



THIRD SPACE
LEARNING

Mathematics

Paper 1

(Non-Calculator)

Higher Tier

Edexcel GCSE

SET 4

Mathematics Paper 1 (Non-Calculator) Higher Tier Edexcel

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.

Question	Mark
1	
2	
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21	

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.

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 Write 132 as a product of its prime factors.

(Total for Question 1 is 2 marks)

- 2 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.

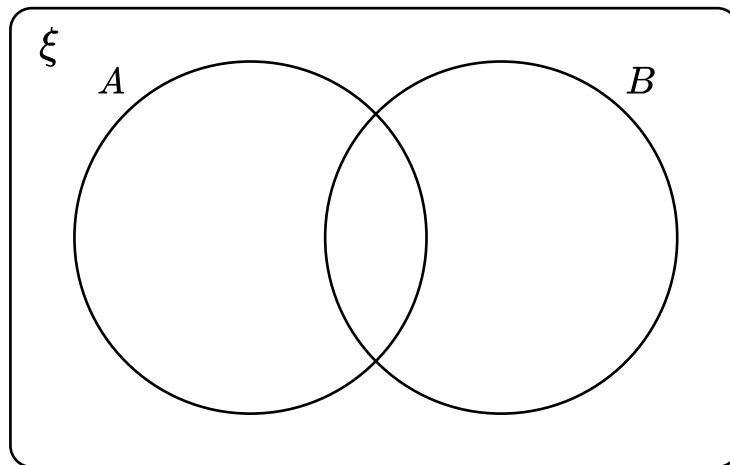
(Total for Question 2 is 4 marks)

3 $\xi = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12\}$

$A = \{\text{even numbers}\}$

$B = \{\text{factors of 12}\}$

(a) Complete the Venn diagram for this information.



(3)

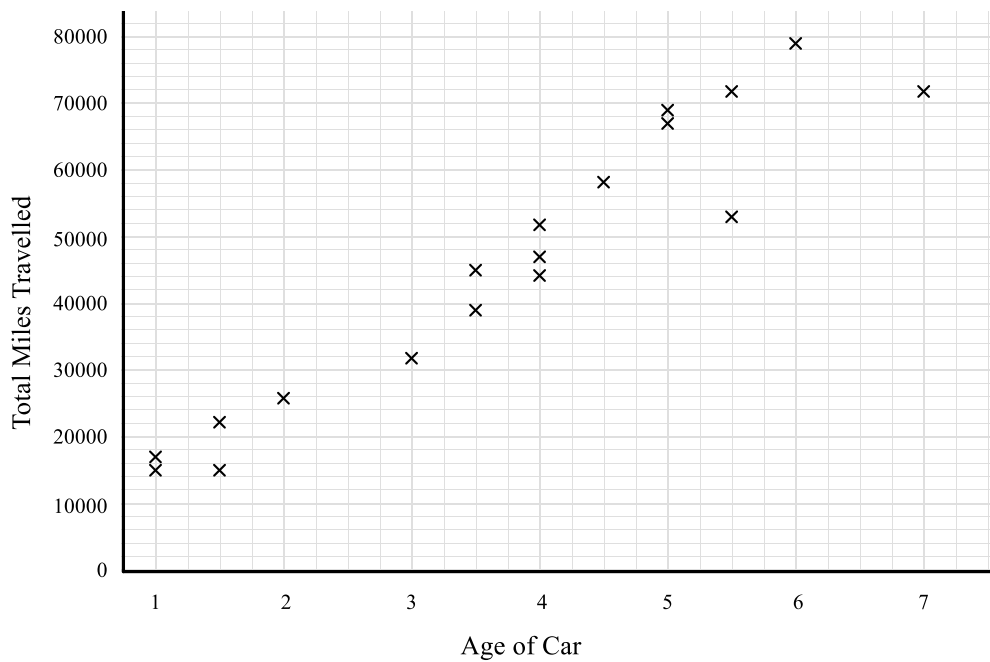
(b) A number is chosen at random from the universal set ξ .

