



Aldenham School

13+ Sample Paper

Subject: Mathematics

Name _____

School _____

Time allowed: 60 mins (+15mins Extra Time)

Instructions:

- Write your answers in the spaces provided in this booklet
- Show sufficient method to show how you obtained your answers
- Calculators **MUST NOT** be used in any question.
- Rulers may be used.

Work steadily through the paper doing as much as you can straight away, then go back to work at the more difficult questions.

Mark: _____ / 100

Q1.

(a) Work out $3 \times 5 + 7$

.....
(1)

(b) Work out 2^3

.....
(1)

(c) Write brackets () in this statement to make it correct.

$$7 \times 2 + 3 = 35$$

(1)

(Total for question = 3 marks)

Q2.

Here are some fractions.

$$\frac{9}{12} \quad \frac{6}{8} \quad \frac{18}{24} \quad \frac{10}{16} \quad \frac{15}{20}$$

One of these fractions is **not** equivalent to $\frac{3}{4}$

(a) Which fraction?

.....
(1)

(b) Work out $\frac{1}{12} + \frac{5}{6}$

.....
(2)

(Total for question = 3 marks)

Q3.

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

35% $\frac{3}{10}$ 0.32 $\frac{2}{5}$ 0.25

.....
(Total for question = 2 marks)

Q4.

(a) Write $\frac{1}{2}$ as a decimal.

.....
(1)

(b) Write 0.3 as a fraction.

.....
(1)

(c) Write 0.8 as a percentage.

..... %
(1)

(d) Work out 7.2×8

.....
(1)

(e) Work out $\frac{7}{12} - \frac{3}{12}$

Give your answer as a fraction in its simplest form.

.....
(2)

(Total for question = 6 marks)

Q5.

At 7 am the temperature was -4°C
By 3 pm the temperature had gone up by 10°C .
(a) Write down the temperature at 3 pm.

..... $^{\circ}\text{C}$
(1)

At 9 pm the temperature was -2°C .
By midnight the temperature had gone down by 7°C .
(b) Write down the temperature at midnight.

..... $^{\circ}\text{C}$
(1)

(Total for question = 2 marks)

Q6.

Ali, Ben and Candice share $\pounds 300$ in the ratio $2 : 3 : 5$
How much money does Candice get?

\pounds
(Total for Question is 2 marks)

Q7.

Emma has 45 rabbits.

30 of the rabbits are male.

8 of the female rabbits have short hair.

12 of the rabbits with long hair are male.

(a) Use the information to complete the two-way table.

	Male	Female	Total
Long hair			
Short hair			
Total			

(3)

One of Emma's rabbits is chosen at random.

(b) Write down the probability that this rabbit is a female with short hair.

.....

(1)

(Total for question = 4 marks)

Q8.

Lily has 3.4 kg of flour.

She uses 500 grams of the flour.

How much flour does Lily have left?

.....

(Total for question = 2 marks)

Q9.

Liz asks 20 people to name the flavour of chocolate they like best.

Here are her results.

