Please check the examination details below before entering your candidate information

| Candidate surname | Other names |
|---|---|
| | |

**Pearson Edexcel International GCSE**

Centre Number | Candidate Number

# Tuesday 15 January 2019

Morning (Time: 2 hours) | Paper Reference **4MA0/2FR**

# Mathematics A

## Paper 2FR
## Foundation Tier

**You must have:**
Ruler graduated in centimetres and millimetres, protractor, compasses, pen, HB pencil, eraser, calculator. Tracing paper may be used.

Total Marks

## Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Without sufficient working, correct answers may be awarded no marks.
- Answer the questions in the spaces provided
  *– there may be more space than you need.*
- **Calculators may be used.**
- You must **NOT** write anything on the formulae page.
  Anything you write on the formulae page will gain NO credit.

## Information

- The total mark for this paper is 100.
- The marks for **each** question are shown in brackets
  *– use this as a guide as to how much time to spend on each question.*

## Advice

- Read each question carefully before you start to answer it.
- Check your answers if you have time at the end.

*Turn over* ▶

P55941A



5/3/1/

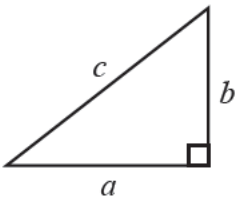
P 5 5 9 4 1 A 0 1 2 8

Pearson

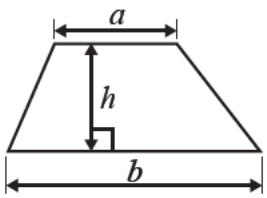
**International GCSE MATHEMATICS**

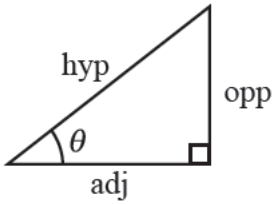
**FORMULAE SHEET – FOUNDATION TIER**

Pythagoras' Theorem
$a^2 + b^2 = c^2$




Area of a trapezium = $\frac{1}{2}(a + b)h$



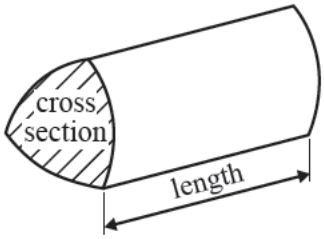

adj = hyp × cos $\theta$
opp = hyp × sin $\theta$
opp = adj × tan $\theta$

*or* $\sin\theta = \frac{\text{opp}}{\text{hyp}}$

$\cos\theta = \frac{\text{adj}}{\text{hyp}}$

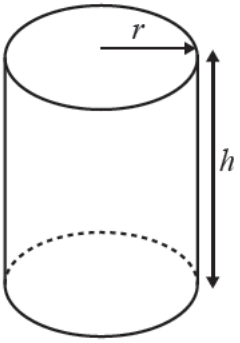
$\tan\theta = \frac{\text{opp}}{\text{adj}}$

Volume of prism = area of cross section × length



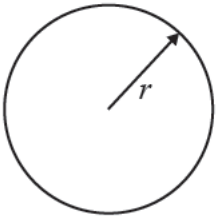

Circumference of circle = $2\pi r$

Area of circle = $\pi r^2$




Volume of cylinder = $\pi r^2 h$

Curved surface area of cylinder = $2\pi rh$

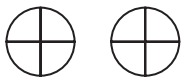
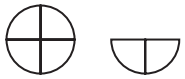


**Answer ALL TWENTY FIVE questions.**

**Write your answers in the spaces provided.**

**You must write down all the stages in your working.**

**1** The pictogram gives information about the number of pizzas sold from a shop on Monday, on Tuesday, on Wednesday and on Thursday one week.

| | |
|---|---|
| Monday |  |
| Tuesday |  |
| Wednesday |  |
| Thursday |  |
| Friday | |

| | |
|---|---|
| Key:  | represents 12 pizzas |

(a) Write down the number of pizzas sold from the shop on Monday.

