



THIRD SPACE
LEARNING

Mathematics

Paper 1

(Non-Calculator)

Higher Tier

AQA GCSE

SET 4

Mathematics Paper 1 (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 not 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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24	

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 $48 = 2^p \times 3$

Circle the value of p .

[1 mark]

2 3 4 5

2 Circle the solid that has 9 edges.

[1 mark]

Triangular prism

Triangular-based pyramid

Cuboid

Square based pyramid

3 Circle the value which is a solution to the equation $(x + 4)(x - 3) = 0$

[1 mark]

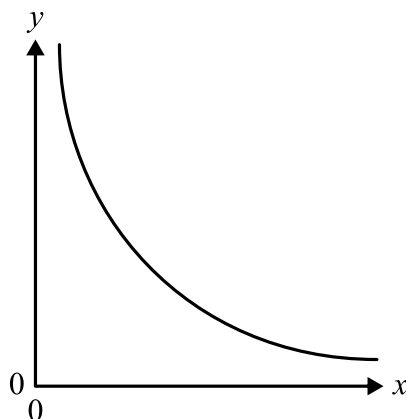
$x = 0$

$x = 3$

$x = -3$

$x = 12$

4 Here is a sketch of a graph.



Circle the relationship between x and y .

[1 mark]

y is directly proportional to x

y is directly proportional to x^2

y is inversely proportional to x

y is inversely proportional to $\frac{1}{x}$

5 Astrid's house is $2\frac{1}{2}$ miles west of Felix's house. Hannah's house is $5\frac{1}{3}$ miles east of Astrid's house.
How far is it from Felix's house to Hannah's house?

Give your answer as a mixed number

[4 marks]

Answer _____

6 (a) Here is some information about a group of 60 students.

$\frac{1}{3}$ of the students own neither a cat nor a dog.

27 students own a dog.

24 students own a cat.

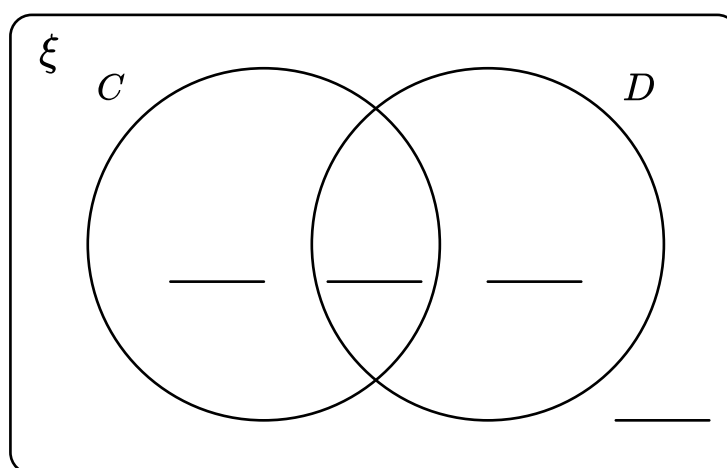
Complete this Venn diagram to represent this information.

[3 marks]

ξ = 60 students

C = students who own a cat

D = students who own a dog



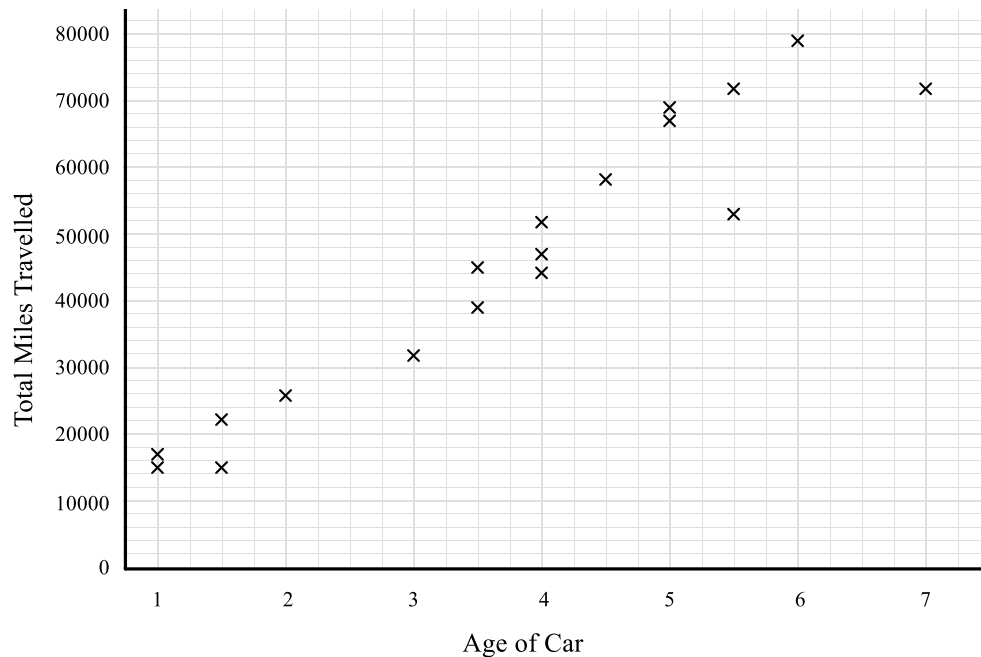
(b) One of the students is chosen at random.