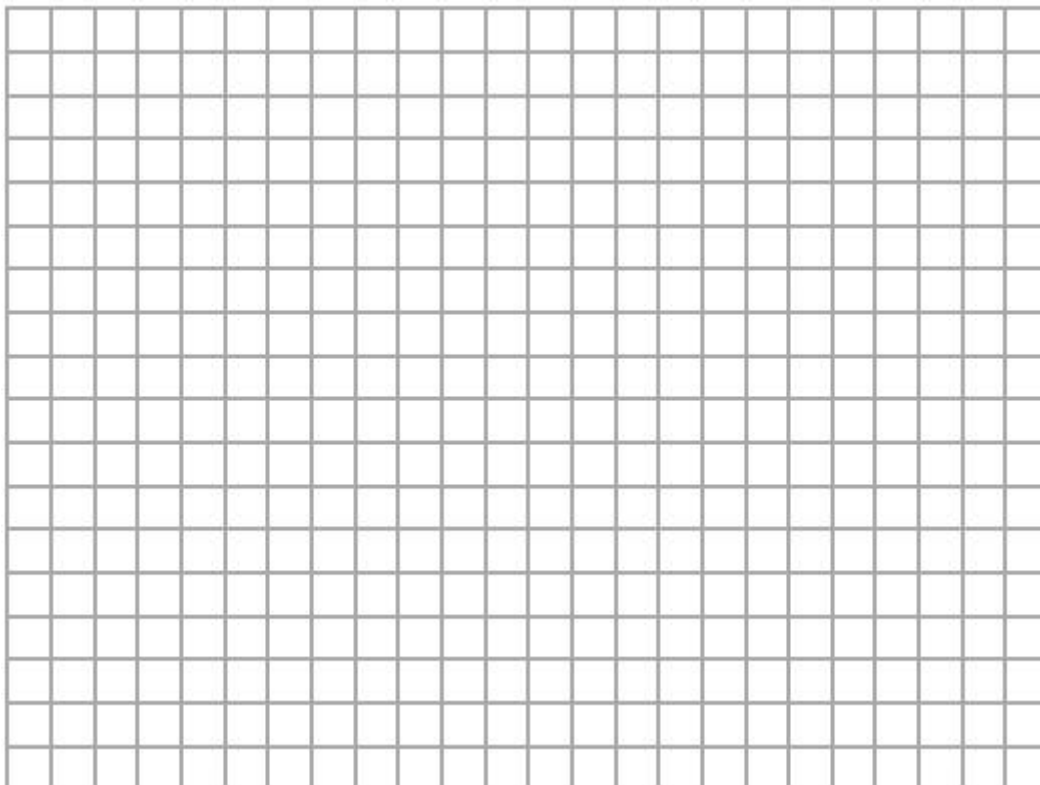
milk plain orange plain milk
coffee white milk milk orange
white coffee plain milk milk
milk plain coffee milk orange

(a) Complete the frequency table.

