

Write your name here

Surname

Other names

**Pearson Edexcel  
International GCSE**

Centre Number

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Candidate Number

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# Mathematics A

## Paper 2FR



**Foundation Tier**

Tuesday 20 May 2014 – Afternoon

**Time: 2 hours**

Paper Reference

**4MA0/2FR**

**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 ►

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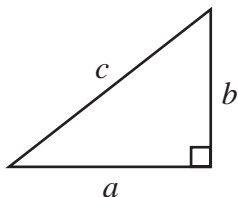


**PEARSON**

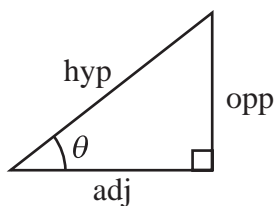
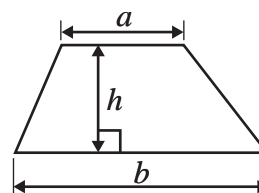
## International GCSE MATHEMATICS

### FORMULAE SHEET – FOUNDATION TIER

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

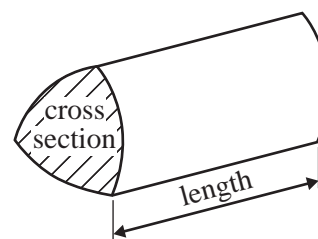


Area of a trapezium =  $\frac{1}{2}(a + b)h$



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

Volume of prism = area of cross section  $\times$  length



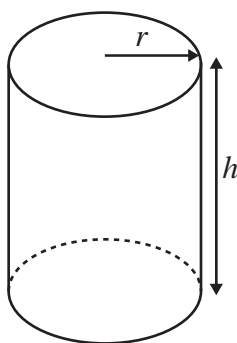
or  $\sin \theta = \frac{\text{opp}}{\text{hyp}}$

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

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

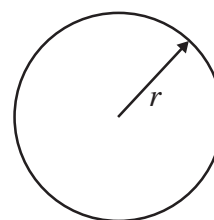
Circumference of circle =  $2\pi r$

Area of circle =  $\pi r^2$



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

Curved surface area  
 of cylinder =  $2\pi r h$

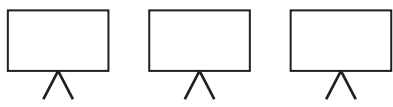




**Answer ALL TWENTY FOUR questions.**

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

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

- 1 The pictogram gives information about the number of televisions sold from a shop in each of the first 3 weeks in May.

Week 1	
Week 2	
Week 3	
Week 4	

 represents 12 televisions.

- (a) Write down the number of televisions sold from the shop in Week 1

.....  
(1)

24 televisions were sold from the shop in Week 4

- (b) Show this information on the pictogram.

(1)

- (c) Work out the total number of televisions sold from the shop in all 4 weeks.

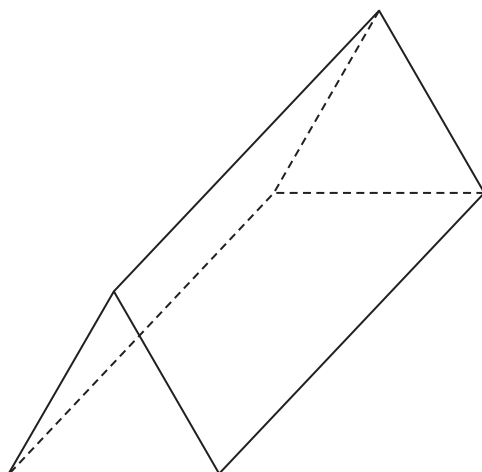
.....  
(2)

**(Total for Question 1 is 4 marks)**

**Do NOT write in this space.**



2 Here is a 3-D shape.



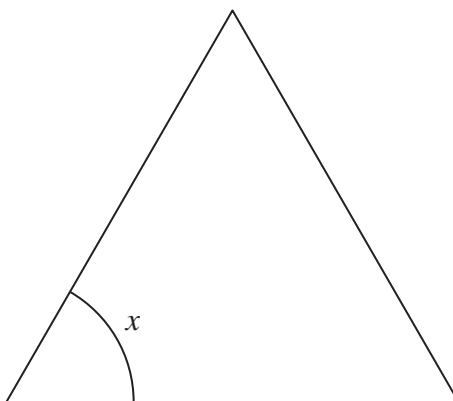
(a) Write down the mathematical name of this shape.

.....  
(1)

(b) Write down the number of edges of this shape.

.....  
(1)

Here is one of the faces of the 3-D shape.



(c) Measure the size of the angle  $x$ .