Find the probability that this student owns a cat and a dog.

[2 marks]

Answer _____

- 7 The scatter diagram shows information about the age and total miles covered by some cars belonging to a certain company.



- (a) Write down the type of correlation shown.

[1 mark]

Answer _____

- (b) Another car is 2.5 years old.

Use a line of best fit to estimate the total distance travelled by this car.

[2 marks]

Answer _____ miles

8 (a) Solve $p < \frac{p+6}{3} + 3$

[3 marks]

Answer _____

(b) Factorise $x^2 + 3x - 40$

[2 marks]

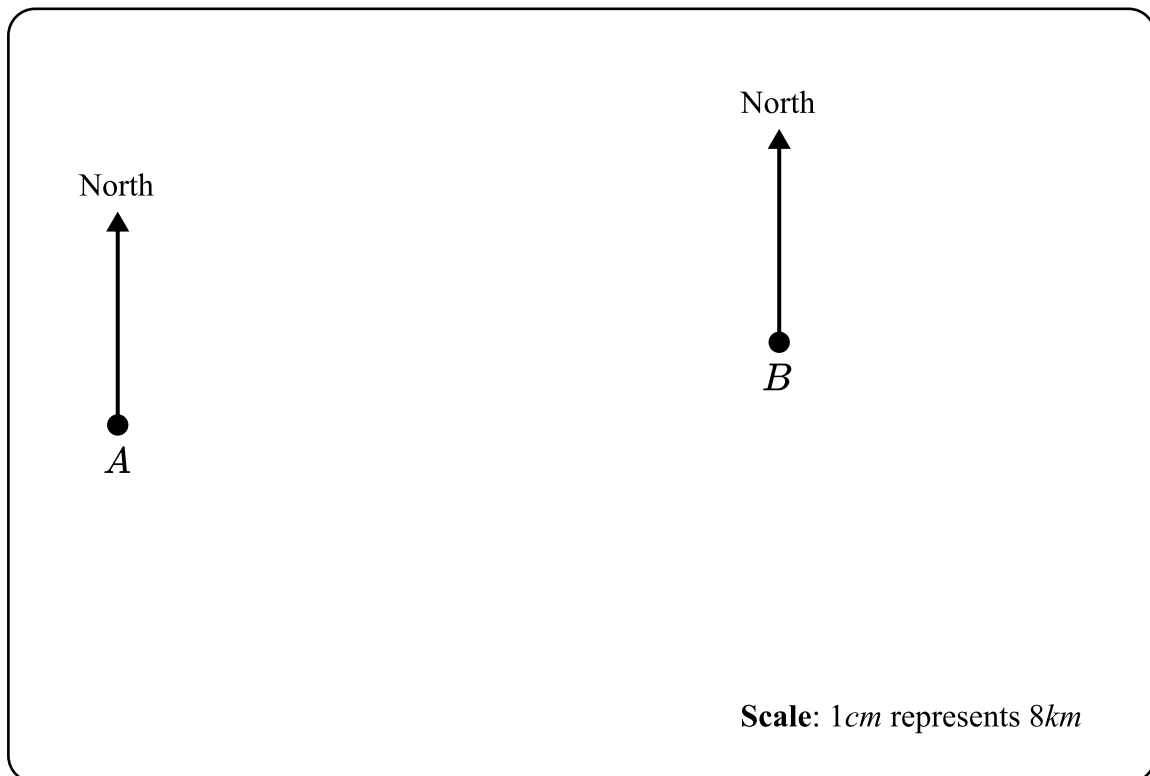
Answer _____

- 9 The scale drawing shows town A and town B .

