Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1 Change 7800 grams into kilograms.

7800 ÷ 1000 = 7.8 kilograms

7.8 kilograms

(Total for Question 1 is 1 mark)

2 Write 0.07 as a percentage.

0.07 × 100 = 7%

7 %

(Total for Question 2 is 1 mark)

3 Write 7.8365 correct to 2 decimal places.

The third decimal digit is 6 (≥ 5), so round up to 7.84

7.84

(Total for Question 3 is 1 mark)

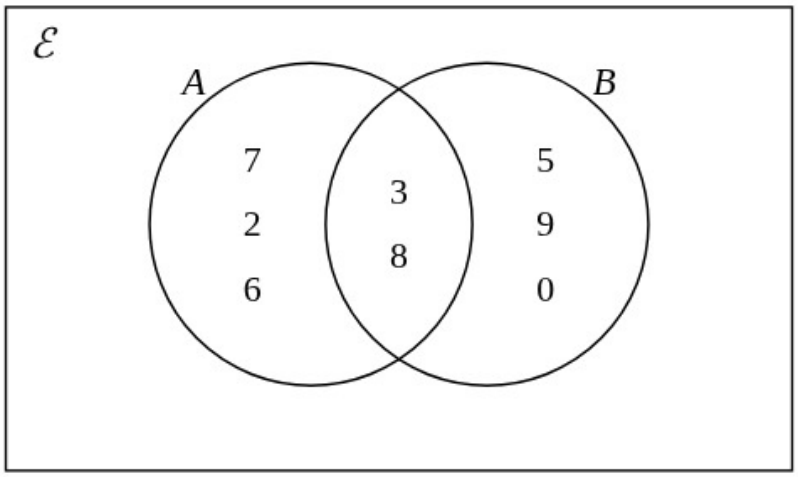
4 Work out $(-5)^2$

(−5) × (−5) = 25

25

(Total for Question 4 is 1 mark)

5 Here is a Venn diagram.



(a) Write down all the numbers in set A.

All numbers inside circle A

2, 3, 6, 7, 8

(2)

(b) Write down the numbers that are in set $A \cap B$.

Numbers in the overlap of A and B

3, 8

(1)

(Total for Question 5 is 3 marks)

6 Here are four digits.

8 2 4 3

(a) (i) Use two of these digits to make the smallest possible two-digit number.

23

(1)

(a) (ii) Use three of these digits to make the three-digit number closest to 300.

284 is 16 away from 300 (324 is 24 away)

284

(1)

Here are four different digits.

5 1 7 9

(b) (i) Put one digit in each box to make the largest total.
You may only use each digit once.

9	**5**	+	**7**	**1**	

95 + 71 = 166

(1)