Flavour of chocolate	Tally	Frequency
plain		
milk		
coffee		
orange		
white		

(2)

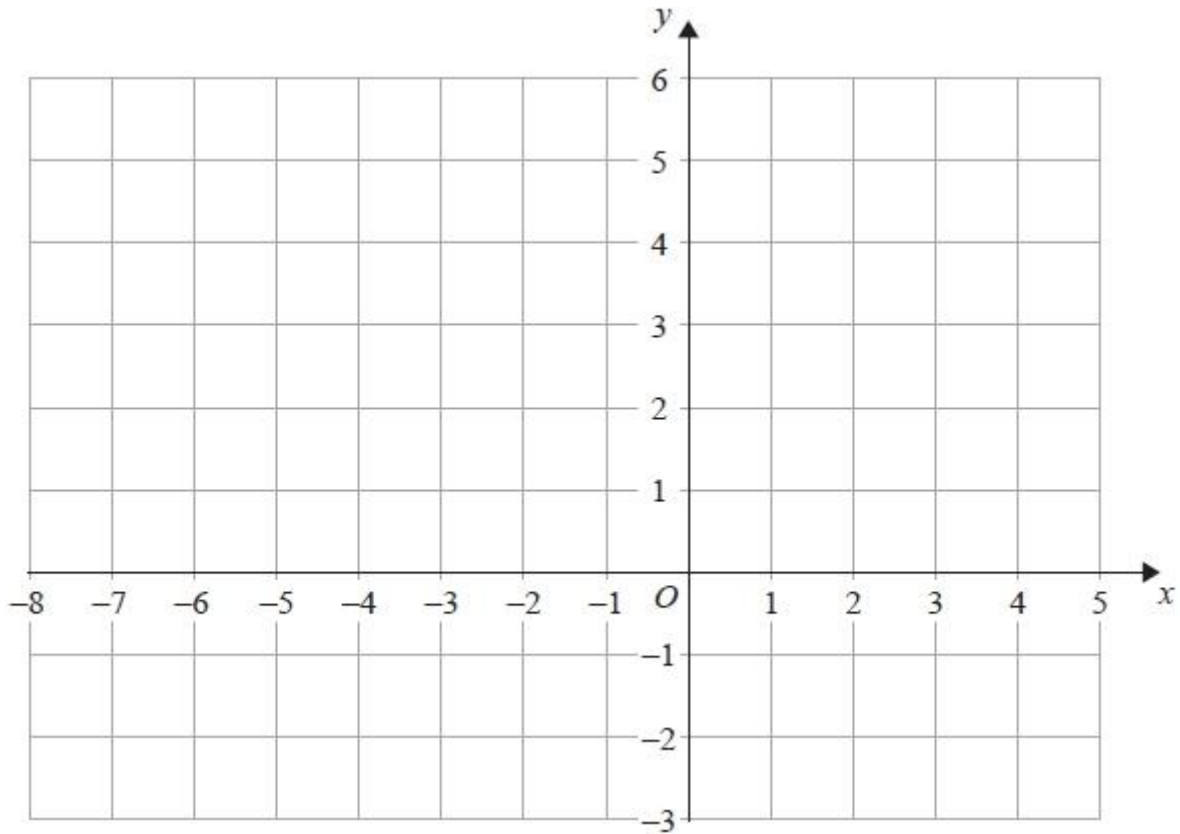
(b) On the grid, draw a suitable chart or diagram to show Liz's results.



