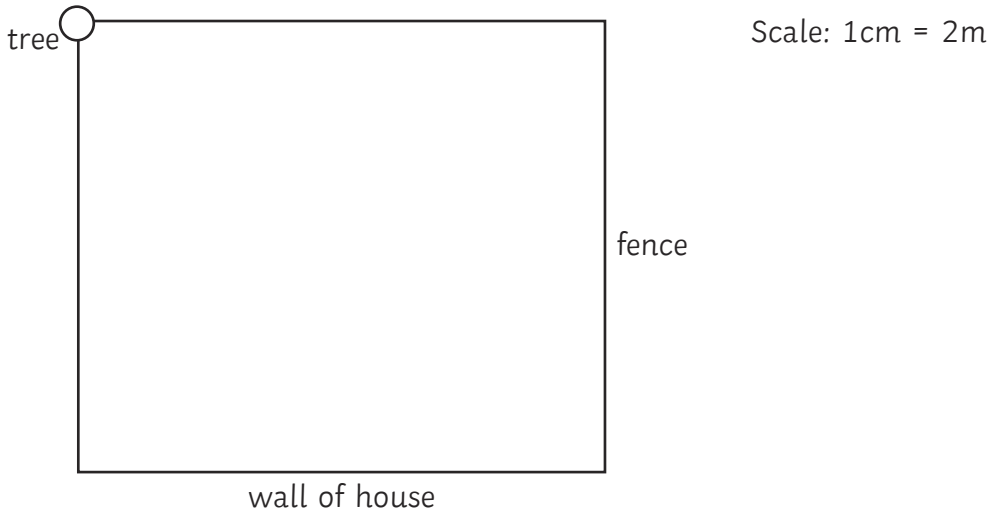


16. The diagram shows a scale drawing of a garden.

Rosemary wants to plant flowers within 7m of the tree. The flowers must also be closer to the fence than the wall of the house.

Shade the region where the flowers can be planted.

[3 marks]



17. Sarah is making some cupcakes using the recipe below:

Calculate the greatest number of cupcakes Sarah can make using the ingredients she currently has.

[4 marks]

Ingredients for 16 cupcakes:

240g flour

140g butter

150g sugar

4 eggs

She has:

4kg flour

3.5kg butter

3kg sugar

36 eggs

18. A runner can sprint 100 metres in 12.5 seconds. Calculate the average speed of the runner in m/s.

[1 mark]

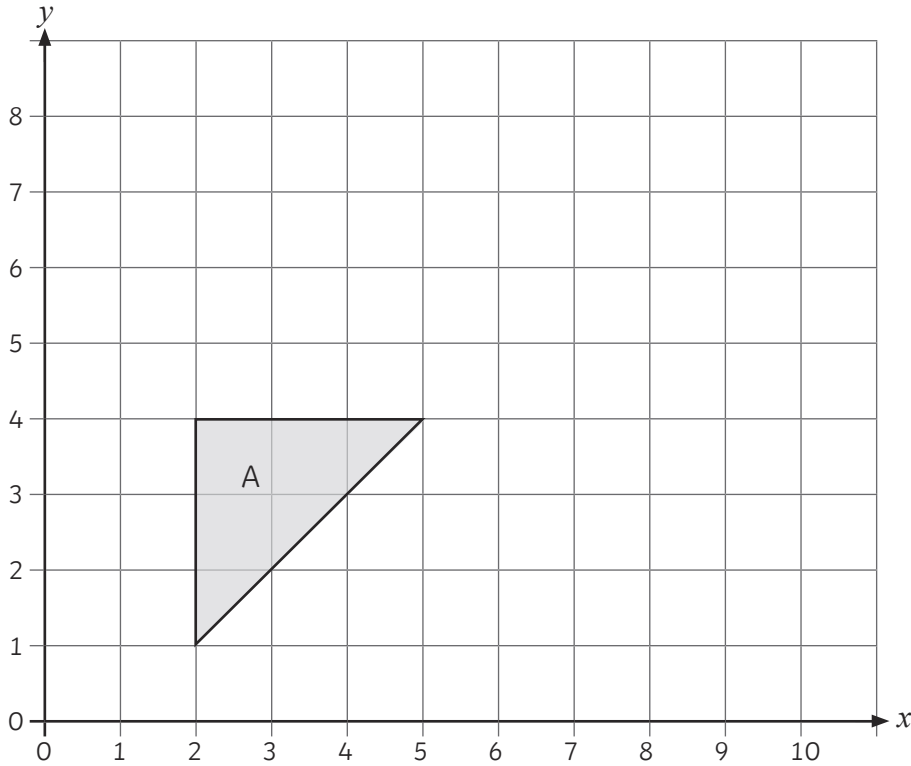
\_\_\_\_\_ m/s





19. On the grid, enlarge shape A by a scale factor of 2, centre (0, 1).

[3 marks]



20. In a company, the ratio of the number of employees who work full time to the number who work part time is 8:5.

40% of the full-timers are under 30.

$\frac{3}{8}$  of the part-timers are under 30.

What proportion of the company's employees are under 30?