**(1)**

(b) Write down the number of pizzas sold from the shop on Wednesday.

**(1)**

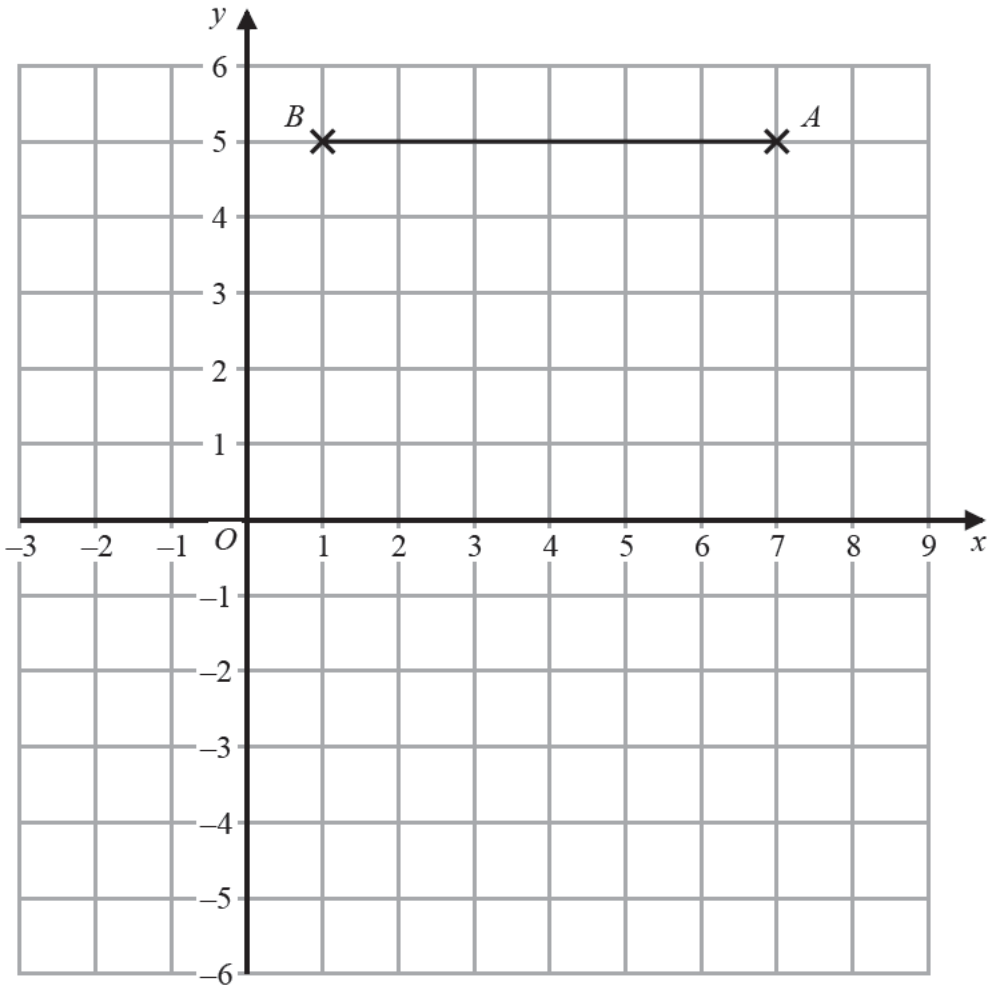
30 pizzas were sold from the shop on Friday.

(c) Show this information on the pictogram.

**(1)**

**(Total for Question 1 is 3 marks)**

**2** The line $BA$ has been drawn on a grid.




(a) Write down the coordinates of the point $A$.

( , )

**(1)**

(b) On the grid, mark with a cross (×) the point with coordinates (–1, –3)
Label the point $C$.

**(1)**

$D$ is the point on the grid so that $ABCD$ is a parallelogram.

(c) Find the coordinates of the point $D$.