(3)

(Total for Question is 5 marks)

Q10.



The points $(-3, -1)$, $(-2, 2)$ and $(3, 2)$ are three vertices of a parallelogram.

Find the coordinates of the fourth vertex of the parallelogram.

(..... ,)

(Total for question = 3 marks)

Q11.

Azmol is paid £1500 per month.

He is going to get a 3% increase in the amount of money he is paid.

Work out how much money Azmol will be paid per month after the increase.

£

(Total for question = 2 marks)

Q12.

Tom and Amy set the alarms on their phones to sound at 6.45 am.

Both alarms sound together at 6.45 am.

Tom's alarm then sounds every 9 minutes.

Amy's alarm then sounds every 12 minutes.

At what time will both alarms next sound together?

.....

(Total for question = 3 marks)

Q13.

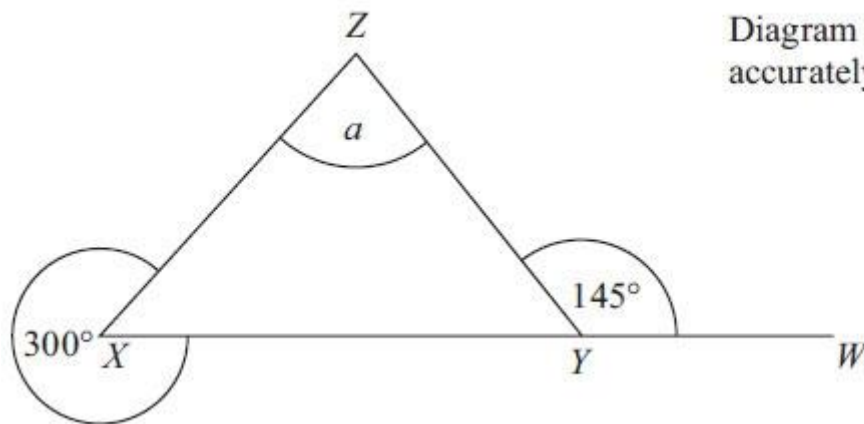


Diagram **NOT**
accurately drawn

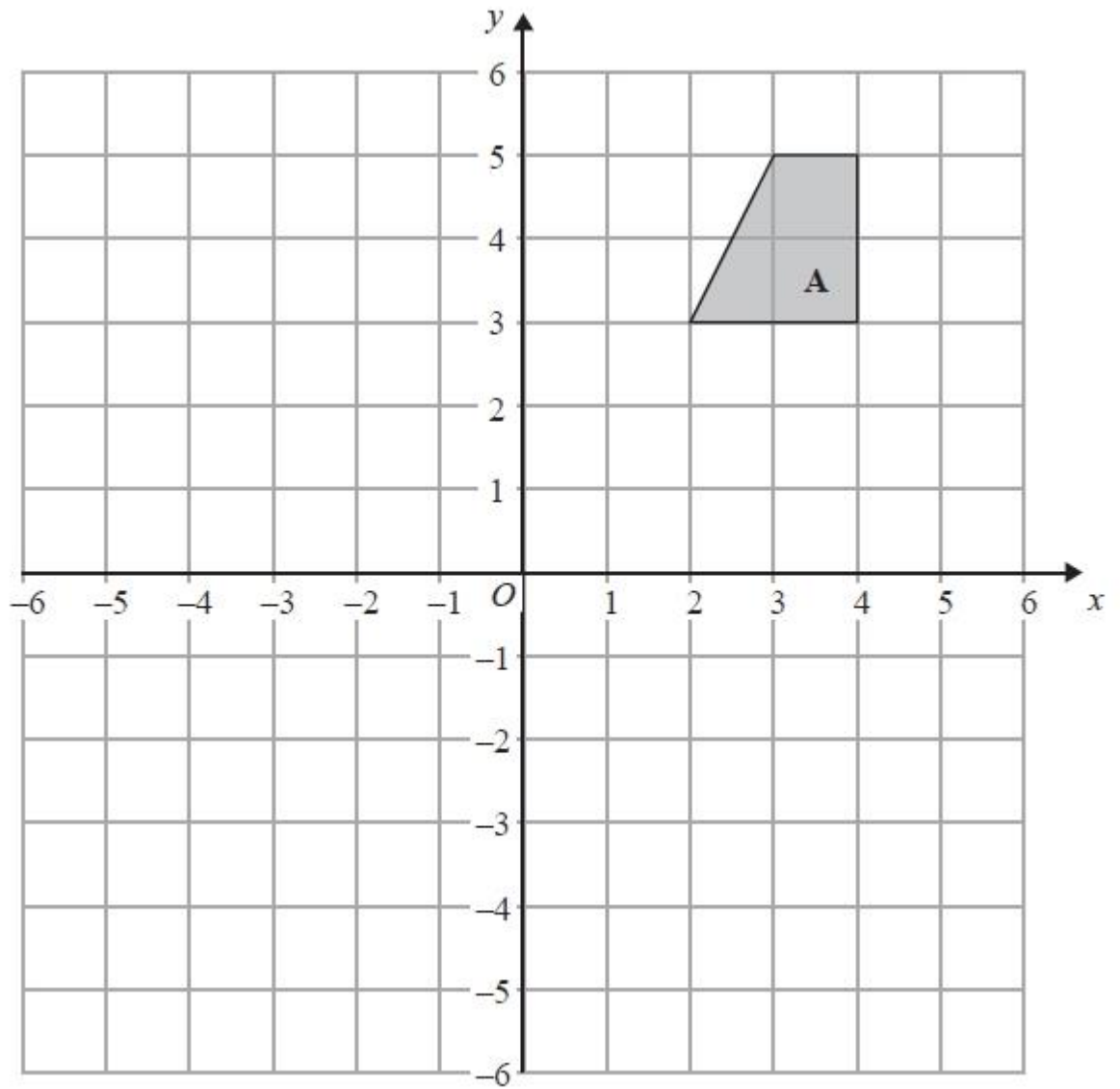
XYW is a straight line.

Work out the size of the angle marked *a*.

You must give reasons for your answer.