Find the probability that this number is in the set $A \cup B$.

(2)

(Total for Question 3 is 5 marks)

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



(a) Describe the relationship between the age of a car and the total distance it has travelled.

(1)

(b) Another car is 2.5 years old.
Using the scatter graph, find an estimate for the total distance travelled by this car.

(2)

(Total for Question 4 is 3 marks)

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

(3)

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

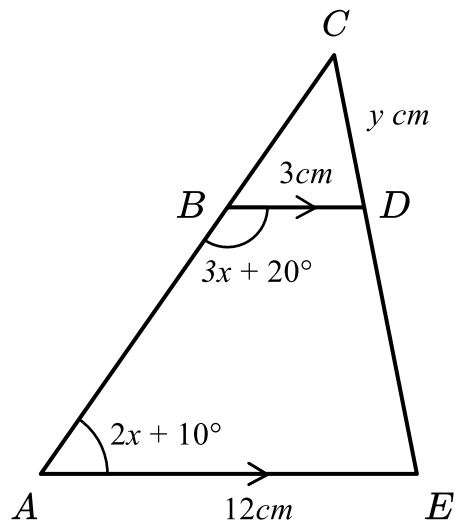
(2)

(c) Solve $x^2 + 3x - 40 = 0$

(1)

(Total for Question 5 is 6 marks)

6 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)

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

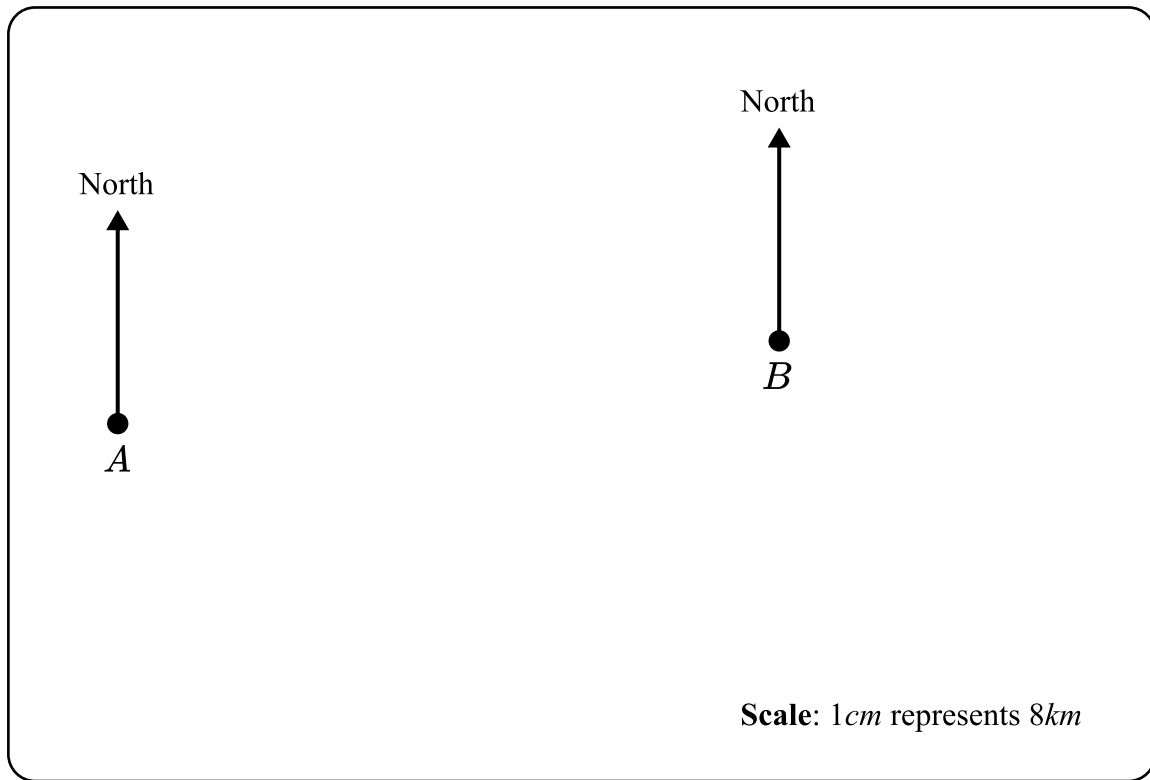
(2)

