

Edexcel

GCSE

Mathematics

H

SET B – Paper 1 Higher Tier (Non-Calculator)

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Time allowed: 1 hour 30 minutes

You must have:

- Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser.



You may not use a calculator

Instructions

- Use **black** ink or black ball-point pen.
- Answer **all** questions.
- Answer the questions in the spaces provided – *there may be more space than you need.*
- **Calculators may not be used.**
- Diagrams are NOT accurately drawn, unless otherwise indicated.
- You must **show all your working out.**

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.*
- 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.

Name:

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages of your working.

1 $f(x) = x - 3$

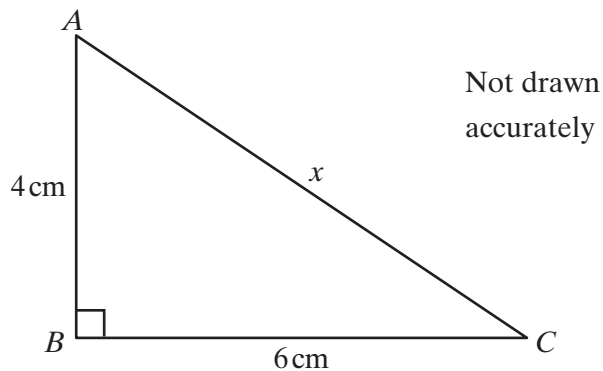
Write down an expression for $f^{-1}(x)$

(Total for Question 1 is 1 mark)

2 Write down the roots of the equation $(x - 2)(x + 3) = 0$

(Total for Question 2 is 1 mark)

3 Here is a right-angled triangle ABC .



Work out the **exact** value of the length x .

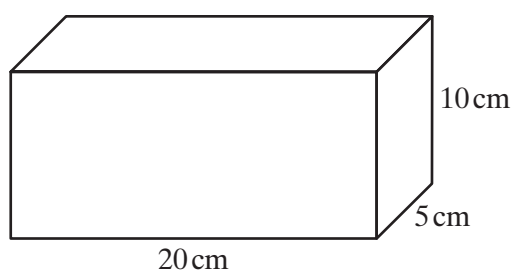
$x =$ cm

(Total for Question 3 is 2 marks)

4 Solve $3(x - 2) + 4 = \frac{x}{2}$

(Total for Question 4 is 3 marks)

5 Work out the surface area of the cuboid shown.



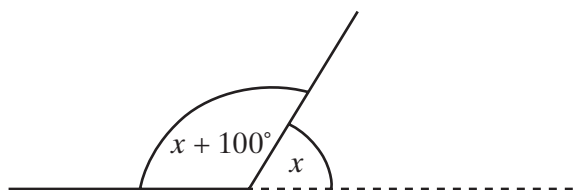
..... cm²

(Total for Question 5 is 3 marks)

6 Expand and simplify $4(x + 1) - 2(3x - 4)$

(Total for Question 6 is 3 marks)

7 Part of a regular polygon is shown.



Not drawn
accurately

How many sides does the polygon have?

(Total for Question 7 is 3 marks)

8 **(a)** Write 2.3×10^5 as an ordinary number.

.....
(1)

(b) Write 0.0005 in standard form.

.....
(1)

