

Silver Level

Model Answers 1

Level	IGCSE
Subject	Maths
Exam Board	Edexcel
Difficulty Level	Silver
Booklet	Model Answers 1

Time Allowed: 59 minutes

Score: / 49

Percentage: /100

- 1 Ella invested \$8000 for 3 years at 5% per annum **compound interest**.

Calculate the value of her investment at the end of 3 years.

5% increase = a multiplication by 1.05

$$\text{yr 1: } 8000 \times 1.05 = 8400$$

$$\text{yr 2: } 8400 \times 1.05 = 8820$$

$$\text{yr 3: } 8820 \times 1.05 = \underline{\underline{9261}}$$

• \uparrow total amount
at the end
of 3 years

\$ 9261

(Total for Question is 3 marks)

2 The table shows information about the weights of 80 parcels.

Weight (w kg)	Frequency	midpoint
$0 < w \leq 2$	8	1
$2 < w \leq 4$	14	3
$4 < w \leq 6$	26	5
$6 < w \leq 8$	17	7
$8 < w \leq 10$	10	9
$10 < w \leq 12$	5	11

(a) Work out an estimate for the total weight of the 80 parcels.

calculate midpoint by lower bound of weight + upper bound, divided by 2

estimate by multiplying frequency and midpoint

$$(8 \times 1) + (14 \times 3) + (26 \times 5) + (17 \times 7) + (10 \times 9) + (5 \times 11)$$

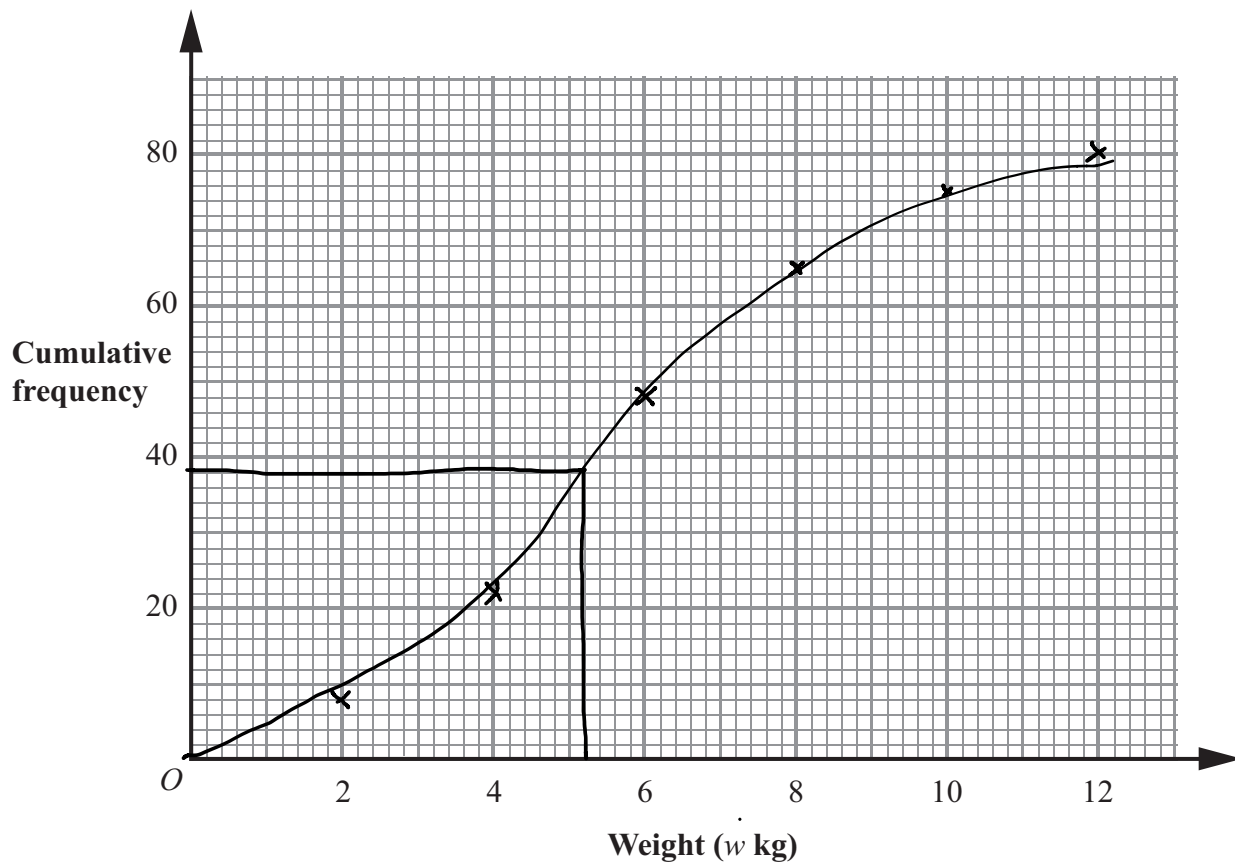
$$= \underline{\underline{444}} \quad \underline{\underline{444}} \text{ kg}$$

(3)

(b) Complete the cumulative frequency table.