( , )

**(2)**

**(Total for Question 2 is 4 marks)**

**3** The incomplete table gives some information about the percentages of his income that Mr Chowdhury spent last month.

| Item | Percentage of income |
|---|---|
| food | 13% |
| housing | 16% |
| leisure | 8% |
| clothes | 5% |
| transport | 15% |
| furniture | 20% |
| other items | % |

(a) Complete the table to show the percentage of Mr Chowdhury's income spent on other items.

**(2)**

Mr Chowdhury spent 16% of his income on housing.

(b) Write 16% as a decimal.

**(1)**

Mr Chowdhury spent 13% of his income on food.

(c) Write 13% as a fraction.

**(1)**

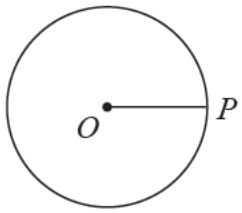
Mr Chowdhury's income was 8000 taka last month.

(d) Work out 15% of 8000

**(2)**

**(Total for Question 3 is 6 marks)**

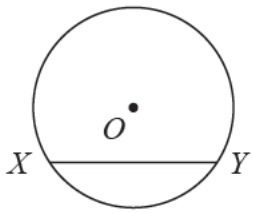
**4** $P$ is a point on a circle, centre $O$.




(a) Write down the mathematical name of the line $OP$.

**(1)**

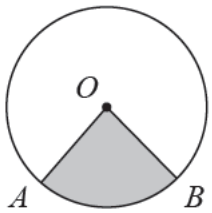
$X$ and $Y$ are points on a circle, centre $O$.




(b) Write down the mathematical name of the line $XY$.

**(1)**

$A$ and $B$ are points on a circle, centre $O$.




(c) Write down the mathematical name of the shaded region.

**(1)**

The diagram shows four identical circles and a rectangle.
The circles fit exactly in the rectangle without overlapping as shown in the diagram.

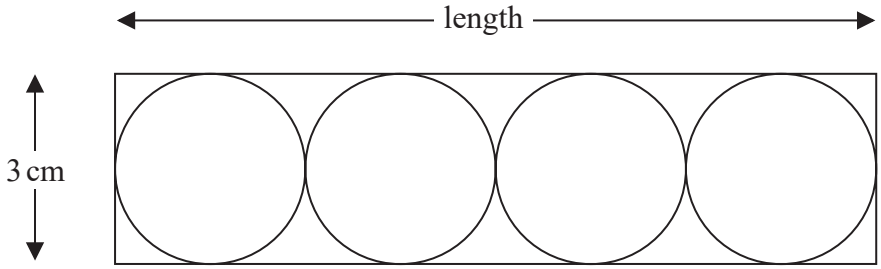



Diagram **NOT** accurately drawn

The width of the rectangle is 3 cm.

(d) Work out the length of the rectangle.

cm

**(1)**

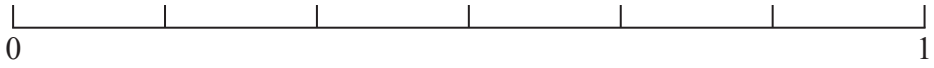
**(Total for Question 4 is 4 marks)**

**5** There are 6 coins in a bag.

2 of the coins are 5 cent coins
1 of the coins is a 10 cent coin
3 of the coins are 20 cent coins

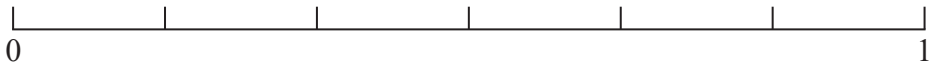
Gregor takes at random a coin from the bag.

(a) On the probability scale, mark with a cross (×) the probability that the coin is a 5 cent coin.




**(1)**

(b) On the probability scale, mark with a cross (×) the probability that the coin is a 50 cent coin.




**(1)**

Here are some words that can be used to describe likelihood.

| impossible | unlikely | evens | likely | certain |
|---|---|---|---|---|

(c) Choose the word from the box that best describes the likelihood that the coin is a 10 cent coin.

