



THIRD SPACE
LEARNING

Mathematics

Paper 2

(Calculator)

Higher Tier

AQA GCSE

SET 4

Mathematics Paper 2 (Non-Calculator) Higher Tier AQA

GCSE SET 4

Name

Total marks

Paper length: 1hr 30mins



Instructions

- Use black ink or ball-point pen.
- 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.

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.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

Question	Mark
1	
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26	

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser. Tracing paper may be used.

This practice paper is based on the topics from the **advanced information for the November 2025 exam series**.

Please note, this practice paper is an example to help revision, these topics can be tested in other ways and other topics may be included in the actual papers

1 Work out

$$\frac{\sqrt{484} + 3^4}{\sin 30}$$

Circle your answer.

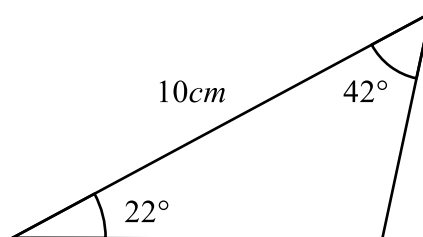
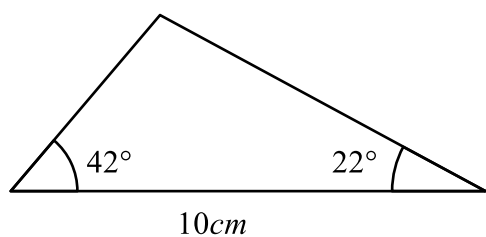
[1 mark]

206

47.539

68

33.615

2 Circle the number that is half way between $\frac{1}{6}$ and $\frac{13}{18}$.**[1 mark]** $\frac{7}{12}$ $\frac{4}{9}$ $\frac{1}{3}$ $\frac{1}{2}$ **3**

Circle the reason why these triangles are congruent.

[1 mark]

RHS

ASA

SAS

SSS

4 (a) Simplify $p^7 \div p^3$

[1 mark]

Answer _____

(b) Simplify $(q^3)^5$

[1 mark]

Answer _____

(c) Matthew simplifies $2x^2 \times 3x^5$

Matthew's answer is $5x^7$.

Explain Matthew's mistake.

[1 mark]

5 Blue and yellow paint is needed to make green paint.

5 *litres* of blue paint costs £17.50.

The ratio of the cost of blue paint to the cost of yellow paint is 5:6.

Work out the cost of 8 *litres* of yellow paint.

[4 marks]

Answer £ _____

- 6 Find the highest common factor (HCF) of 48 and 72.

[2 marks]

Answer _____

- 7 (a) Circle the reciprocal of 0.4

[1 mark]

0.6 0.25 2.5 1.6

- (b) $x = 230$ to 2 significant figures.

Complete the error interval for x .

[2 marks]

Answer _____ $\leq x <$ _____

- 8 The cost of 3 teas and 4 coffees is £10.80.
 The cost of 2 teas and 5 coffees is £11.40.

Work out the cost of 4 teas and 1 coffee.
You must show all your working.

[5 marks]

Answer £ _____

- 9 The radius of planet A is $4 \times 10^3 \text{ km}$
The volume of planet B is 9.05×10^{11}

Volume of a Sphere: $V = \frac{4}{3}\pi r^3$

How many times greater is the radius of planet B than the radius of planet A ?

[4 marks]

Answer _____

- 10 Some people were asked whether they had any siblings.

20% of the people said no.
60% of the people who said yes, said they had more than one sibling.

What percentage of the people asked had more than one sibling?

[2 marks]

Answer _____

- 11 Make f the subject of the formula $x = \frac{2f-p}{5}$.

[2 marks]

Answer $f =$ _____

- 12 In a restaurant, there are 360 ways to choose one starter, one main and one dessert.
There are 8 starters. There are 4 more mains than desserts.
How many desserts are there?

[2 marks]

Answer _____

13 Jeremy wants to know whether his dice is biased.

Jeremy rolls the dice 60 times.

Here are the results.

Number	Frequency
1	11
2	19
3	8
4	6
5	7
6	9

(a) Jeremy thinks the dice is biased. Do you think Jeremy is correct?