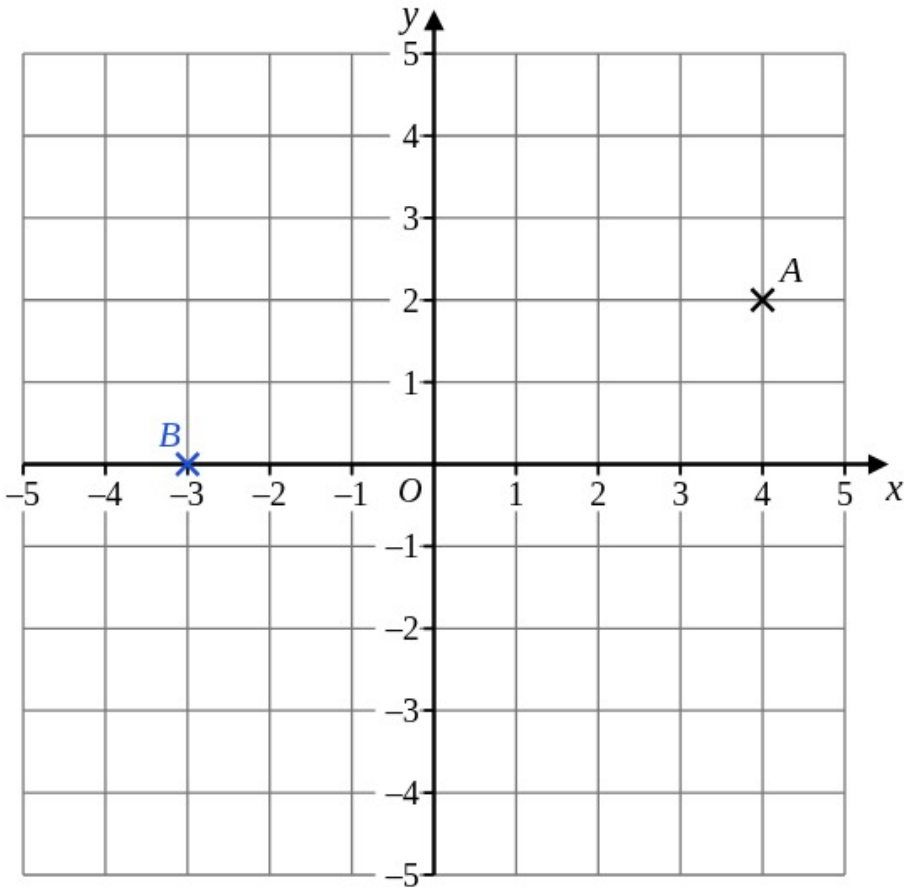
(b) (ii) Write down the total.

166

(1)

(Total for Question 6 is 4 marks)

7



(a) Write down the coordinates of point A.

x = 4, y = 2

(4 , 2)

(1)

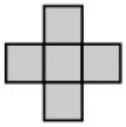
(b) On the grid, mark with a cross (×) the point (–3, 0).
Label this point B.

3 units left along the x-axis

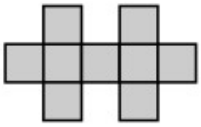
(1)

(Total for Question 7 is 2 marks)

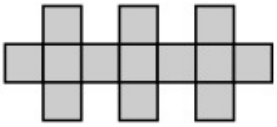
8 Here are some patterns made from squares.



Pattern number 1

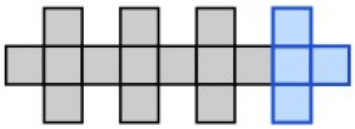


Pattern number 2



Pattern number 3

(a) The diagram below shows part of Pattern number 4.
Complete the diagram for Pattern number 4.



Pattern number 4

(1)

(b) Complete the table.

Pattern number	1	2	3	4	5
Number of squares	5	9	13	**17**	**21**

(1)

(c) Find the number of squares used for Pattern number 10.

41

(1)

(Total for Question 8 is 3 marks)

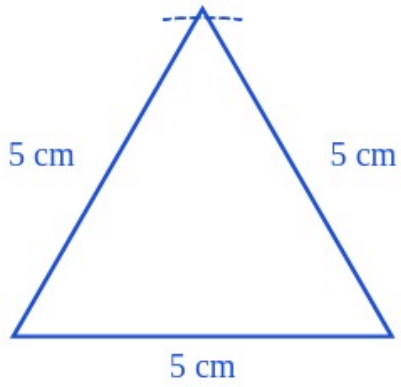
9 Two numbers are added together.
The answer is 15
Both the numbers are factors of 24
What are the two numbers?

Factors of 24: 1, 2, 3, 4, 6, 8, 12, 24. 3 + 12 = 15

3 and **12**

(Total for Question 9 is 2 marks)

10 Make an accurate drawing of an equilateral triangle of side length 5 cm.



Draw 5 cm base, use compasses set to 5 cm from each end to find top vertex.

(Total for Question 10 is 2 marks)

11 Here are three calculations.

The sum of 14 and 19	The difference between 57 and 29
The product of 9 and 4	

Which of these calculations has the biggest answer?
You must show how you got your answer.

