Name ..... Class .....

Calculator Crossover Paper 3

GCSE Mathematics · Foundation and Higher

40 marks · 45 minutes · Calculator

1 The number of people at a concert is 380, correct to the nearest 10.

Write down the error interval for the number of people, n, at the concert.

..... **(2)**

[Question 1: 2 marks]

2 (a) Simplify $m^5 \times m^3$

..... **(1)**

(b) Simplify $\frac{12a^8}{4a^3}$

..... **(1)**

(c) Simplify fully $(3x^2y)^3$

..... **(2)**

[Question 2: 4 marks]

3 The mass of the Earth is 5.97×10^{24} kg.

The mass of the Moon is 7.35×10^{22} kg.

(a) Write 7.35×10^{22} as an ordinary number.

..... **(1)**

(b) How many times greater is the mass of the Earth than the mass of the Moon?
Give your answer correct to 1 decimal place.

..... **(2)**

[Question 3: 3 marks]

4 Solve $\frac{5x + 3}{4} = 2x - 6$

You must show all your working.

$x =$ ..... **(3)**

[Question 4: 3 marks]

5 The price of an electric car increased by 3.5%.

After the increase, the price of the car was £30 222.

Work out the price of the car before the increase.

£ ..... **(3)**

[Question 5: 3 marks]

6 Here are the first four terms of an arithmetic sequence.

4 11 18 25

(a) Find an expression, in terms of n, for the nth term of this sequence.

..... **(2)**

(b) Find the first term of the sequence that is greater than 200

..... **(2)**

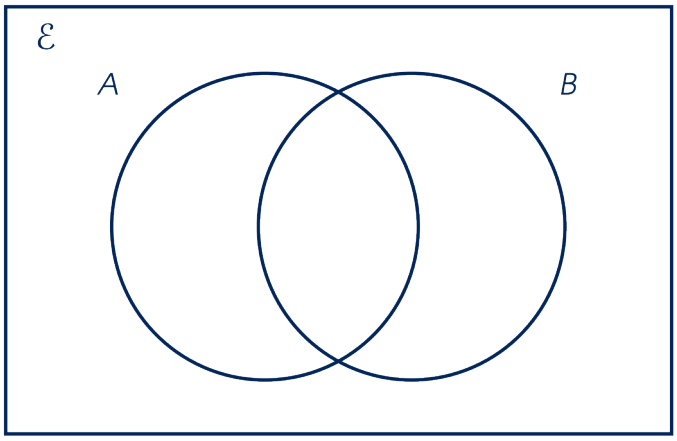
[Question 6: 4 marks]

7 $\mathcal{E}$ = {1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15}

A = {multiples of 3}

B = {factors of 30}

(a) Complete the Venn diagram.



(2)

(b) A number from 1 to 15 is chosen at random.

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

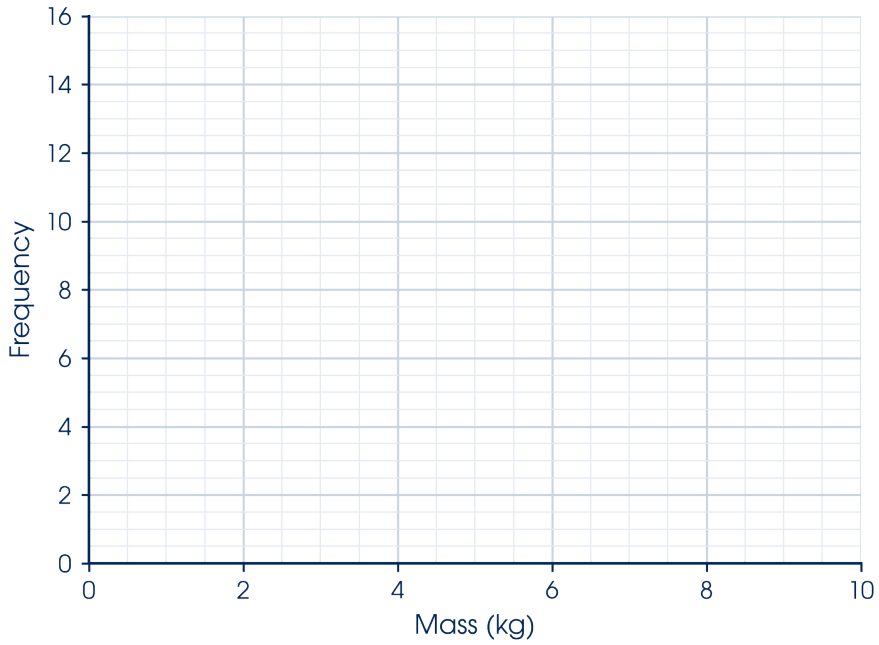
..... **(1)**

[Question 7: 3 marks]

8 The table gives information about the masses, m kg, of 40 parcels.

Mass (m kg)	Frequency
$0 < m \leq 2$	4
$2 < m \leq 4$	11
$4 < m \leq 6$	15
$6 < m \leq 8$	7
$8 < m \leq 10$	3

(a) On the grid, draw a frequency polygon for the information in the table.