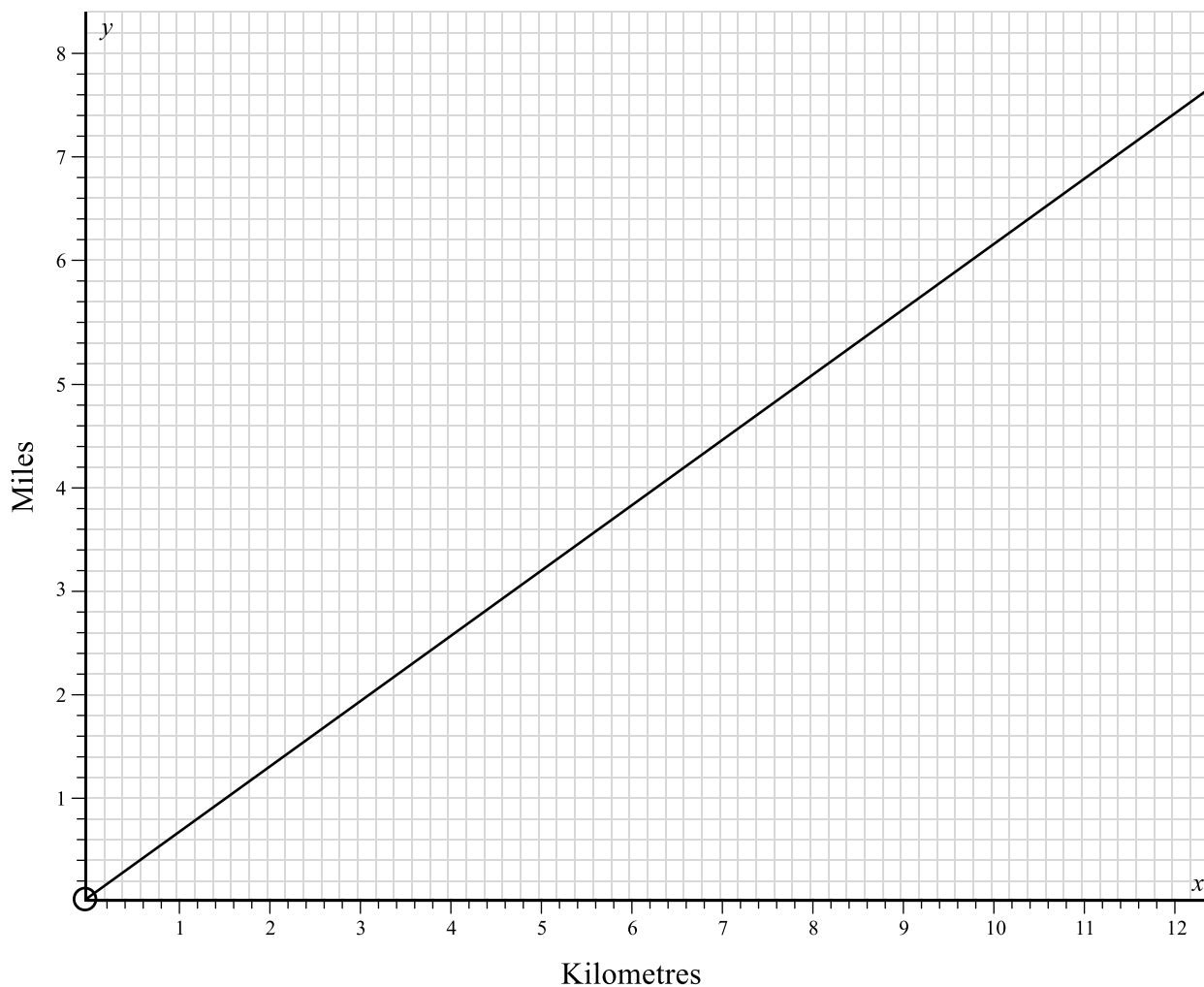
The scale is 1cm represents 8km .