14 + 19 = 33

57 − 29 = 28

9 × 4 = 36

Biggest is The product of 9 and 4 (36).

(Total for Question 11 is 3 marks)

12 Here is a bus timetable from a Park and Ride car park to a town centre.

Car park	Town centre
07 40	07 52
08 00	08 12
08 15	08 27
then every 15 minutes until	
18 15	18 27

Sadia gets to the car park at 07 45.
She catches the next bus to the town centre.

(a) What time should the bus get to the town centre?

Next bus after 07:45 is 08:00, arrives 08:12

08 12

(1)

Here is the bus timetable from the town centre to the car park.

(b) How many buses go from the town centre to the car park between 08 00 and 10 00?

Town centre	Car park
08 03	08 15
08 35	08 47
09 02	09 14
09 20	09 32
then every 15 minutes until	
19 20	19 32

08:03, 08:35, 09:02, 09:20, 09:35, 09:50 = 6 buses

6

(2)

Paul wants to leave the town centre after 17 30.
He is going to catch a bus to the car park.

(c) What is the time of the first bus Paul can catch from the town centre after 17 30?

Buses leave at 05, 20, 35, 50 past each hour → 17:35

17 35

(1)

(Total for Question 12 is 4 marks)

13 A charity made an appeal for money.
The charity put the information shown below on a poster.

> **Hunger appeal**
>
> • £3 will buy 5 meals for one person.
>
> • £100 will buy lunches for 80 school children for 5 days.

£3 will buy 5 meals for one person.

(a) Work out the cost of one of the meals.
Give your answer in pence.

300p ÷ 5 = 60p

60 ..... p

(2)

£100 will buy lunches for 80 school children for 5 days.

(b) Work out the cost of buying lunch for one school child for one day.

80 × 5 = 400 lunches. £100 ÷ 400 = £0.25 = 25p

25p (or £0.25) .....

(3)

(Total for Question 13 is 5 marks)

14

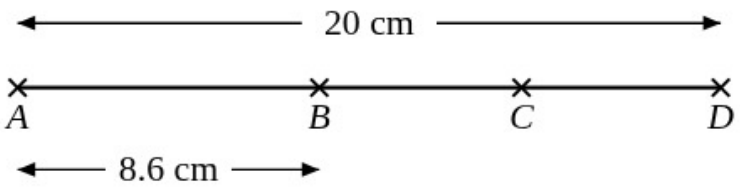


Diagram NOT accurately drawn

A, B, C and D are points on a straight line.
$AD = 20$ cm
$AB = 8.6$ cm
$BC = CD$
Work out the length of BC.

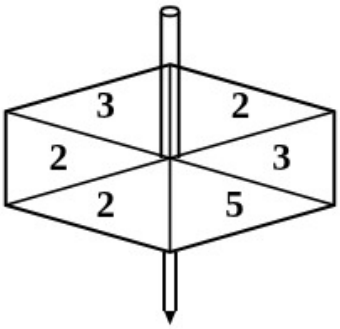
BD = 20 − 8.6 = 11.4 cm

BC = 11.4 ÷ 2 = 5.7 cm

5.7 cm

(Total for Question 14 is 3 marks)

15 Meela has a fair 6-sided spinner.
The sides of the spinner are numbered 2, 2, 2, 3, 3, 5.



Meela spins the spinner once.

(a) Which number is the spinner least likely to land on?

Only one 5

5

(1)

(b) From the following list, choose the word that best describes the likelihood that the spinner will land on 2.

impossible unlikely evens likely certain

Three 2s out of 6 = 1/2 (evens)

evens

(1)

(c) Write down the probability that the spinner will land on 3.