.....  
(1)

(Total for Question 2 is 3 marks)

**Do NOT write in this space.**





4 There were 86 162 spectators at the 2012 Olympic men's soccer final.

(a) Write 86 162 correct to the nearest 100

.....  
(1)

There were 80 203 spectators at the 2012 Olympic women's soccer final.

More spectators were at the men's final than at the women's final.

(b) How many more?

.....  
(1)

There was a total of 2 186 890 spectators at all the soccer matches.

There were 32 men's matches.

There were 26 women's matches.

(c) Work out the mean number of spectators at a match.

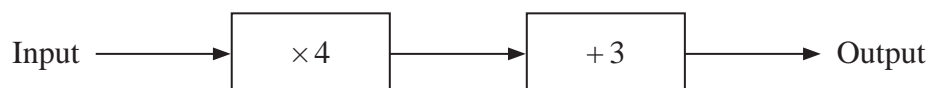
.....  
(2)

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

**Do NOT write in this space.**



5 Here is a number machine.



(a) Work out the output when the input is 5

.....  
(1)

(b) Work out the input when the output is  $-5$

.....  
(2)

The input is  $x$  and the output is  $y$ .

(c) Write  $y$  in terms of  $x$ .

.....  
(2)

(Total for Question 5 is 5 marks)

**Do NOT write in this space.**



- 6 The table gives information about the number of medals won by the eight most successful athletics teams in the 2012 Olympic Games.

	<b>Gold</b>	<b>Silver</b>	<b>Bronze</b>
Australia	1	2	0
Ethiopia	3	1	3
Germany	1	4	3
Great Britain	4	1	1
Jamaica	4	4	4
Kenya	2	4	5
Russian Federation	8	5	5
United States of America	9	13	7

- (a) Which **two** teams won more bronze medals than silver medals?

..... and ..... (1)

- (b) What fraction of the medals won by Ethiopia were gold medals?

..... (1)

One scoring system for a medals table is to award 3 points for a gold medal, 2 points for a silver medal and 1 point for a bronze medal.

- (c) How many more points would Great Britain score than Germany under this scoring system?

..... (2)

**(Total for Question 6 is 4 marks)**

**Do NOT write in this space.**



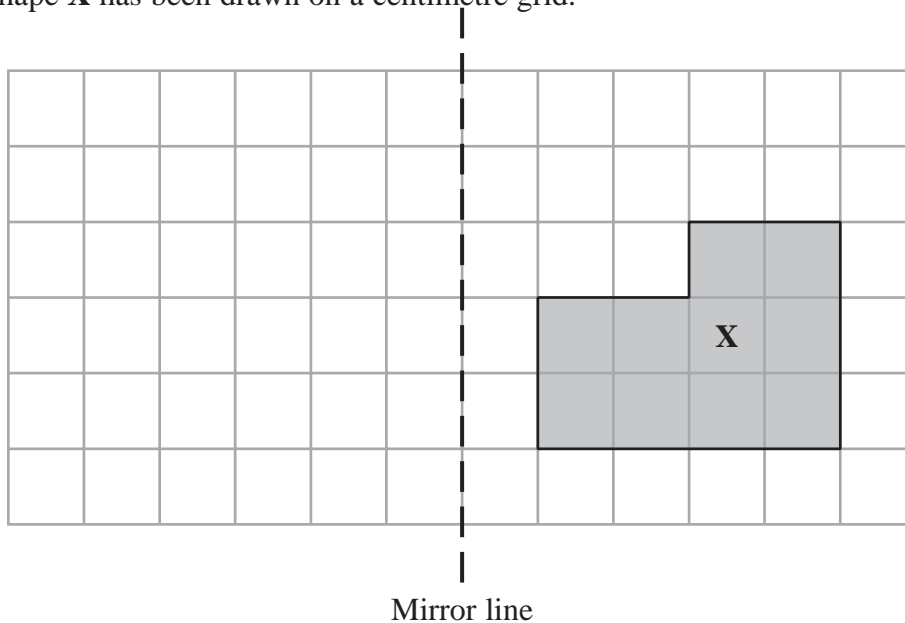


7 Melina buys 4 stamps at 0.43 euros each and 4 postcards at 0.75 euros each.  
 How much change should she get from a 5 euro note?

..... euros

(Total for Question 7 is 3 marks)

8 The shaded shape **X** has been drawn on a centimetre grid.



(a) Reflect the shaded shape **X** in the mirror line.  
 Label the new shape **Y**.

(2)

$\frac{2}{5}$  of the centimetre squares in the shaded shape **X** are going to be coloured black.

(b) How many squares in the shaded shape **X** are going to be coloured black?

.....  
 (2)

(Total for Question 8 is 4 marks)



- 9 The table gives information about the midday temperatures and the midnight temperatures for one day in 4 cities near ski resorts.