Weight (w kg)	Cumulative frequency
$0 < w \leq 2$	8
$0 < w \leq 4$	22
$0 < w \leq 6$	48
$0 < w \leq 8$	65
$0 < w \leq 10$	75
$0 < w \leq 12$	80

(c) On the grid, draw a cumulative frequency graph for your table.



(2)

(d) Use the graph to find an estimate for the number of parcels which weighed less than 5.2 kg.

.....
(2)

(Total for Question is 8 marks)

3 Solve $\frac{2x-1}{4} + \frac{x-1}{5} = 2$

Multiply out fractions
 $\times 4, \times 5$

$$5(2x-1) + 4(x-1) = 2(4)(5)$$

Multiply out brackets

$$10x - 5 + 4x - 4 = 40$$

collect like terms

$$14x - 9 = 40$$

$$14x = 49$$

$$2x = 7$$

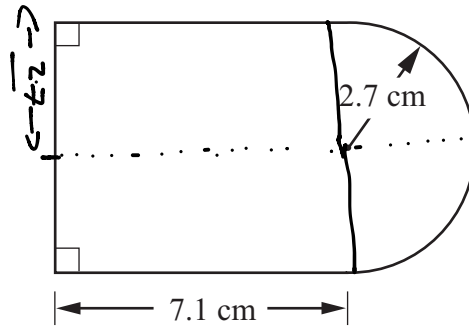
$$x = \underline{\underline{3.5}}$$

$$x = \underline{\underline{3.5}}$$

(Total for Question is 4 marks)

4 (a) Here is a shape made from a rectangle and a semicircle.

Diagram **NOT** accurately drawn



The length of the rectangle is 7.1 cm.
The radius of the semicircle is 2.7 cm.

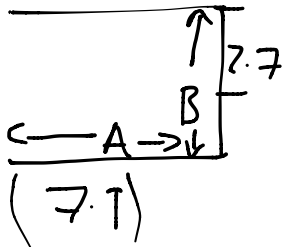
Work out the area of the shape.
Give your answer correct to 3 significant figures.

D

$$\text{area of a circle} = \pi r^2$$

$$\therefore \text{area of a semi-circle} = \frac{1}{2} \pi r^2$$

$$r = 2.7 \therefore A_c = \frac{(2.7)^2 \pi}{2} = 3.645\pi$$



$$A_r = A \times B$$

$$= (7.1) \times (2 \times 2.7)$$

$$\frac{49.8}{(4)} \text{ cm}^2$$

$$= 38.34$$

$$\text{Total area} = A_c + A_r$$

$$= 3.645\pi + 38.34$$

$$\approx \underline{49.8}$$

(b) Here is another shape made from a rectangle and a semicircle.

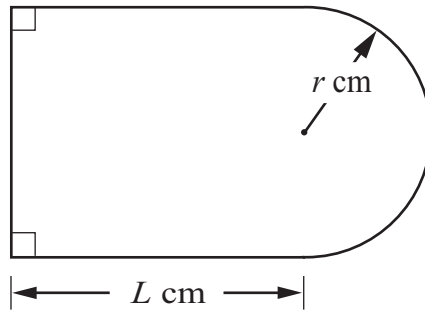


Diagram NOT accurately drawn

The length of the rectangle is L cm.
The radius of the semicircle is r cm.

The perimeter, P cm, of the shape is given by the formula

$$P = \pi r + 2L + 2r$$

Make r the subject of the formula $P = \pi r + 2L + 2r$.

re arrange for r

$$P - 2L = \pi r + 2r$$

factorise r

$$P - 2L = r(\pi + 2)$$

Divide by $\pi + 2$

$$r = \frac{P - 2L}{\pi + 2}$$

$$r = \frac{P - 2L}{\pi + 2} \dots\dots\dots$$

(3)

(Total for Question is 7 marks)

- 5 Here are seven counters.
Each counter has a number on it.



Ali puts the seven counters in a bag.
He takes, at random, a counter from the bag and does **not** replace the counter.
He then takes, at random, a second counter from the bag.

Calculate the probability that

- (i) the number on the second counter is 2 more than the number on the first counter,

$$\frac{1}{7} \times \frac{2}{6} = \frac{1}{21}$$

← Second counter

↑ First counter

1/21

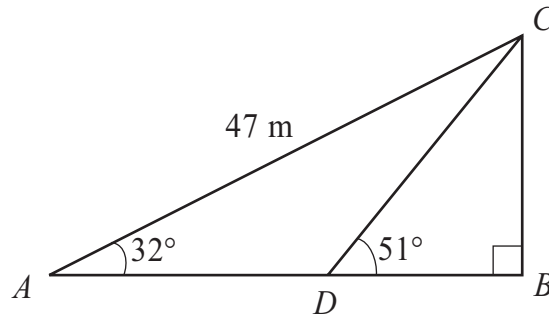
- (ii) the number on the second counter is 1 more than the number on the first counter.

$$\frac{1}{7} \times \frac{1}{6} \quad \text{or} \quad \frac{2}{7} \times \frac{3}{6}$$

$$\frac{1}{7} \times \frac{1}{6} + \frac{2}{7} \times \frac{3}{6} = \frac{7}{42} = \frac{1}{6}$$

(Total for Question is 5 marks)

6

Diagram **NOT** accurately drawn

Triangle ABC is right-angled at B .