(Total for Question 6 is 5 marks)

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

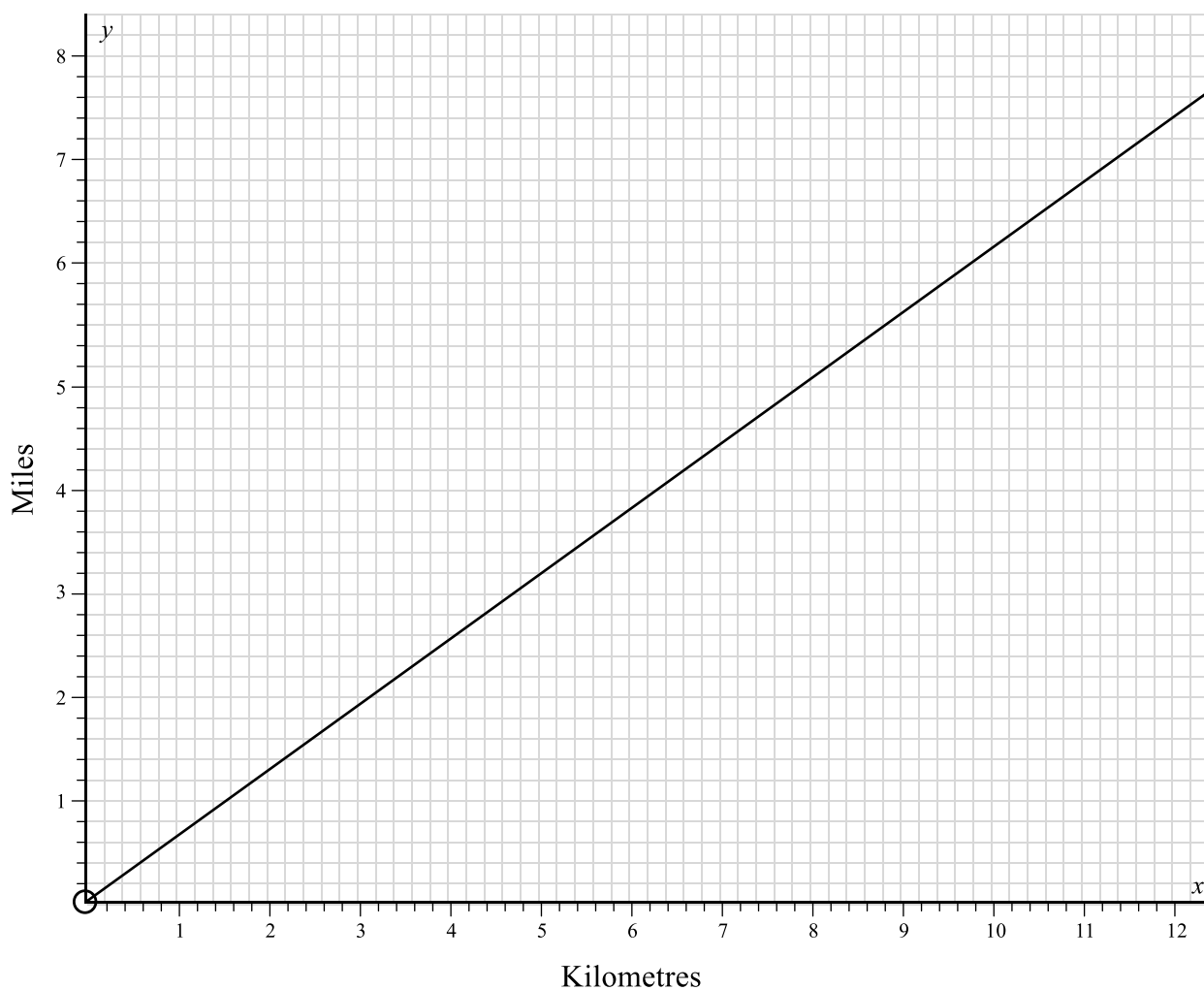
The scale is 1 cm represents 8 km .