City	Midday temperature ( $^{\circ}\text{C}$ )	Midnight temperature ( $^{\circ}\text{C}$ )
Grenoble	6	-1
Inverness	5	-2
Andorra la Vella	1	-7
Zurich	6	-3

- (a) Which city had the lowest midnight temperature?

.....  
(1)

- (b) Work out the difference between the midday temperature for Zurich and the midnight temperature for Zurich.

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

Franz uses this rule to work out the temperature as you ski at greater heights.

For every 1 km increase in height the temperature decreases by $6.5^{\circ}\text{C}$ .
--

- (c) Use the rule to work out the temperature 2 km higher than Grenoble at midday.

.....  $^{\circ}\text{C}$   
(2)

(Total for Question 9 is 4 marks)



10 (a) Work out 40% of 20

.....  
(2)

Here are four numbers.

0.43      $\frac{3}{7}$      43.8%      $\frac{7}{16}$

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

.....  
(2)

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

**Do NOT write in this space.**



11 (a) Simplify  $4x + 3x$

.....  
(1)

(b) Simplify  $5 \times 3y$

.....  
(1)

$$f = 5p - 4v$$

(c) (i)  $p = -4, v = 3$

Work out the value of  $f$ .

$f =$  .....

(ii)  $f = -22, v = -5$

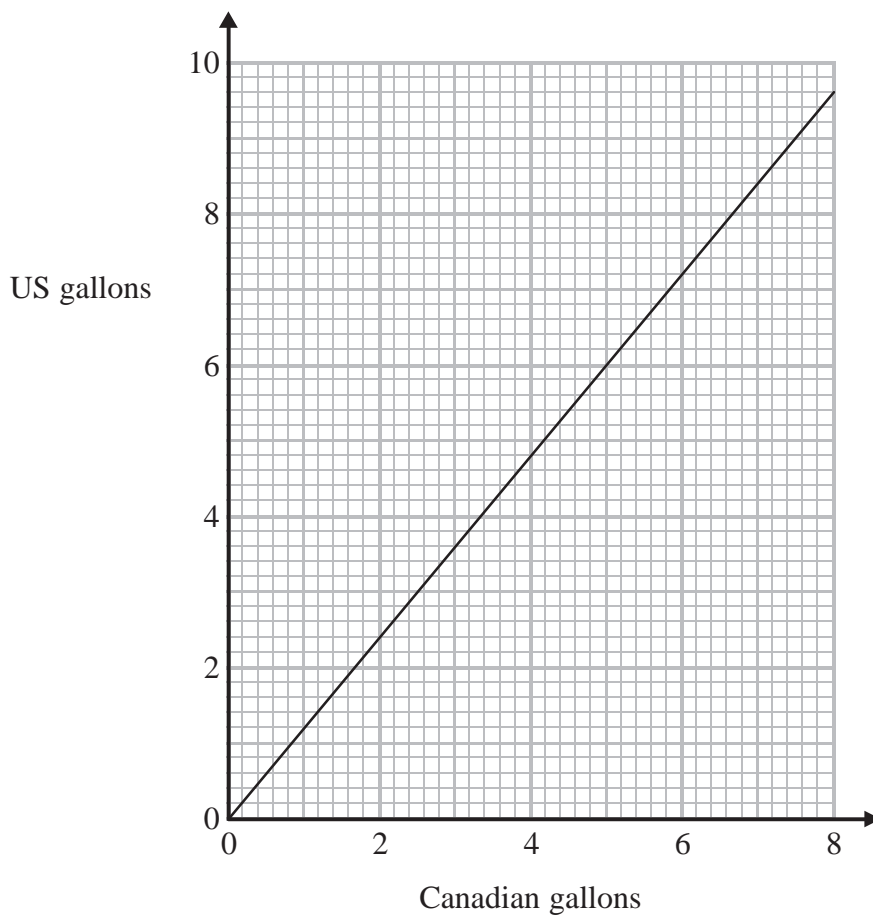
Work out the value of  $p$ .

$p =$  .....  
(5)

(Total for Question 11 is 7 marks)



12 You can use this graph to convert between US gallons and Canadian gallons.



(a) Convert 4 Canadian gallons to US gallons.

..... US gallons  
(1)

The fuel tank of Jim's truck holds 27 US gallons of fuel when full.

(b) Convert 27 US gallons to Canadian gallons.

..... Canadian gallons  
(2)

(Total for Question 12 is 3 marks)



13 In the diagram, the straight line  $AZB$  is parallel to the straight line  $CYD$ .  
 $XYZ$  and  $MYN$  are straight lines.