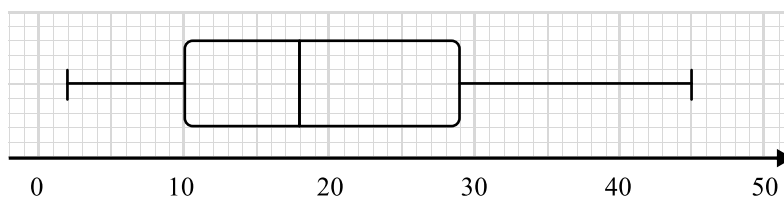
Explain your answer.

[1 mark]

(b) Explain how Jeremy could improve his experiment.

[1 mark]

14 The boxplot shows information about the waiting time at a GP surgery.



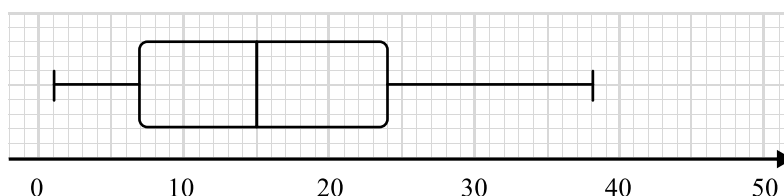
(a) Tick the box next to the correct statement.

[1 mark]

- ☐ Less than 75% of patients were seen in under 30 minutes
- ☐ Exactly 75% of patients were seen in under 30 minutes
- ☐ More than 75% of patients were seen in under 30 minutes
- ☐ We can't tell whether 75% of patients were seen in under 30 minutes

The surgery introduced a new appointment system.

This boxplot shows information about the waiting times after the change.



(b) On average, was the waiting time higher or lower after the change?

Use one statistical measure to support your decision.

[1 mark]

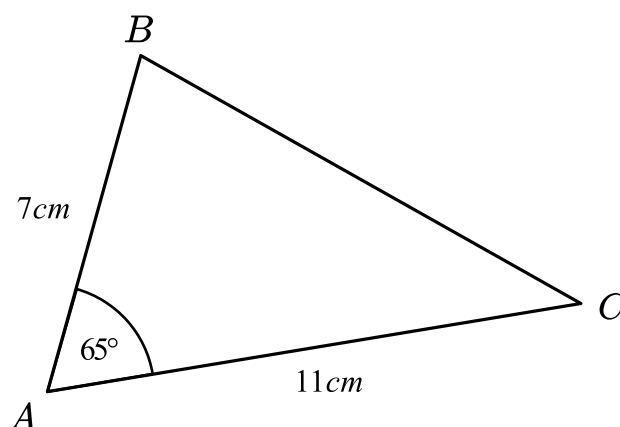
Question continued on the next page

(c) Were the waiting times more or less consistent after the change?

Use one statistical measure to support your decision.

[1 mark]

15 ABC is a triangle.



Find the length of BC .

Give your answer correct to 3 significant figures.

[3 marks]

Answer _____

16 A and B are points on a centimetre grid.

A is the point with coordinates $(-6, 4)$

B is the point with coordinates $(3, -8)$

(a) Work out the length of AB .

[2 marks]

Answer _____

(b) The line $4y = 3x + 34$ passes through the point $(-6, 4)$.

Show that this line is perpendicular to the line AB .

[3 marks]

17 Here are the first four terms of a quadratic sequence.

5 11 19 29

Circle the n th term formula for the sequence.

[1 mark]

$n^2 + 4$ $2n^2 + 3n$ $n^2 + 3n + 1$ $n^2 - 3n$

18 (a) The equation of a circle is $x^2 + y^2 = 29$

Work out the length of the diameter.

Circle your answer.

[1 mark]

$\sqrt{29}$ $2\sqrt{29}$ $\sqrt{58}$ 58

(b) (p, q) is a point on the circle, such that p and q are integers.

Write down two possible sets of values for p and q .