(2)

(b) Write down the modal class.

..... **(1)**

(c) What percentage of the parcels have a mass of more than 6 kg?

..... % **(1)**

[Question 8: 4 marks]

9 A wooden crate has a weight of 180 newtons.

The crate rests on horizontal ground.

The base of the crate is a rectangle measuring 0.4 m by 0.35 m.

$$\text{pressure} = \frac{\text{force}}{\text{area}}$$

Work out the pressure, in newtons/m^2, on the ground due to the crate.

Give your answer correct to 3 significant figures.

..... newtons/m^2 **(3)**

[Question 9: 3 marks]

10 (a) Factorise $x^2 + 3x - 28$

..... **(2)**

(b) Hence, solve $x^2 + 3x - 28 = 0$

..... **(1)**

[Question 10: 3 marks]

11 *ABC* is an isosceles triangle.

$AB = AC = 8.5$ cm.

$BC = 10$ cm.

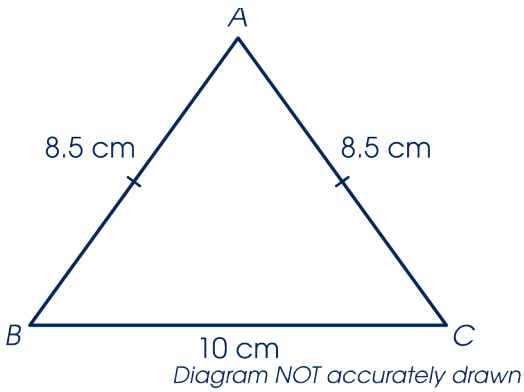


Diagram NOT accurately drawn

Work out the area of triangle *ABC*.

Give your answer correct to 1 decimal place.

..... cm^2 **(4)**

[Question 11: 4 marks]

12 Quadrilateral *ABCD* is mathematically similar to quadrilateral *EFGH*.

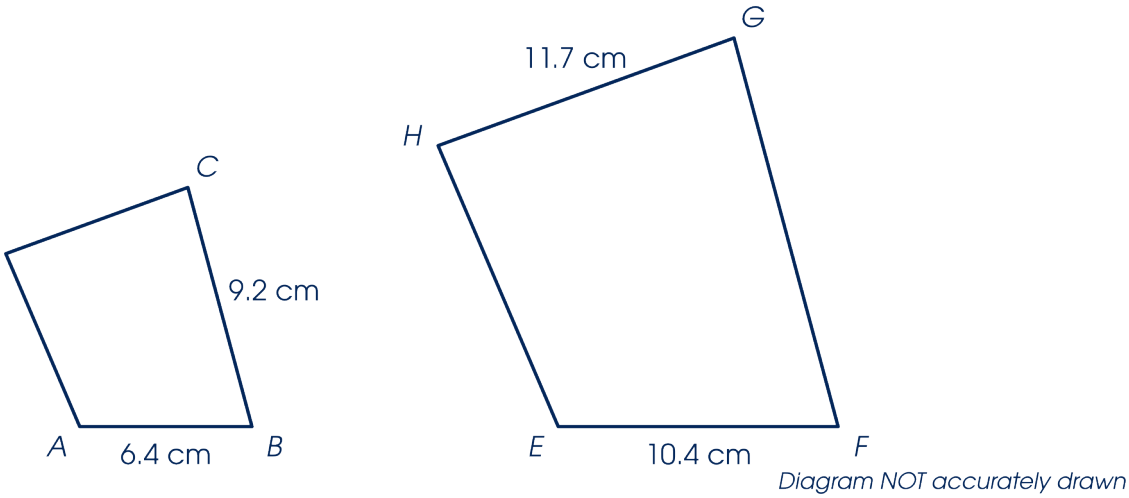


Diagram NOT accurately drawn

(a) Work out the length of *FG*.

..... cm **(2)**

(b) Work out the length of *CD*.

..... cm **(2)**

[Question 12: 4 marks]

TOTAL FOR PAPER IS 40 MARKS