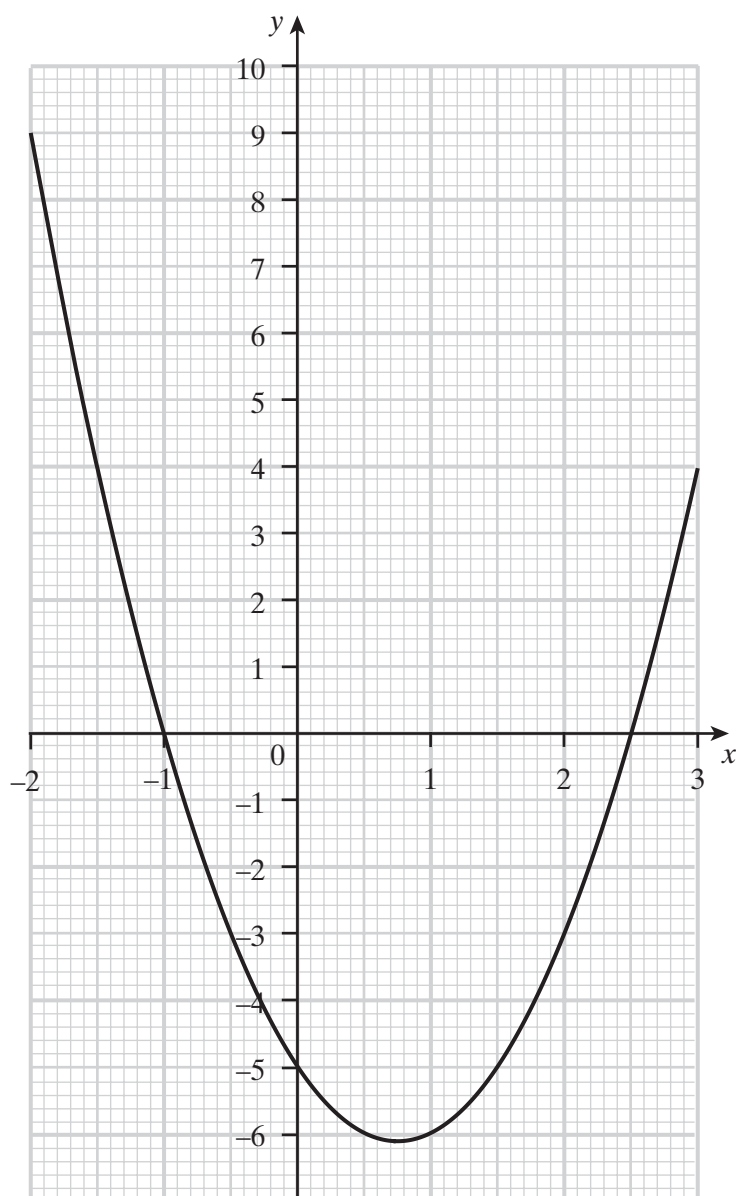
(c) Work out $2 \times 10^4 \times 8 \times 10^3$

Give your answer in standard form.

.....
(2)

(Total for Question 8 is 4 marks)

- 9 The graph of $y = 2x^2 - 3x - 5$ is shown.



- (a) Write down the values of x when $y = 4$.

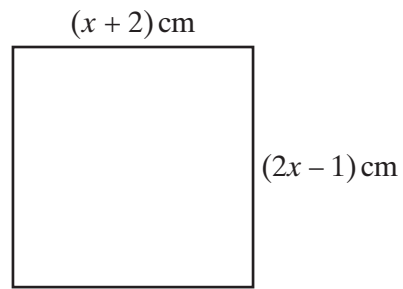
.....
(2)

- (b) Write down the coordinates of the minimum point.

.....
(1)

(Total for Question 9 is 3 marks)

- 10 Here is a square.



Not drawn
accurately

Work out the area.

You **must** show your working.

..... cm^2

(Total for Question 10 is 5 marks)

- 11 Expand $(x + 1)^2(x - 3)$

.....
(Total for Question 11 is 3 marks)

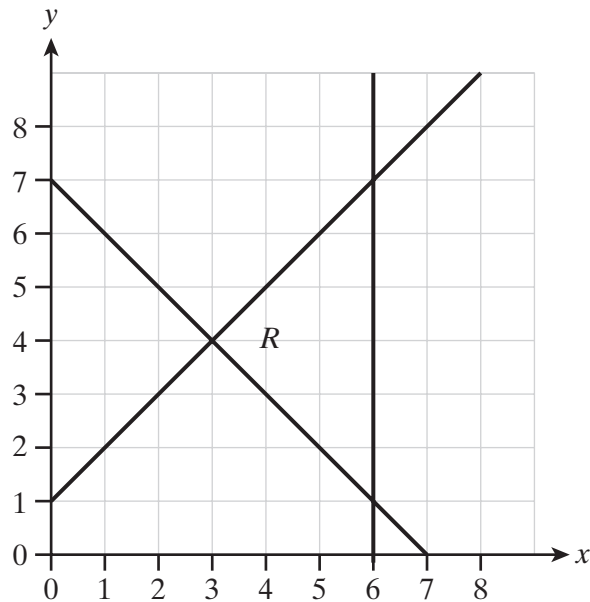
- 12 A cylinder has a base diameter that is $\frac{1}{3}$ of the height.

The volume of the cylinder is 48π

Work out the **radius** of the base.

(Total for Question 12 is 3 marks)

13



Write down the three inequalities that define the region R .