**(1)**

**(Total for Question 5 is 3 marks)**

**6** Here are the amounts of money, in euros, earned last week by 10 workers in a company.

330 330 250 290 350 330 310 370 320 300

(a) Work out the mean.

euros

**(2)**

(b) Work out the median.

euros

**(2)**

(c) Find the mode.

euros

**(1)**

(d) Work out the range.

euros

**(2)**

**(Total for Question 6 is 7 marks)**

**7** Here is a sketch of triangle $PQR$.

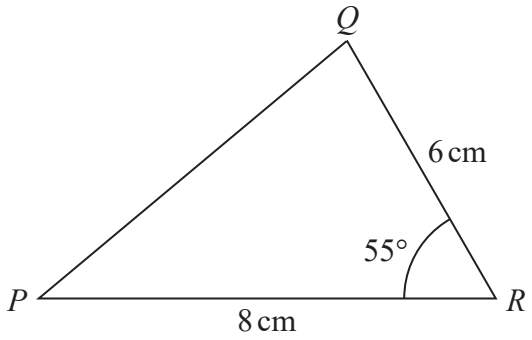


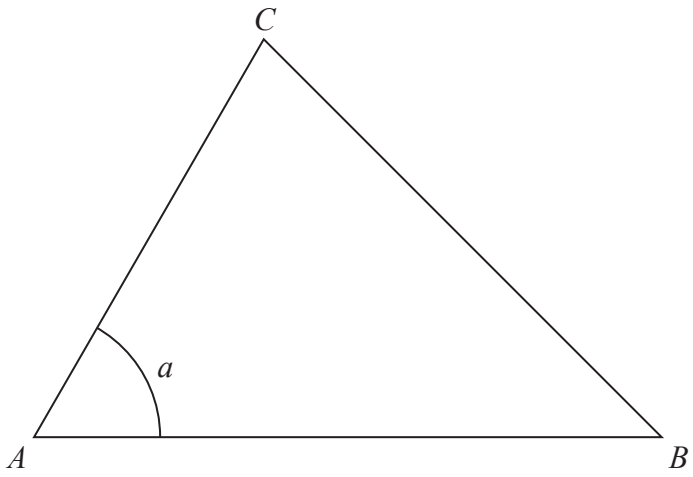

Diagram **NOT** accurately drawn

(a) Make an accurate drawing of triangle $PQR$.
The line $PR$ has already been drawn for you.

$P$ ——————————————— $R$

**(2)**

Triangle $ABC$ has been accurately drawn.




(b) Measure the size of angle $a$.

°

**(1)**

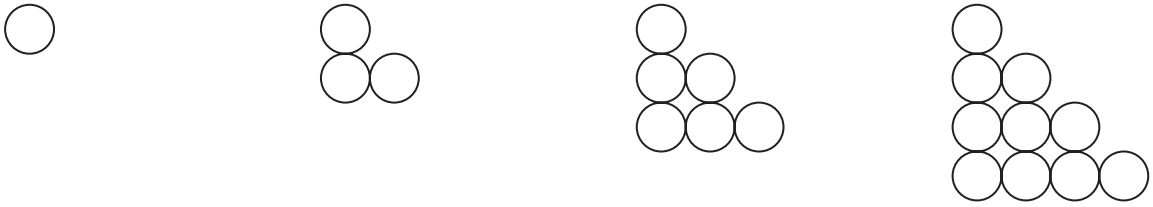
$D$ is the point on $AB$ such that $CD$ is perpendicular to $AB$.

(c) On the accurate diagram above, mark the position of point $D$ with a cross (×)
Label the point $D$.

**(1)**

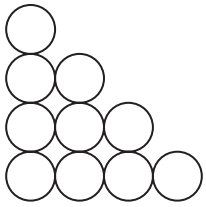
**(Total for Question 7 is 4 marks)**

**8** Here is a sequence of patterns made from circles in rows.



Pattern number 1 Pattern number 2 Pattern number 3 Pattern number 4

(a) In the space below, complete Pattern number 5



Pattern number 5

**(1)**

(b) Find the number of circles in Pattern number 6

**(1)**

(c) Write down the number of circles in the bottom row of Pattern number 20

**(1)**

There are more circles in Pattern number 30 than there are in Pattern number 28

(d) How many more?