Two 3s out of 6 = 2/6 = 1/3

$\frac{2}{6}$ (or $\frac{1}{3}$)

(2)

(Total for Question 15 is 4 marks)

16 Tom is going to buy 25 plants to make a hedge.
Here is information about the cost of buying the plants.

Kirsty's Plants	**Hedge World**
£2.39 each	Pack of 25 £52.50 plus VAT at 20%

Tom wants to buy the 25 plants as cheaply as possible.
Should Tom buy the plants from Kirsty's Plants or from Hedge World?
You must show all your working.

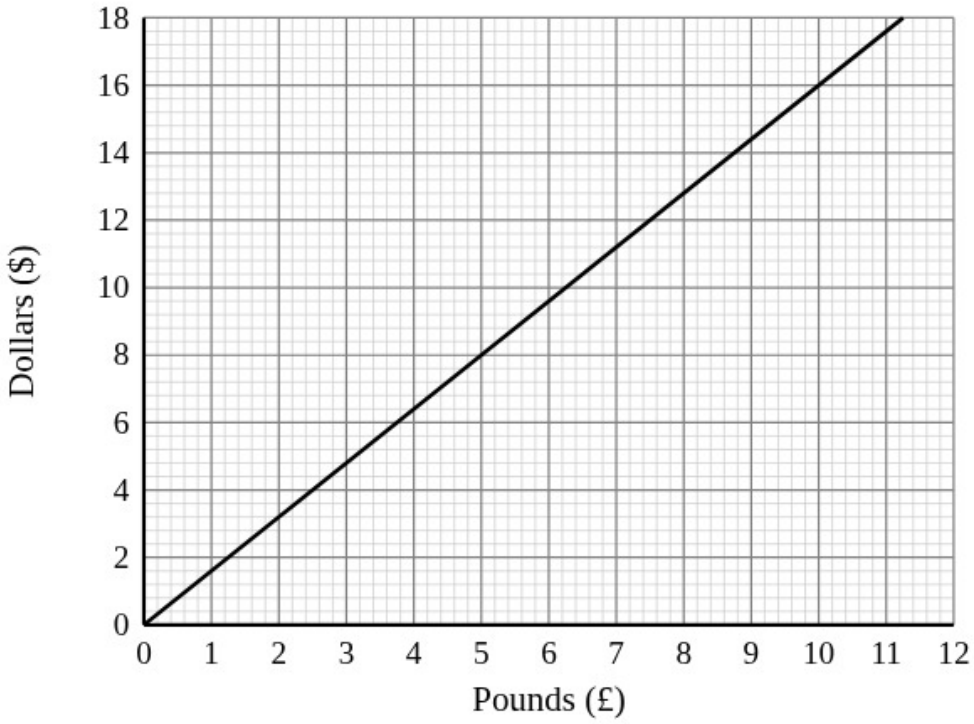
Kirsty's Plants: 25 × £2.39 = £59.75

Hedge World: £52.50 + 20% of £52.50 (£10.50) = £63.00

Kirsty's Plants is cheaper.

(Total for Question 16 is 5 marks)

17 You can use this conversion graph to change between pounds (£) and dollars ($).



(a) Use the conversion graph to change £5 to dollars.

£5 = $8

$ 8

(1)

Ella has $200 and £800
Her hotel bill is $600
Ella pays the bill with the $200 and some of the pounds.

(b) Use the conversion graph to work out how many pounds she has left.

Needs $600 − $200 = $400 more

At $8 = £5, $400 = 50 × £5 = £250

Left = £800 − £250 = £550

£ 550

(4)

(Total for Question 17 is 5 marks)

18

A pack of 9 toilet rolls costs £4.23
A pack of 4 toilet rolls costs £1.96
Which pack gives the better value for money?
You must show all your working.

423p ÷ 9 = 47p per roll. 196p ÷ 4

= 49p per roll. 47p < 49p so the pack of 9 is better value.

Pack of 9 (47p per roll vs 49p per roll)

(Total for Question 18 is 3 marks)

19 Dylan is driving from London to Newcastle.
He will drive a total distance of 240 miles.
Dylan leaves London at 09:30
It takes him $1\frac{1}{2}$ hours to travel the first 90 miles.