(Total for Question 13 is 3 marks)

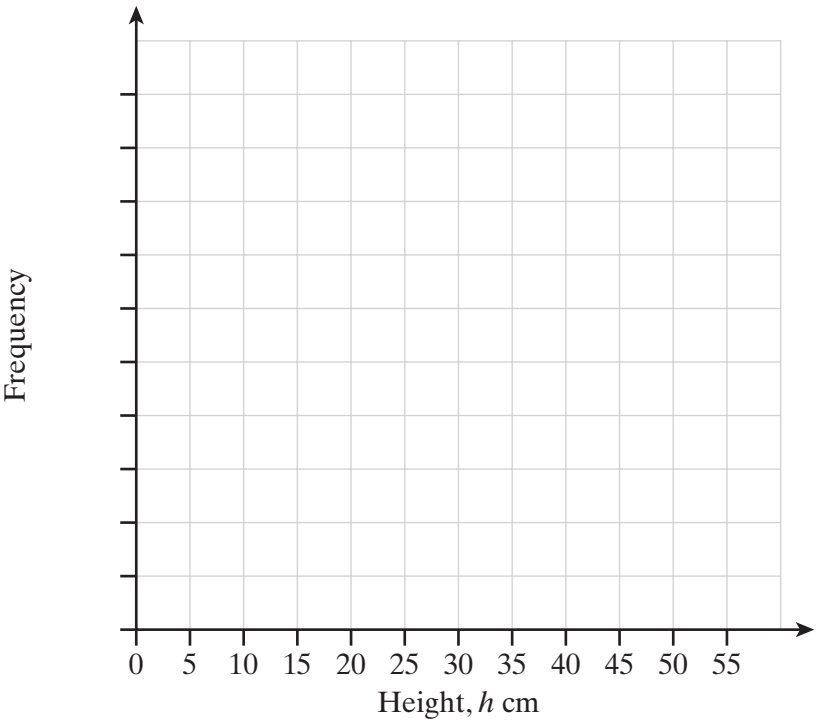
14 Expand and simplify $(3 + \sqrt{2})(9 - \sqrt{8})$

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

(Total for Question 14 is 3 marks)

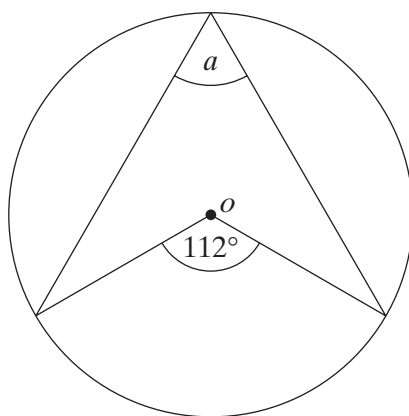
15 Draw a histogram for the data below.

Height, h cm	Frequency
$5 \leq h < 10$	15
$10 \leq h < 20$	35
$20 \leq h < 35$	30
$35 \leq h < 45$	15
$45 \leq h < 50$	5



(Total for Question 15 is 3 marks)

- 16 (a) O is the centre of the circle.



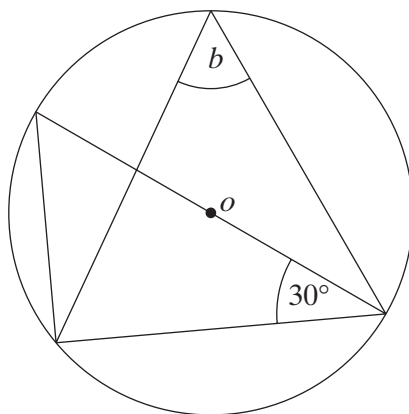
Not drawn
accurately

Write down the size of angle a in degrees.

.....°

(1)

- (b) O is the centre of the circle.



Not drawn
accurately

Write down the size of angle b in degrees.

.....°

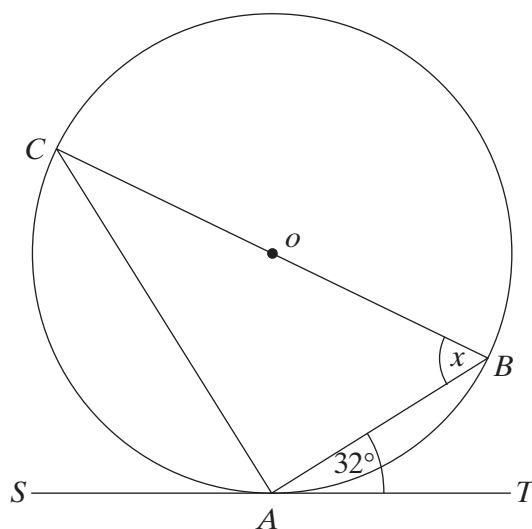
(1)

(c) ABC are points on the circumference of a circle, centre O .

SAT is a tangent.

BC is a diameter.

Angle $BAT = 32^\circ$



Not drawn
accurately

Work out the size of angle CBA , marked x on the diagram.

You **must** show your working, which may be on the diagram.