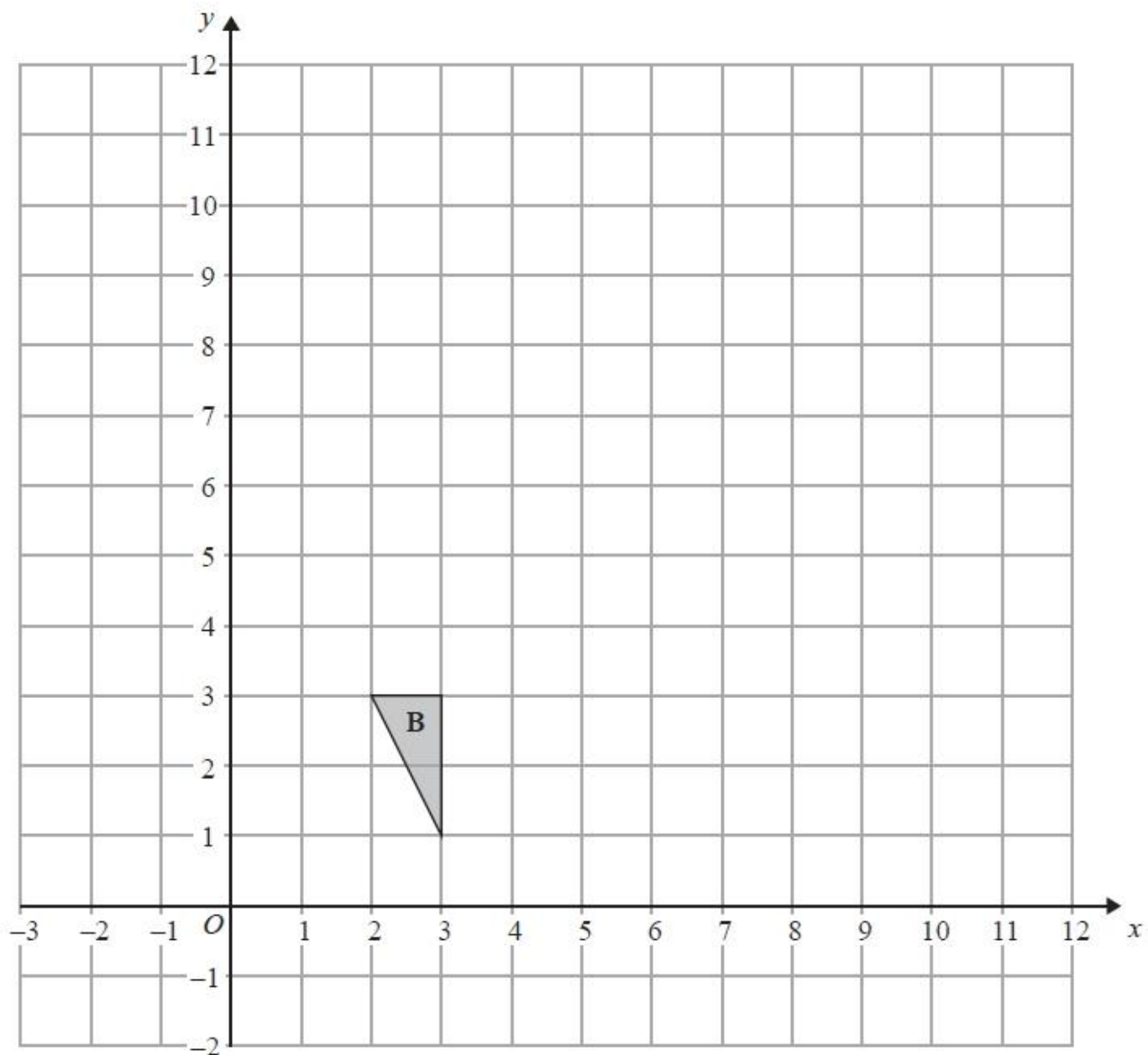
(Total for Question is 4 marks)

Q14.



(a) On the grid, rotate shape **A** 180° about the point (1, 1).

(2)



(b) On the grid, enlarge triangle **B** by scale factor 3, centre (0, 0).

(2)

(Total for Question is 4 marks)

Q15.

On Monday Alex earned £120
She worked for 8 hours.

(a) Work out Alex's hourly rate of pay.