Livvy needs to get to a location between town A and town B that is on a bearing of 75° from town A and is 32 km from town B . Mark the location on the map and label it C .



(Total for Question 7 is 3 marks)

8 Here is a conversion graph for kilometres and miles.



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

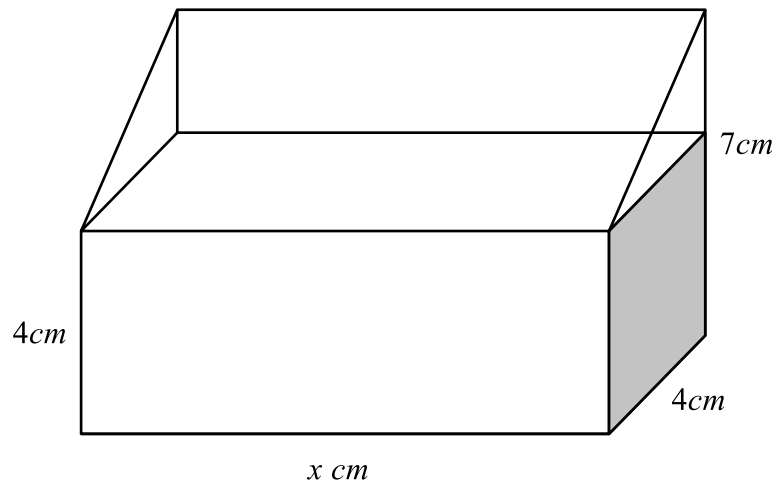
Yussef is travelling at 25 metres per second.

Is Yussef breaking the speed limit?

Show how you decide.

(Total for Question 8 is 3 marks)

- 9 Here is a 3D shape made from a cuboid and a triangular prism.



The volume of the shape is 198cm^3 .

Work out the length, x , of the shape.

cm

(Total for Question 9 is 4 marks)

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

(2)

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

(3)

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

(2)

(Total for Question 10 is 7 marks)

11 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.

Number of hours (h)	Cumulative frequency
$30 < h \leq 35$	
$30 < h \leq 40$	
$30 < h \leq 45$	
$30 < h \leq 50$	
$30 < h \leq 55$	
$30 < h \leq 60$	

(1)

(b) On the grid opposite, draw a cumulative frequency graph for your completed table.