$x = \dots\dots\dots^\circ$

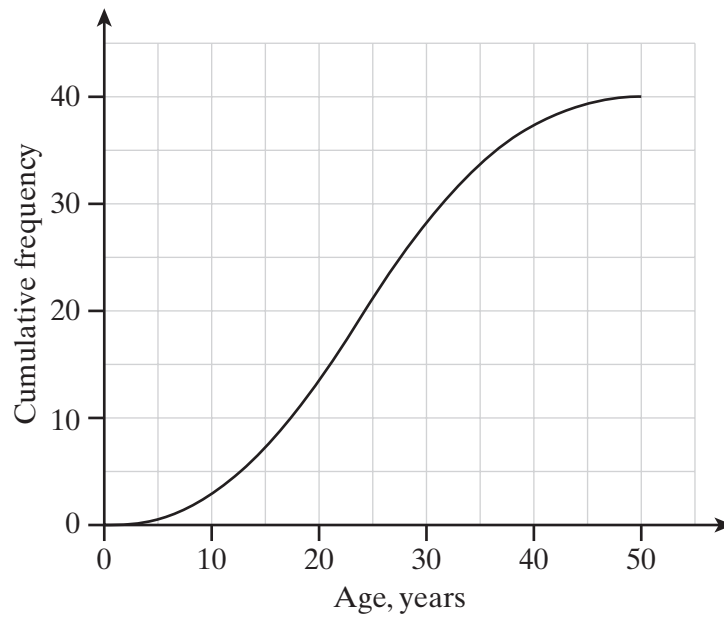
(3)

(Total for Question 16 is 5 marks)

17 Work out $64^{\frac{2}{3}}$

(Total for Question 17 is 2 marks)

- 18 The cumulative frequency diagram shows the ages of people at a wedding.



- (a) Write down an estimate of the median age.

.....

(1)

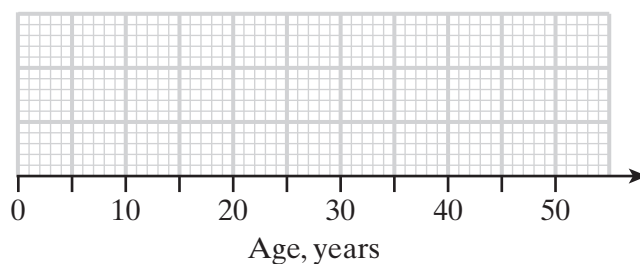
- (b) Work out an estimate of the interquartile range.

.....

(2)

- (c) The youngest person at the wedding was 5 years old.

Draw a box plot for the data.



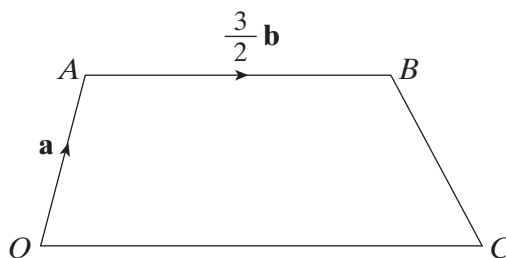
(3)

(Total for Question 18 is 6 marks)

- 19 $OABC$ is a trapezium.

$$\overrightarrow{OA} = \mathbf{a}$$

$$\overrightarrow{AB} = \frac{3}{2}\mathbf{b}$$



Not drawn
accurately

- (a) Write down the vector \overrightarrow{OB} in terms of \mathbf{a} and \mathbf{b} .

(1)

(b) $\overrightarrow{BC} = -\mathbf{a} + \frac{1}{2}\mathbf{b}$

Work out the vector \overrightarrow{OC} .

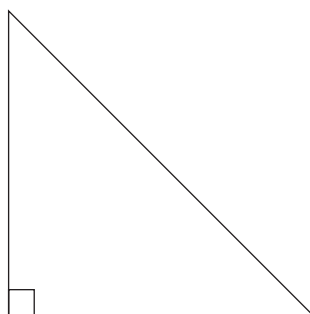
(2)

(Total for Question 19 is 3 marks)

- 20 Write the recurring decimal $3.733333\dots$ as a mixed number.

(Total for Question 20 is 3 marks)

- 21 The area of a right-angled isosceles triangle is 9 cm^2



Not drawn
accurately

Work out the perimeter of the triangle.

Give your answer in the form $a + b\sqrt{c}$, where a , b and c are integers.

(Total for Question 21 is 5 marks)

22 A bag contains 10 counters.

7 of them are red, 3 of them are blue.

Two counters are taken from the bag.

Work out the probability that they are different colours.

(Total for Question 22 is 4 marks)

23 Simplify fully $\frac{4x^2 - 4x - 15}{2x + 8} \times \frac{2x^2 + 5x - 12}{4x^2 - 9}$

(Total for Question 23 is 4 marks)

24 $A(3, 10)$ and $B(7, 8)$ are two points.

Work out the equation of the line that is

perpendicular to AB

passes through the midpoint of AB .

(Total for Question 24 is 5 marks)

TOTAL FOR PAPER IS 80 MARKS