(a) Use this information to estimate the time Dylan will arrive in Newcastle.
You must show how you get your answer.

Speed = 90 ÷ 1.5 = 60 mph

Total time = 240 ÷ 60

= 4 hours. 09:30 + 4 hours

= 13:30

13:30

(3)

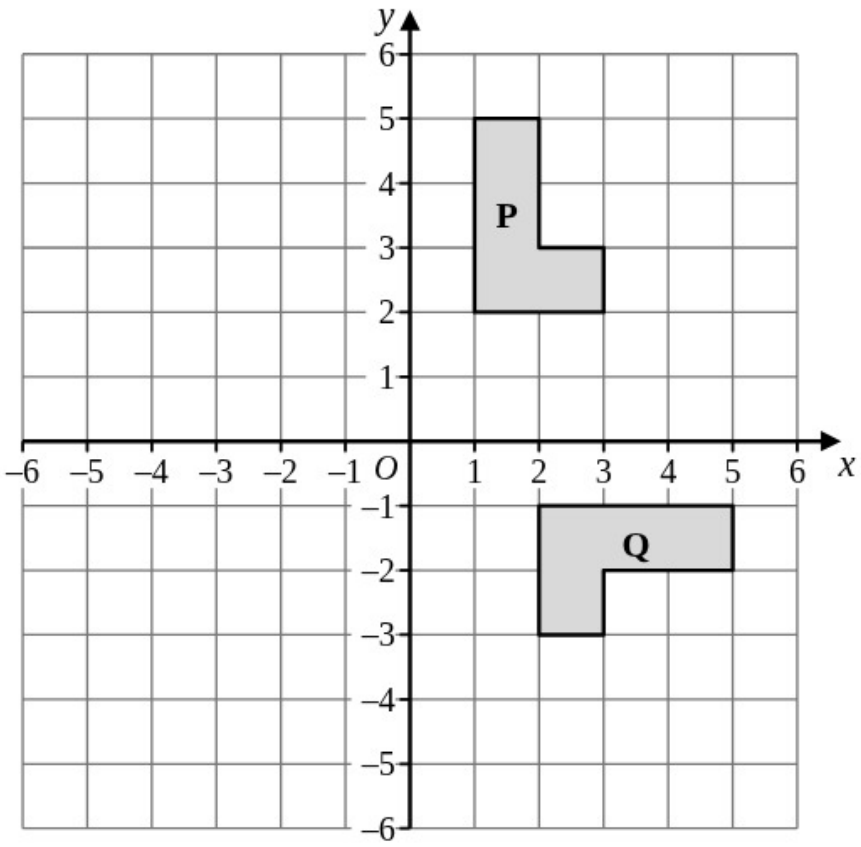
(b) Write down one assumption you made in your answer to part (a).
If your assumption is wrong, how would this affect your answer to part (a)?

Assumed his average speed stays constant (60 mph); if he drives slower he will arrive later.

(1)

(Total for Question 19 is 4 marks)

20



Describe fully the single transformation that maps shape P onto shape Q.

Rotation 90° clockwise about (0, 0)

(Total for Question 20 is 3 marks)

21 The diagram shows the cross-section of a solid prism.
The length of the prism is 2 m.

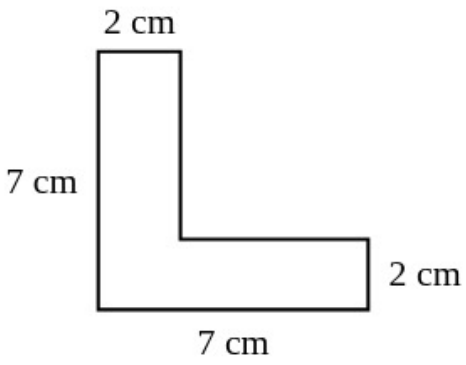


Diagram NOT accurately drawn

The prism is made from metal.
The density of the metal is 8 grams per cm^3.