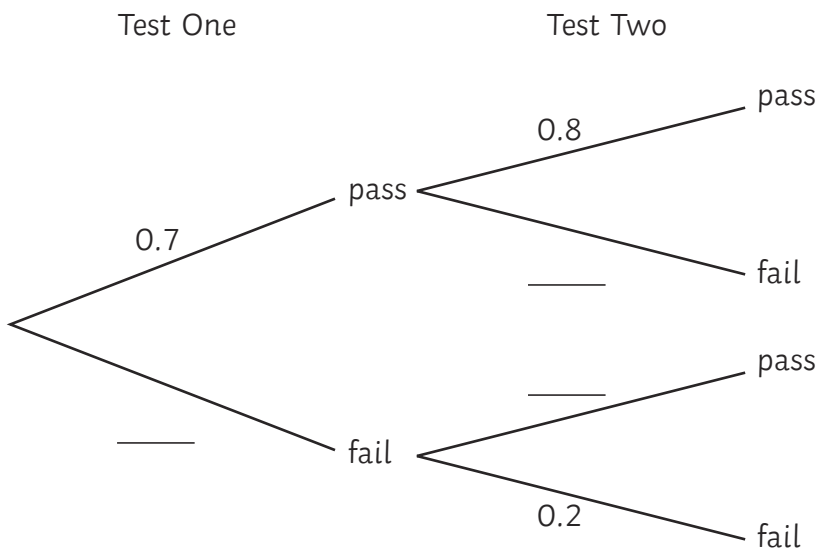
[3 marks]



21. Elise needs to buy some bottles of sparkling water for a dinner party. She needs 20 bottles. All individual bottles of sparkling water have the same recommended retail price but Elise visits three different shops:
- Shop A has a special offer of buy two get one free;
- Shop B has a special offer of buy one get the second half price;
- Shop C is selling each bottle at 65% of its RRP.
- Elise can buy the bottles from more than one shop. How should she buy the 20 bottles, so that she spends as little money as possible?

[4 marks]

22. The tree diagram shows the probability Jacques will pass two college tests.



- a. Complete the tree diagram.

[2 marks]

- b. Calculate the probability Jacques fails at least one test.

[3 marks]



23. The vectors  $\mathbf{a}$  and  $\mathbf{b}$  are given by:

$$\mathbf{a} = \begin{pmatrix} 4 \\ 7 \end{pmatrix} \text{ and } \mathbf{b} = \begin{pmatrix} 3 \\ -2 \end{pmatrix}$$

Work out  $3\mathbf{a} - \mathbf{b}$

[2 marks]

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24. Here are the first five terms of the sequence of triangular numbers.

1    3    6    10    15

a. Find the 8<sup>th</sup> term of this sequence.

[1 mark]

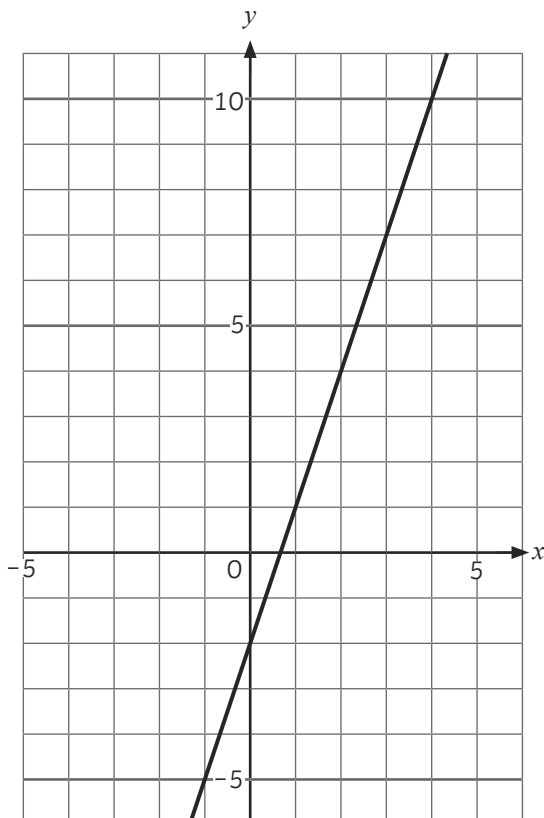
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b. The  $n^{\text{th}}$  term of this sequence is given by  $\frac{1}{2}n(n+1)$ . Show that the 18<sup>th</sup> term of the sequence is 171.

[1 mark]

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25. Line L is drawn on the grid below.



Find an equation for the line L, giving your answer in the form  $y = mx + c$ .

[2 marks]

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26. A cylinder has a diameter of 40cm and height of 75cm. Calculate the volume of the cylinder, giving your answer in  $\text{m}^3$ . Give your answer correct to 2 significant figures.

[3 marks]

\_\_\_\_\_  $\text{m}^3$ 

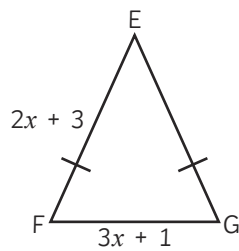
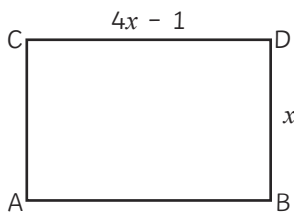
27. Shape ABCD is a rectangle.

Shape EFG is a triangle.

The two shapes have the same perimeter.

Find the area of the triangle. All measurements are in cm.

[6 marks]



Diagrams **not** drawn to scale

\_\_\_\_\_  $\text{cm}^2$ 