£

(2)

On Monday Alex earned £120
On Tuesday she earned £100

Alex earned the same amount of money on Wednesday, on Thursday and on Friday.

She earned a total of £550 for these five days.

(b) How much did Alex earn on Wednesday?

£

(3)

(Total for question = 5 marks)

Q16.

(a) Simplify $h + h + h$

.....

(1)

(b) Simplify $p \times r \times 3$

.....

(1)

(c) Simplify $5x + 4y - 3x + 3y$

.....

(2)

$k = 5$

$m = 3$

(d) Work out the value of $2k + 4m$

.....

(2)

(Total for question = 6 marks)

Q17.

$$P = 4x + 3y$$

$$x = 5$$

$$y = -2$$

(a) Work out the value of P .

.....
(2)

(b) Expand $4e(e + 2)$

.....
(2)

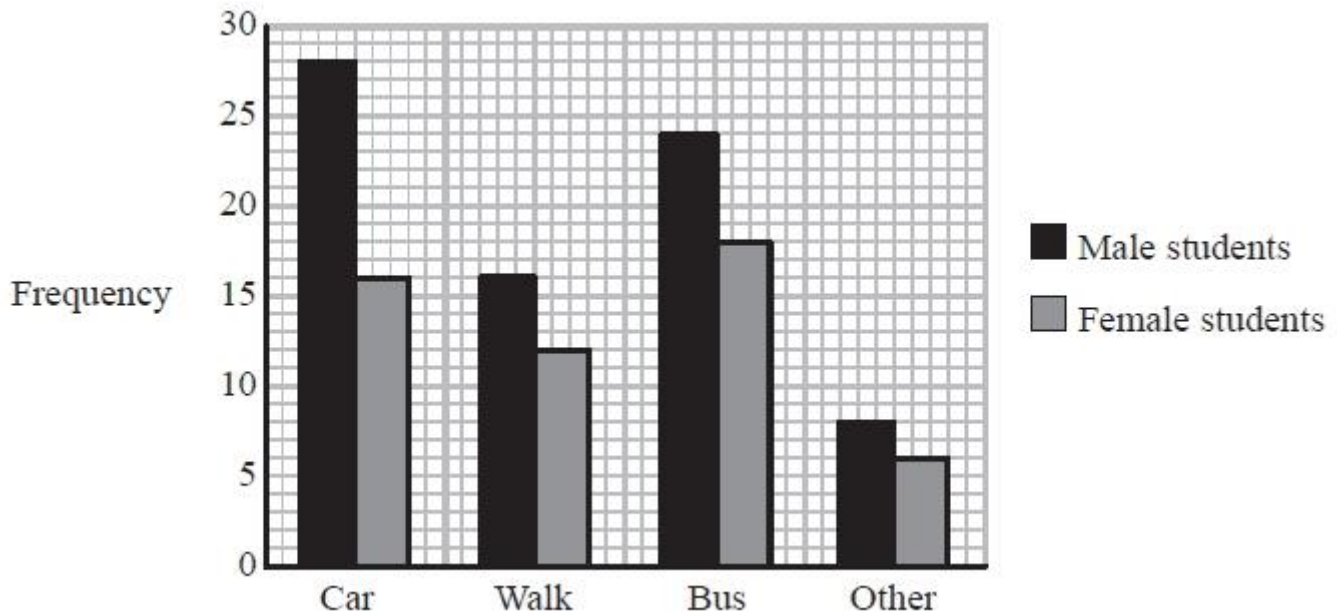
(c) Solve $3(m - 4) = 21$

..... m
(2)

(Total for question = 6 marks)

Q18.

The bar chart gives information about how students got to a college yesterday.



(a) How many male students got to the college by car?

.....
(1)

(b) Work out the total number of students who got to the college by bus.

.....
(1)

More male students than female students got to the college.

(c) How many more?

.....
(2)

Total for question = 4 marks)

Q19.

Here is a rectangle.