**(2)**

**(Total for Question 8 is 5 marks)**

**9** (a) Find two factors of 36 that have a sum greater than 14 but less than 20

.

and

**(2)**

$N$ is an even number greater than 50
Two factors of the number $N$ are 3 and 5

(b) Write down a possible value of $N$.

**(2)**

**(Total for Question 9 is 4 marks)**

**10** $y = 2cx + d$

(a) Find the value of $y$ when $x = 3$, $c = 4$ and $d = -8$

$y =$

**(2)**

$y = 2cx + d$

(b) Find an expression for $y$ in terms of $c$ when $x = 2$ and $d = 3c$
Give your answer in its simplest form.

**(2)**

**(Total for Question 10 is 4 marks)**

**11** Here is a rectangle.

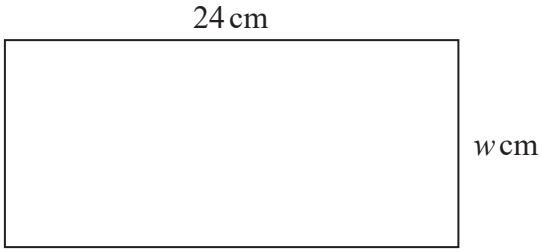



Diagram **NOT** accurately drawn

The area of the rectangle is 432 $cm^2$

Work out the value of $w$.

$w =$

**(Total for Question 11 is 2 marks)**

DO NOT WRITE IN THIS AREA DO NOT WRITE IN THIS AREA DO NOT WRITE IN THIS AREA

**12** Four congruent squares are used to form a shape.
Two squares meet at each vertex of the shape as shown in the diagram.

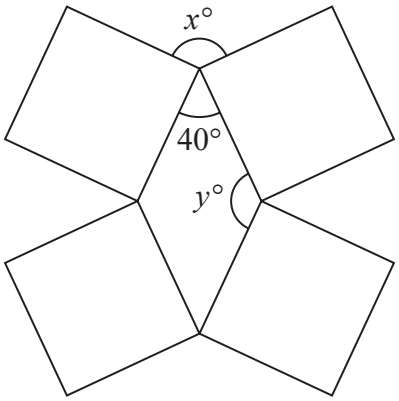



Diagram **NOT** accurately drawn

(a) Work out the value of $x$.

$x =$

**(2)**

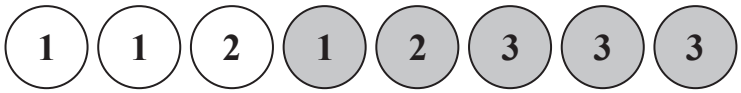
(b) Work out the value of $y$.

$y =$

**(1)**

**(Total for Question 12 is 3 marks)**

**13** Hamid puts 3 white counters and 5 grey counters into a bag.
Each counter has a number on it.




Hamid takes at random a counter from the bag.

(a) Write down the probability that the number on the counter is **3**

**(1)**

(b) Write down the probability that the counter does **not** have the number **1** on it.

**(1)**

(c) Write down the probability that the counter is grey with the number **1** on it.

**(1)**

**(Total for Question 13 is 3 marks)**

**14** In a factory, 3 machines each make bottles.

Two of the machines each make 14 bottles every hour.
The other machine makes 18 bottles every hour.

Each machine makes bottles 24 hours a day.
Each machine makes bottles 7 days a week.

When made, the bottles are stored in crates.
When full, each crate holds 120 bottles.

How many crates are needed to store **all** the bottles made by the 3 machines in a week?