[2 marks]

Answer (_____ , _____)

Answer (_____ , _____)

- 19 (a) Use the iterative formula $x_{n+1} = \sqrt[3]{8 - 3x_n}$ to find the values of x_1 , x_2 and x_3
Start with $x_0 = 2$

[3 marks]

Answer $x_1 =$ _____

Answer $x_2 =$ _____

Answer $x_3 =$ _____

- (b) Explain the relationship between x_1 , x_2 and x_3 and the equation
 $x^3 + 3x - 8 = 0$

[1 mark]

20

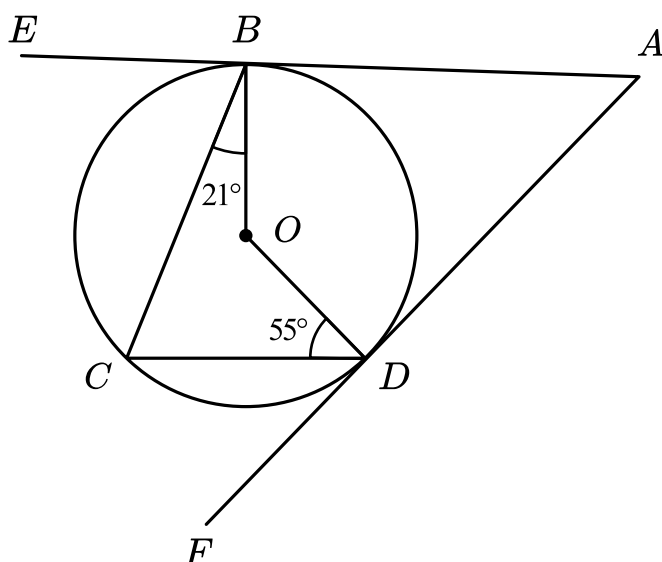


Diagram NOT
accurately drawn

B , C and D are points on a circle with centre O .
 ABE and ADF are tangents to the circle.

Angle $CBO = 21^\circ$

Angle $CDO = 55^\circ$

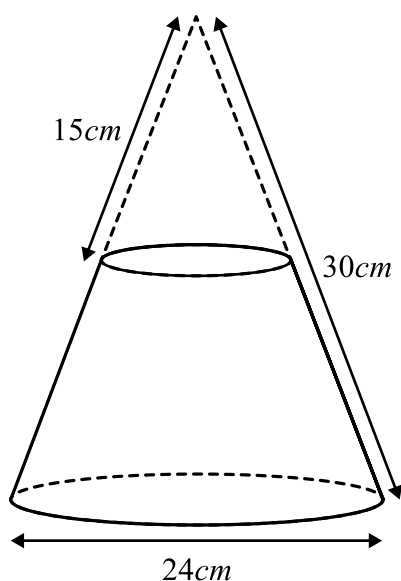
Work out the size of angle DAB .

You must show all your working.

[4 marks]

Answer _____^o

- 21** A frustum is made by removing a small cone from a similar large cone.



Curved surface area of cone = $\pi r l$

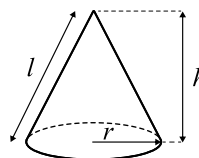


Diagram NOT
accurately drawn

The slanted height of the small cone is 15cm.

The slanted height of the large cone is 30cm.

The diameter of the base of the large cone is 24cm.

Work out the surface area of the frustum.

Give your answer to 3 significant figures.

[4 marks]

Answer _____ cm^2

22 Here is some information about the lengths of some songs.

Time, t (seconds)	Frequency
$0 < t \leq 120$	6
$120 < t \leq 180$	15
$180 < t \leq 210$	18
$210 < t \leq 240$	12
$240 < t \leq 360$	12

Pablo draws a histogram to show this information.

The height of the bar for $180 < t \leq 210$ is $1.8cm$.