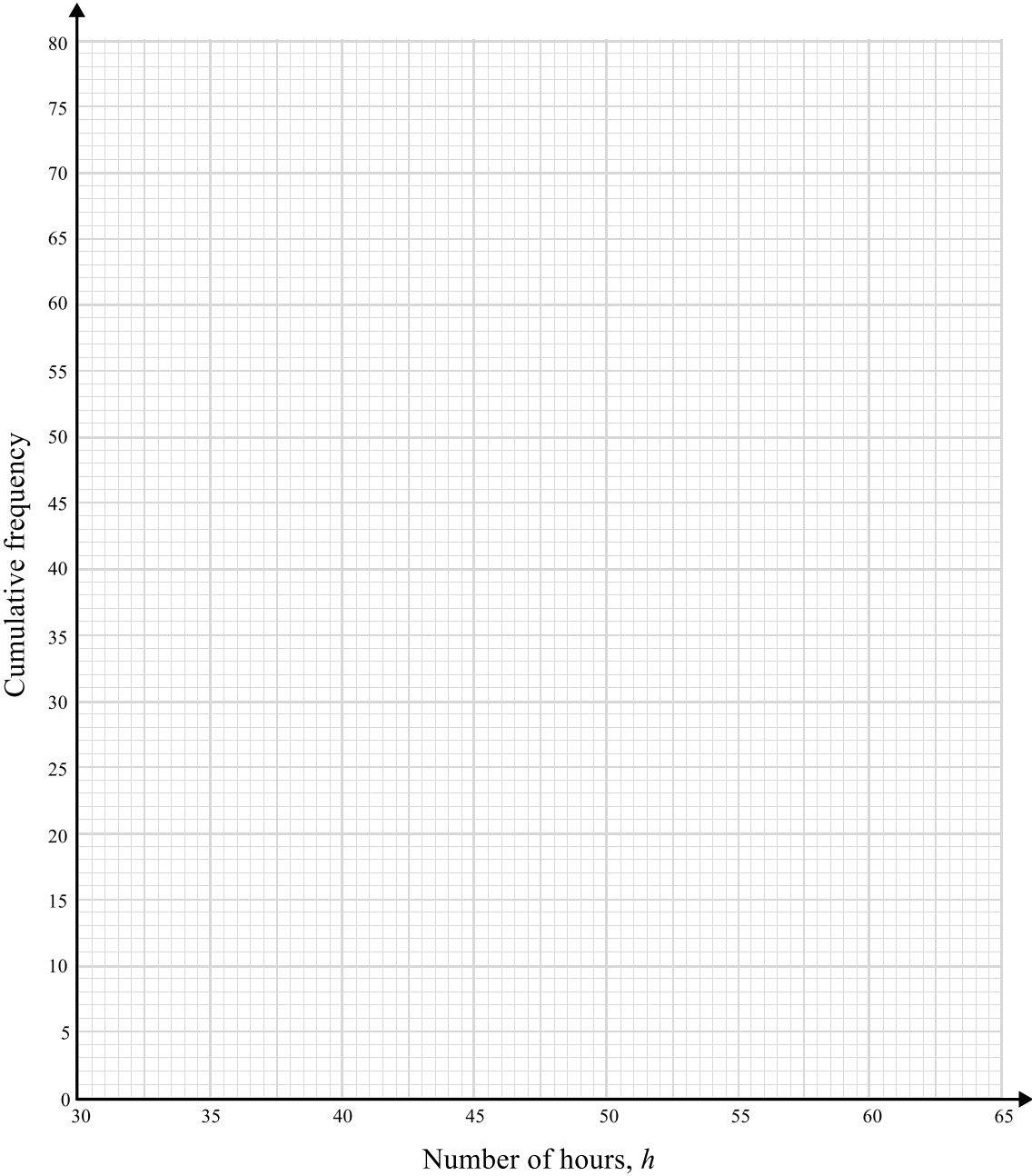
(2)

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

Is Jana correct?

You must show how you get your answer.

(3)



(Total for Question 11 is 6 marks)

12 y is inversely proportional to x

Complete the table of values.

x	120	60		3
y	1		5	

(Total for Question 12 is 3 marks)

13 Using algebra, prove that $0.0\dot{8}\dot{3} \times 0.\dot{4}$ is equivalent to $\frac{1}{27}$.

(Total for Question 13 is 3 marks)

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

(Total for Question 14 is 3 marks)

15 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} .