Work out the mass of the prism.

(Mass = density × volume)

Cross-sectional area = 7 × 2 + 5 × 2 = 24 cm²

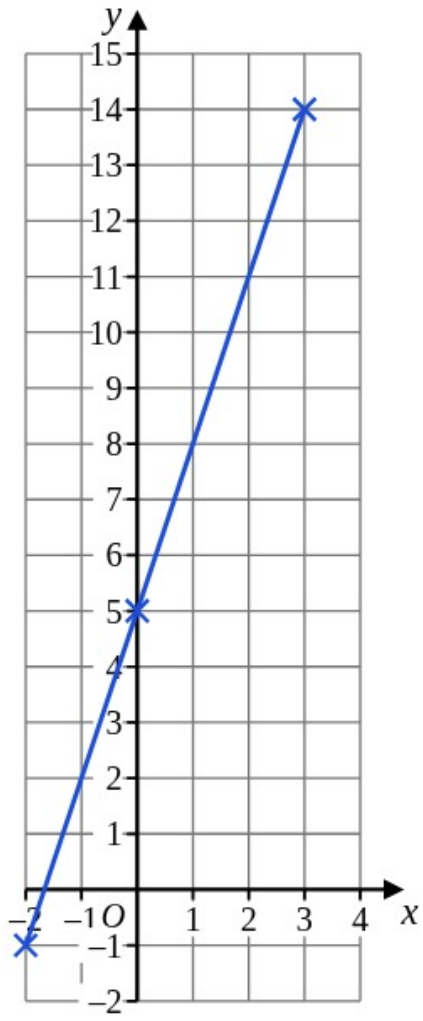
Volume = 24 × 200 cm = 4800 cm³

Mass = 4800 × 8 = 38 400 g (38.4 kg)

38 400 g (or 38.4 kg) kg

(Total for Question 21 is 5 marks)

22 (a) On the grid, draw the graph of $y = 3x + 5$ for values of x from –2 to 3



Plot (–2, –1), (0, 5), (3, 14)

(3)

(b) Explain why the point (6, 24) does not lie on the line $y = 3x + 5$

Substitute x = 6: y = 18 + 5 = 23 ≠ 24

(2)

(Total for Question 22 is 5 marks)

23 Ramesh throws a biased coin.
The probability that the coin will land on a Head is 0.37

(a) Write down the probability that the coin will land on a Tail.

1 − 0.37 = 0.63

0.63

(1)

Ramesh is going to throw the coin 500 times.

(b) Work out an estimate for the number of times that the coin will land on a Head.

0.37 × 500 = 185

185

(2)

(Total for Question 23 is 3 marks)

24 Arwen buys a car for £4000
The value of the car depreciates by 10% each year.
Work out the value of the car after two years.

After 1 year: 4000 − 400 = £3600

After 2 years: 3600 − 360 = £3240

£ **3240**

(Total for Question 24 is 3 marks)

25 Write the following numbers in order of size.
Start with the smallest number.

$$0.038 \times 10^2 \qquad 3800 \times 10^{-4} \qquad 380 \qquad 0.38 \times 10^{-1}$$

0.038, 0.38, 3.8, 380

0.38×10^{-1},
3800×10^{-4}, 0.038×10^{2},
380

(Total for Question 25 is 2 marks)

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26 There are 18 packets of sweets and 12 boxes of sweets in a carton.
The mean number of sweets in all the 30 packets and boxes is 14.
The mean number of sweets in the 18 packets is 10.
Work out the mean number of sweets in the boxes.

(Mean = total of values ÷ number of values)

Total sweets = 30 × 14 = 420

Sweets in packets = 18 × 10 = 180

Sweets in boxes = 420 − 180 = 240

Mean in boxes = 240 ÷ 12 = 20

20

(Total for Question 26 is 3 marks)

TOTAL FOR PAPER IS 80 MARKS