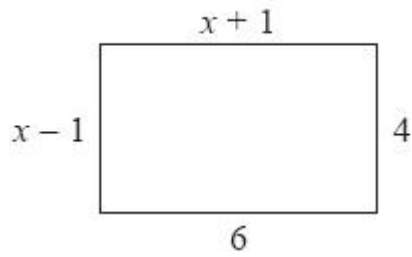


Diagram **NOT**
accurately drawn

All measurements on the diagram are in centimetres.

(a) Find the value of x .

.....
(2)

Here is a triangle.

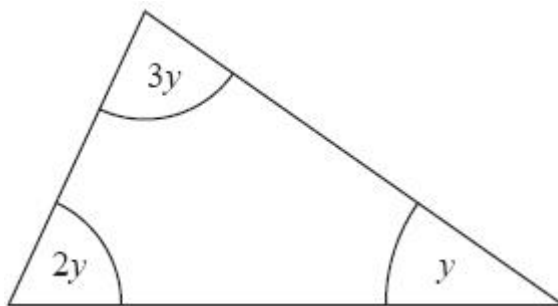


Diagram **NOT**
accurately drawn

(b) Find the size of the angle marked y .

.....°
(2)

(Total for question = 4 marks)

Q20.

Dilys buys a new house.

She wants to have a lawn in the back garden.

The lawn is going to be in the shape of a rectangle.

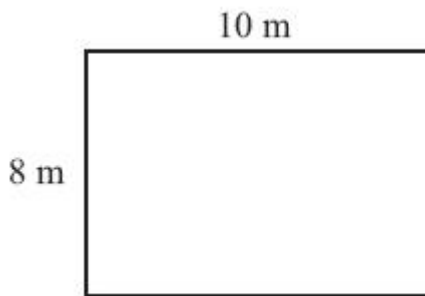


Diagram **NOT** accurately drawn

The lawn will have a length of 10 m.

The lawn will have a width of 8 m.

Edging strip
£1.50 per metre



Dilys wants to buy edging strip for her lawn.

The length of the edging strip needs to be equal to the perimeter of her lawn.

Edging strip costs £1.50 per metre.

What is the total cost of the edging strip?

£

Total for Question is 4 marks)

Q21.

In a box there are three types of chocolates.

There are 6 plain chocolates,
8 milk chocolates
and 10 white chocolates.

Ben takes at random a chocolate from the box.

(a) Write down the probability that Ben takes a plain chocolate.

.....
(2)

Deon takes 2 chocolates from the box.

(b) Write down all the possible combinations of types of chocolates that Deon can take.

.....
.....
.....

(2)

(Total for question = 4 marks)

Q22.

There are 30 children in a nursery school.

At least 1 adult is needed for every 8 children in the nursery.

(a) Work out the least number of adults needed in the nursery.

.....
(2)

2 more children join the nursery.

(b) Does this mean that more adults are needed in the nursery?

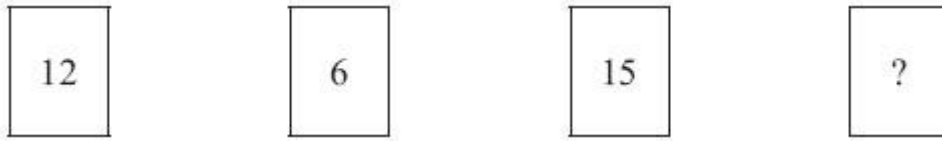
You must give a reason for your answer.

.....
(1)

(Total for question = 3 marks)

Q23.

Ed has 4 cards.
There is a number on each card.

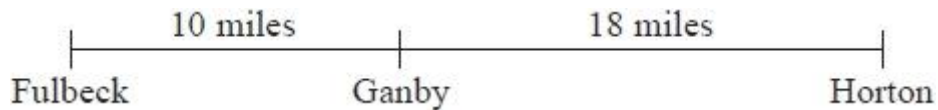


The mean of the 4 numbers on Ed's cards is 10
Work out the number on the 4th card.