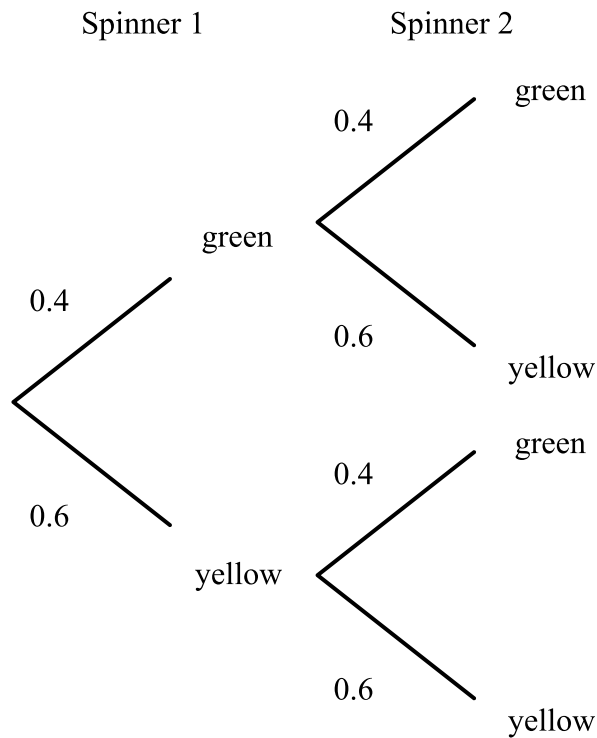
Find the height of the bar for $210 < t \leq 240$.

[3 marks]

Answer _____ *cm*

- 23** Sophie has two identical spinners, each with two colours, green and yellow.
The probability that each spinners lands on green is 0.4 and the probability that each spinner lands on yellow is 0.6.

The probability tree diagram shows this information.



Sophie spins the spinners a number of times.

The number of times both spinners land on green is 24.

Work out an estimate for the number of times both spinners land on yellow.

[3 marks]

Answer _____

24 $x:y = 3:7$

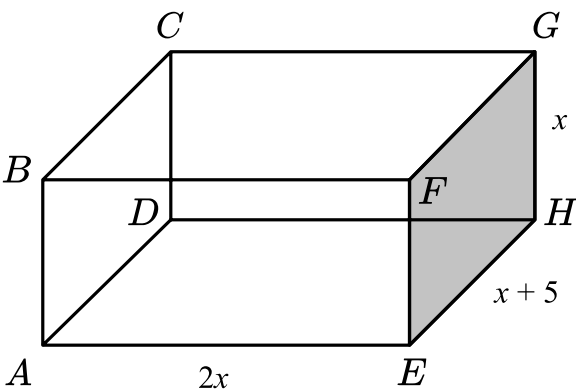
$2x + y = 117$

Work out the value of $x + 2y$.

[3 marks]

Answer _____

25 A packaging company is designing a cuboid shaped packet with dimensions shown.



It is required that the length of AG is at least 7cm .

(a) Show that $6x^2 + 10x - 24 > 0$

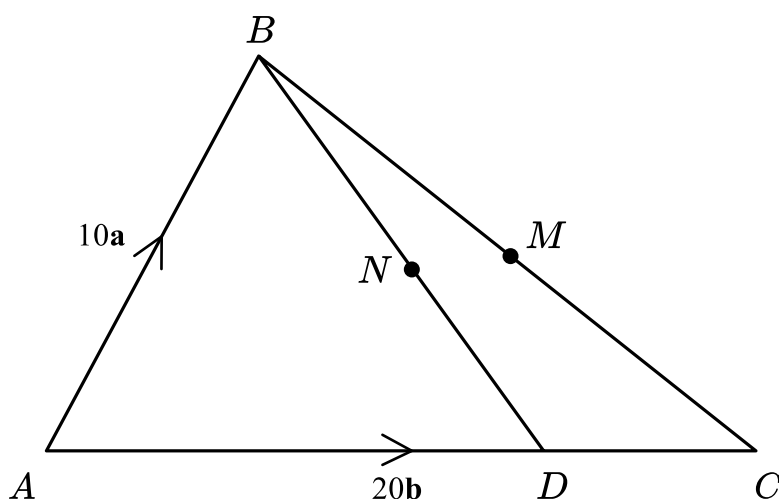
[3 marks]

(b) Find the range of possible values of x .

[3 marks]

Answer _____

26



$$\vec{AB} = 10\mathbf{a}$$

$$\vec{AC} = 20\mathbf{b}$$

$$\vec{AD} = x \vec{AC}$$

$$BN:ND = 3:2$$

M is the midpoint of BC .

(a) Show that $\vec{AM} = 5\mathbf{a} + 10\mathbf{b}$

[2 marks]

Question continued on the next page

(b) Given that $x = \frac{2}{3}$, show that ANM is a straight line.

[4 marks]

End of Questions

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