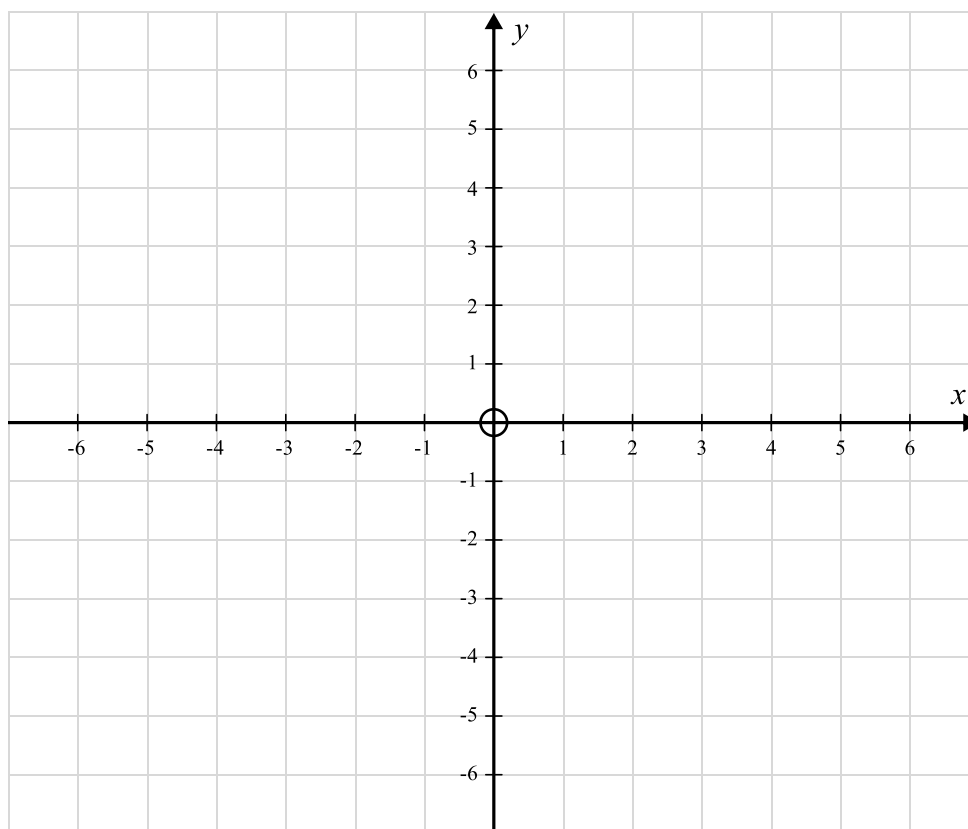
(Total for Question 15 is 2 marks)

- 16** On the grid show, by shading, the region that satisfies all of these inequalities.
Label the region R .

$$y < 2x$$

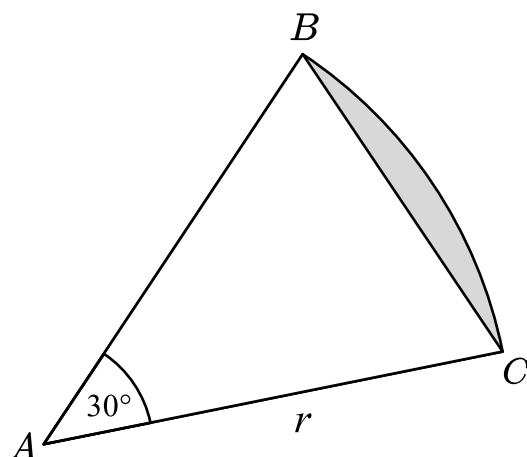
$$y \geq -3$$

$$2x + y < 2$$



(Total for Question 16 is 3 marks)

17 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 .

 cm

(Total for Question 17 is 5 marks)

18 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) Find $g^{-1}(x)$

$$g^{-1}(x) = \text{-----}$$

(2)

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

$$x = \text{-----}$$

(3)

(Total for Question 18 is 5 marks)

- 19** Show that $\frac{10 - \sqrt{20}}{3 + \sqrt{5}}$ can be written in the form $a + b\sqrt{5}$, where a and b are integers.

(Total for Question 19 is 4 marks)

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

(Total for Question 20 is 4 marks)

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