Livvy needs to get to a location between town A and town B that is on a bearing of 075° from town A and 32km from town B . Mark the location on the map and label it C .

[3 marks]



10 Here is a conversion graph for *kilometres* and *miles*.



Yussef is travelling along a road with a speed limit of 50 *miles per hour*.

Yussef is travelling at 25 *metres per second*.

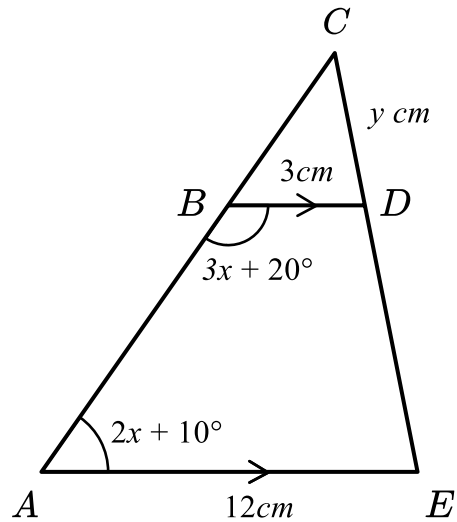
Is Yussef breaking the speed limit?

Show how you decide.

[3 marks]

Answer _____

11 ACE is a triangle.



ABC and CDE are straight lines.

AE is parallel to BD .

Angle $BAE = (2x + 10)^\circ$

Angle $ABD = (3x + 20)^\circ$

$BD = 3 \text{ cm}$

$CD = y \text{ cm}$

$AE = 12 \text{ cm}$

(a) Work out the value of x .

[3 marks]

Answer _____

Question continued on the next page

(b) Find an expression, in terms of y , for the length of CE .

[2 marks]

Answer _____

12 a is 20% less than b .

Circle the ratio $a:b$

[1 mark]

10:12

2:10

8:10

10:8

13 Write $p^6:(2p^2)^3$ in the form $1:n$ where n is an integer.

[2 marks]

Answer _____

14 (a) Find the value of $25^{-\frac{1}{2}}$.

[2 marks]

Answer _____

(b) Work out $16^{\frac{3}{2}} + 27^{\frac{5}{3}}$.

[3 marks]

Answer _____

(c) Write $5^n \times 25^{n+2}$ as a power of 5.

[2 marks]

Answer _____

15 This table gives information about the number of hours worked in a week by 80 teachers.

Number of hours (h)	Frequency
$30 < h \leq 35$	6
$35 < h \leq 40$	12
$40 < h \leq 45$	18
$45 < h \leq 50$	21
$50 < h \leq 55$	15
$55 < h \leq 60$	8

(a) Complete the cumulative frequency table.

[1 mark]

Number of hours (h)	Cumulative frequency
$h \leq 35$	6
$h \leq 40$	18
$h \leq 45$	
$h \leq 50$	
$h \leq 55$	
$h \leq 60$	

(b) Circle the interval that contains the median.

[1 mark]