**(Total for Question 14 is 4 marks)**

**15**

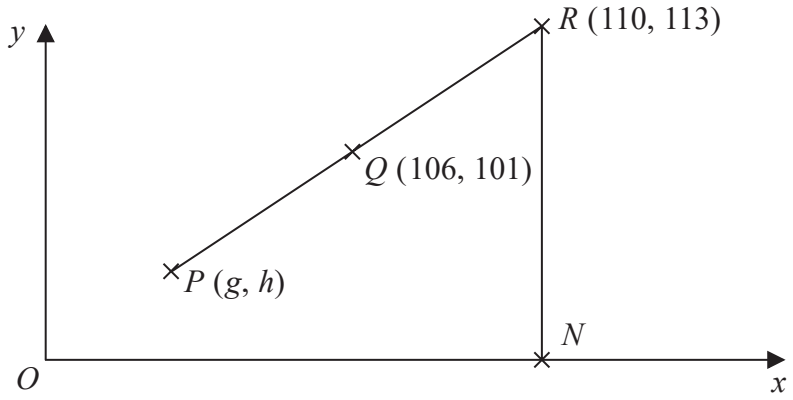



Diagram **NOT** accurately drawn

$Q$ is the midpoint of the line $PR$.

(a) Find the value of $g$ and the value of $h$.

$g =$

$h =$

**(2)**

$N$ is the point on the $x$-axis such that $RN$ is parallel to the $y$-axis.

$M$ is a point on the line $RN$.
$M$ is also a point on the straight line with equation $x + y = 130$

(b) Find the coordinates of $M$.

( , )

**(2)**

**(Total for Question 15 is 4 marks)**

**16** Yulia normally lives in Russia.
She buys a car in Cyprus.

The cost of the car is 15 400 euros.

The exchange rate is 1 euro = 63.21 Russian rubles.

(a) Change 15 400 euros into Russian rubles.

Russian rubles

**(2)**

The cost of insuring the car is 240 euros.

(b) Express 240 as a percentage of 15 400
Give your answer correct to 2 decimal places.

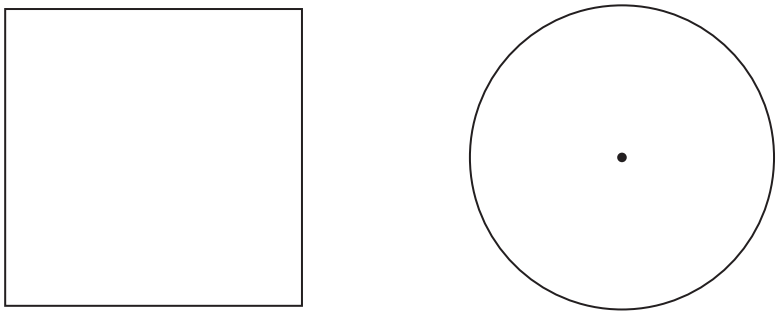
%

**(2)**

**(Total for Question 16 is 4 marks)**

**17** The diagram shows a square and a circle.

Diagram **NOT** accurately drawn



The square has area 400 cm$^2$

The diameter of the circle is equal to the length of a side of the square.

Work out the circumference of the circle.
Give your answer correct to 1 decimal place.

cm

**(Total for Question 17 is 3 marks)**

**18** An aeroplane takes 11 hours 40 minutes to fly from London to Mauritius.
The aeroplane flies a distance of 9720 kilometres.

Work out the average speed of the aeroplane.
Give your answer in kilometres per hour, correct to the nearest whole number.

kilometres per hour

**(Total for Question 18 is 3 marks)**

**19** The length of a car is 472 centimetres.

Mikhail makes a scale model of the car using a scale of 1 : 20

(a) Work out the length of the scale model.

centimetres
**(2)**

Alis makes a scale model of a bus.

The length of the real bus is 10.8 metres.
The length of the scale model is 60 centimetres.

Alis uses a scale of 1 : $n$ where $n$ is a whole number.

(b) Find the value of $n$.