Angle $BAC = 32^\circ$

$AC = 47$ m.

D is the point on AB such that angle $BDC = 51^\circ$

Calculate the length of BD .

Give your answer correct to 3 significant figures.

S^OH C^AH T^Oa



$$CB = 47 \cdot \sin(32)$$

$$\approx 24.906$$

$$\tan(51) = \frac{24.906}{BD}$$

$$\therefore BD = \frac{24.906}{\tan(51)} = 20.1686 \dots$$

$$\approx \underline{\underline{20.2}} \text{ m}$$

(Total for Question is 5 marks)

7 The diagram shows a trapezium $PQRS$.

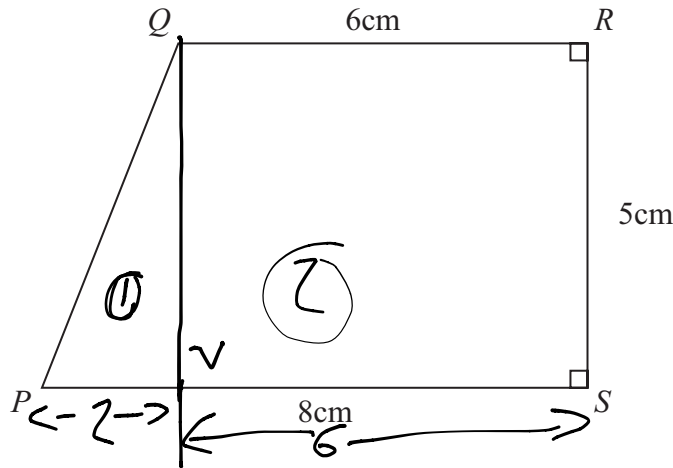


Diagram NOT accurately drawn

(a) Calculate the area of the trapezium $PQRS$.

$$\textcircled{1} \text{ Area} = \frac{1}{2} \times 2 \times 5 = 5$$

$$\textcircled{2} \text{ Area} = 5 \times 6 = 30$$

$$\textcircled{1} + \textcircled{2} = \underline{35}$$

$$\begin{array}{r} 35 \\ \hline (2) \end{array} \text{ cm}^2$$

(b) Calculate the length PQ .

Give your answer correct to 3 significant figures.

$$PQ^2 = QV^2 + VP^2$$

$$4^2 + 5^2 = 29$$

$$\begin{aligned} \sqrt{29} &= 5.38516... \\ &\approx \underline{\underline{5.39}} \text{ (3sf)} \end{aligned}$$

$$\begin{array}{r} 5.39 \\ \hline (4) \end{array} \text{ cm}$$

(Total for Question is 6 marks)

8 Six numbers have a mean of 5

Five of the numbers are

3 2 7 6 2

The other number is x .

Work out the value of x .

$$\text{Mean} = 5 \quad \therefore \frac{3+2+7+6+2+x}{6} = 5$$

$$\therefore 30 = 3+2+7+6+2+x$$

$$\therefore 30 = 20 + x \quad \therefore \underline{x = 10} \quad x = \underline{10}$$

(Total for Question is 3 marks)

9 (i) Solve the inequality $2x + 13 \geq 6$

$$2x \geq -7$$

$$x \geq \underline{-3.5}$$

$$x \geq \underline{-3.5}$$

(ii) n is a **negative** integer.

Write down all the values of n which satisfy $2n + 13 \geq 6$

$$n \geq -3.5$$

$$\text{and } n < 0$$

$$\therefore \underline{n = -1, -2, -3}$$

$$\underline{-1, -2, -3}$$

(Total for Question is 4 marks)

10 The table gives the diameters, in metres, of four planets.

Planet	Diameter (metres)
Mercury	4.88×10^6
Venus	1.21×10^7
Earth	1.28×10^7
Mars	6.79×10^6

(a) Which planet has the largest diameter?

earth as 10^7 is the largest exponent
& 1.28 is the largest coefficient

earth

(1)

(b) Write 6.79×10^6 as an ordinary number.

$6.79 \times 1,000,000$

6,790,000

(1)

(c) Calculate the difference, in metres, between the diameter of Venus and the diameter of Mercury.

Give your answer in standard form.

$$1.21 \times 10^7 - 4.88 \times 10^6$$

$$12.1 \times 10^6 - 4.88 \times 10^6$$

$$\underline{\underline{7.22 \times 10^6}}$$

7.22×10^6 metres

(2)

(Total for Question is 4 marks)