$35 < h \leq 40$

$40 < h \leq 45$

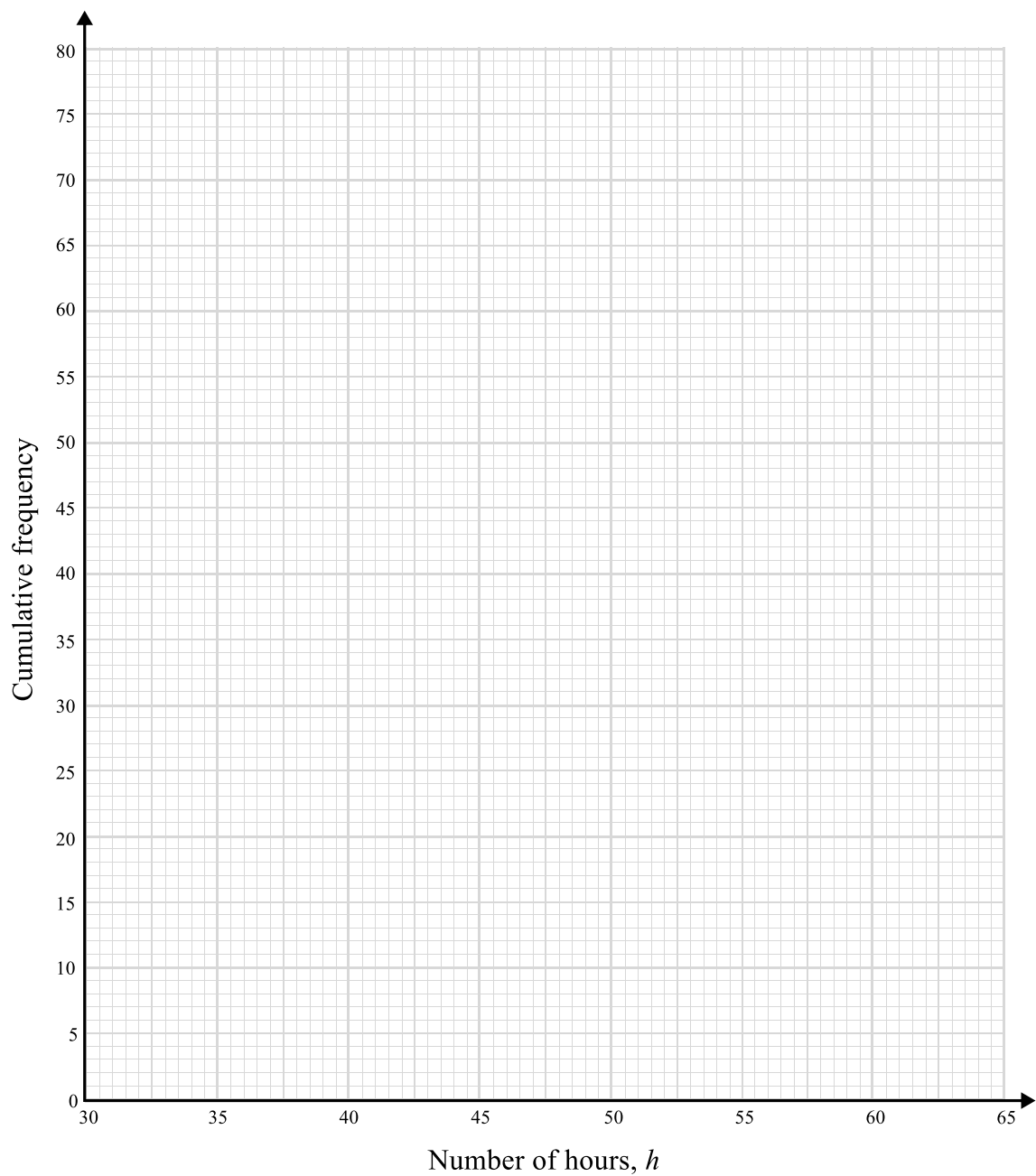
$45 < h \leq 50$

$50 < h \leq 55$

Question continued on the next page

(c) Draw a cumulative frequency diagram to represent the data.

[2 marks]



(d) Jana says ‘approximately 75% of teachers worked less than 51 hours’.

[3 marks]

Answer _____

16 Work out $0.08\dot{3} \times 0.\dot{4}$.

Give your answer as a fraction in its simplest form.

[5 marks]

Answer _____

17 Simplify $\frac{x+5}{4} - \frac{x-3}{3}$.

[3 marks]

Answer _____

18 A , B and C are three points on a straight line, in that order, such that

$$\text{length of } AB : \text{length of } BC = 3:5$$

$$\overrightarrow{AB} = 9\mathbf{a} - 6\mathbf{b}$$

Find the vector \overrightarrow{AC} .

[2 marks]