$n =$

**(3)**

**(Total for Question 19 is 5 marks)**

**20** (a) Solve $5x - 2 = x + 8$
Show clear algebraic working.

$x =$

**(3)**

(b) Factorise $3t - 5ty$

**(1)**

(c) Simplify $k^5 \times k$

**(1)**

(d) Solve $\frac{h}{2} - 8 < 5$

**(2)**

**(Total for Question 20 is 7 marks)**

**21** Here is a right-angled triangle.

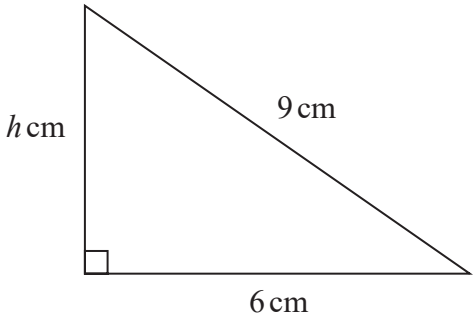



Diagram **NOT** accurately drawn

Calculate the value of $h$.
Give your answer correct to 2 decimal places.

$h =$

**(Total for Question 21 is 3 marks)**

**22** Show that $2\frac{1}{4} \times \frac{5}{6} = 1\frac{7}{8}$

**(Total for Question 22 is 3 marks)**

**23** Here is a prism.

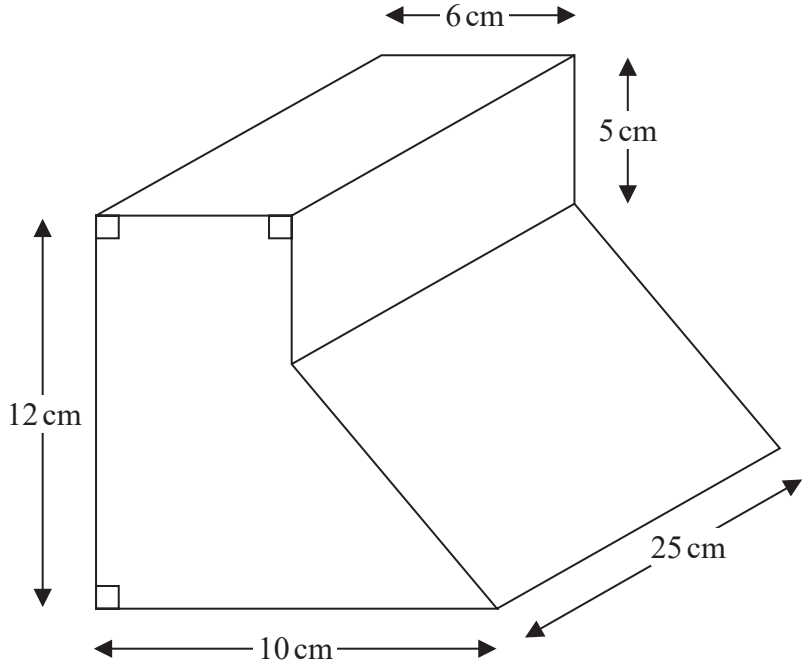



Diagram **NOT** accurately drawn

Work out the volume of this prism.

$cm^3$

**(Total for Question 23 is 4 marks)**

**24** Eugenia bought 120 watches at 50 dollars each.

She sold $\frac{3}{4}$ of the watches at 80 dollars each.

She then sold all the remaining watches at 40 dollars each.

Work out her percentage profit.

%

**(Total for Question 24 is 4 marks)**

**25** $\mathscr{E} = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$

$A = \{1, 3, 5, 7, 9\}$
$B = \{\text{numbers greater than } 6\}$

(a) List the members of the set $A \cup B$

**(1)**

$C = \{3, 6, 9\}$

(b) List the members of the set $A \cap C$

**(1)**

$D$ is a set with 4 members.

$5 \in D$ and $B \cap D = \varnothing$

(c) List the members of one possible set $D$.

**(2)**

**(Total for Question 25 is 4 marks)**

**TOTAL FOR PAPER IS 100 MARKS**