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

Q24.

The distance from Fulbeck to Ganby is 10 miles.
The distance from Ganby to Horton is 18 miles.



Raksha is going to drive from Fulbeck to Ganby.
Then she will drive from Ganby to Horton.

Raksha leaves Fulbeck at 10 00

She drives from Fulbeck to Ganby at an average speed of 40mph.

Raksha wants to get to Horton at 10 35

Work out the average speed Raksha must drive at from Ganby to Horton.

..... mph
(Total for question = 3 marks)

Q25.

Ali has some packets.

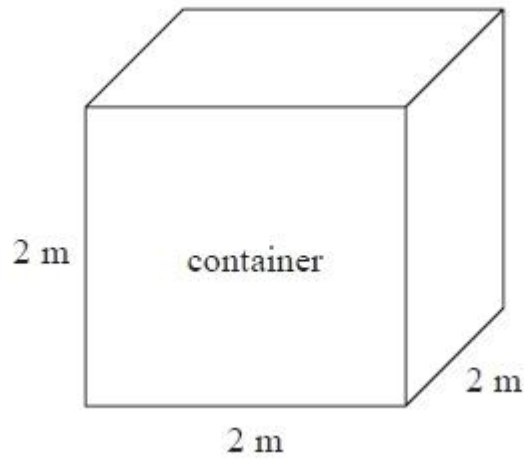
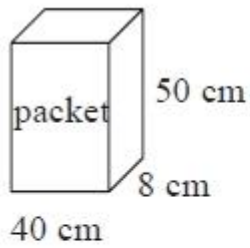


Diagram **NOT**
accurately drawn

Each packet has dimensions 40 cm by 8 cm by 50 cm.

Ali fills a container with these packets.

The container is a cube of side 2 m.

Ali fills the container completely with these packets.

Work out the number of packets.

.....
(Total for Question is 4 marks)

Q26.

$ABCD$ is a trapezium.
 $STUV$ is a rectangle.

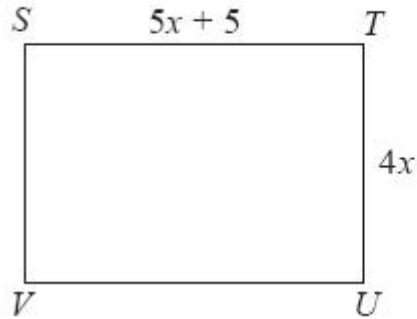
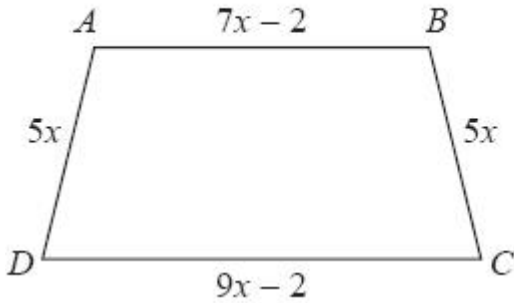


Diagram **NOT**
accurately drawn

All measurements are in centimetres.

The two shapes have the same perimeter.

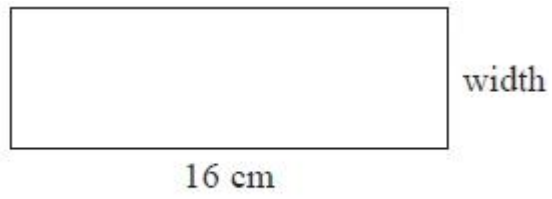
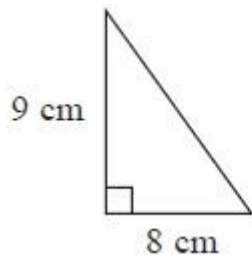
Work out the length of ST .

..... cm

(Total for question = 5 marks)

Q27.

Here are a triangle and a rectangle.



The area of the rectangle is 6 times the area of the triangle.

Work out the width of the rectangle.

..... cm

(Total for question = 4 marks)