Answer _____

19 On the grid identify the region represented by

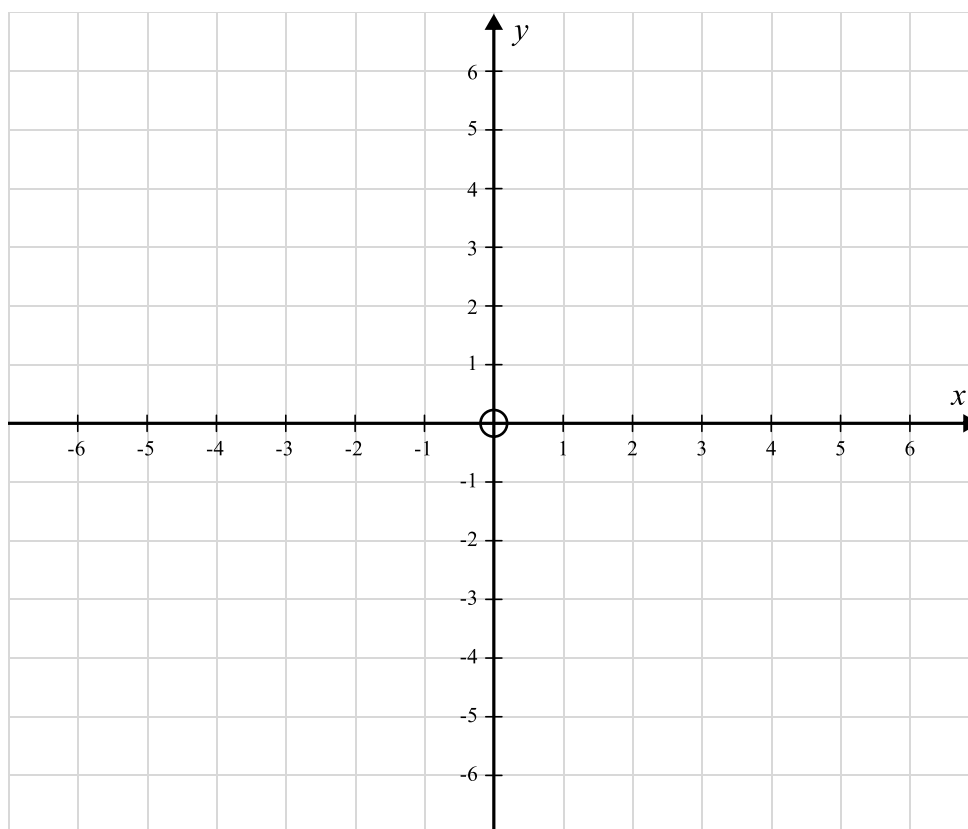
$$y < 2x$$

$$y \geq -3$$

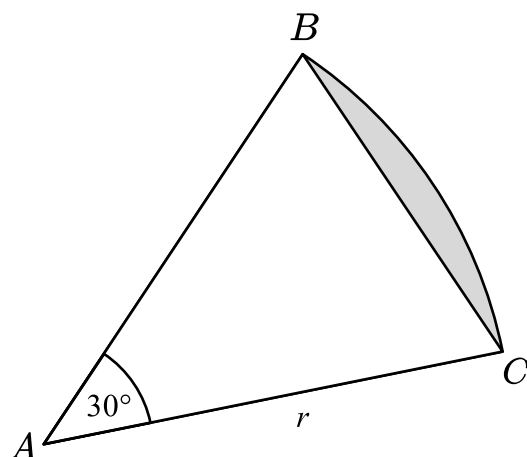
$$2x + y < 2$$

Label the region R .

[3 marks]



20 ABC is a sector of a circle.



The area of the shaded segment is $3\pi - 9 \text{ cm}^2$.

Find the radius of the circle, r .

[5 marks]

Answer _____ cm

21 For $x \geq 0$, the functions f and g are such that

$$f(x) = 3x + 4$$

$$g(x) = 2\sqrt{x} + 1$$

$$x \geq 0$$

(a) Circle the expression for $g^{-1}(x)$

[1 mark]

$$\sqrt{\frac{x-1}{2}}$$

$$2(x-1)^2$$

$$\left(\frac{x-1}{2}\right)^2$$

$$\left(\frac{x}{2} - 1\right)^2$$

(b) Solve $gf(x) = 9$

[3 marks]

Answer $x =$ _____

22 Work out $\sqrt{1\frac{7}{25}} - \frac{1}{\sqrt{2}}$

Give your answer in the form $\frac{a\sqrt{2}}{b}$ where a and b are integers.

[4 marks]

Answer $x =$ _____

23 Show that $(2x + 1)(x + 3)(x - 4) \equiv ax^3 + bx^2 + cx + d$ where $ad + b = c$.

[3 marks]

Answer _____

24 (a) x is an acute angle.

Which statement is true?

Tick one box.

[1 mark]

☐

$-1 < \sin x < 1$

☐

$-1 < \sin x < 1$

☐

$0 < \sin x < 1$

☐

$-0.5 < \sin x < 0.5$

(b) y is an acute angle.

Complete the inequality for y .

[1 mark]

$\tan y > \underline{\hspace{2cm}}$

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