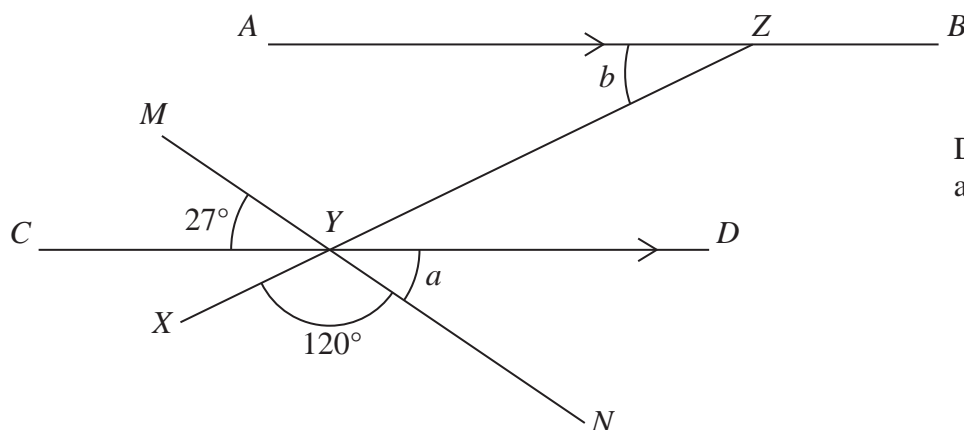


Diagram **NOT** accurately drawn

(a) Write down the mathematical name of an angle with size  $120^\circ$

.....  
 (1)

(b) (i) Write down the size of the angle marked  $a$ .

.....  
 °

(ii) Give a reason for your answer.

.....  
 (2)

(c) Work out the size of the angle marked  $b$ .

.....  
 °  
 (2)

(Total for Question 13 is 5 marks)



14 Here is part of a timetable for the Paris to Montpellier express train service.

<b>Paris</b>	06 07	10 07	12 07	18 07	20 07
<b>Valence</b>	08 22	12 24	14 24	20 24	22 24
<b>Nimes</b>	09 09	13 05	15 05	21 05	23 05
<b>Montpellier</b>	09 37	13 34	15 34	21 34	23 34

(a) At what time should the 12 07 from Paris get to Nimes?

.....  
(1)

One day, the 06 07 from Paris arrived at Montpellier  $\frac{3}{4}$  of an hour late.

(b) At what time did this train arrive at Montpellier?

.....  
(2)

(c) Work out how long it should take the 20 07 train from Paris to get to Montpellier.

.....  
(1)

The average speed of the 20 07 train from Paris is 224 km/h.

(d) Work out the distance this train travels from Paris to Montpellier.

..... km

(3)

(Total for Question 14 is 7 marks)



15 Michael carried out a survey.

He asked some students what they thought was the most important benefit of reading.  
The pie chart shows some information about their responses.

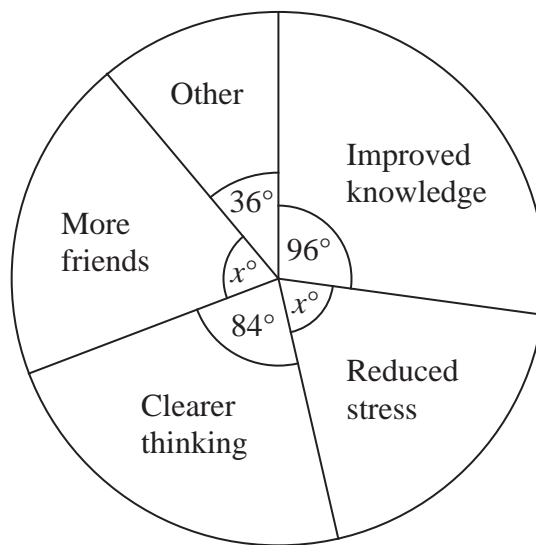


Diagram **NOT**  
accurately drawn

(a) What fraction of the students gave Reduced stress as their response?

.....  
(2)

The number of students who gave Improved knowledge as their response was 48

(b) Work out how many students were in the survey.

.....  
(2)

(Total for Question 15 is 4 marks)





- 16** The total weight of 3 cans of soup and 5 jars of peppers is 4.1 kg.  
The total weight of 4 cans of soup is 0.8 kg.

Work out the weight of 1 jar of peppers.

..... kg

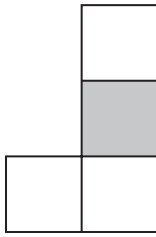
**(Total for Question 16 is 4 marks)**

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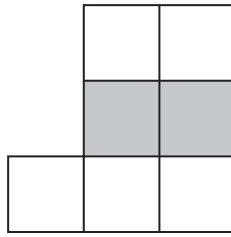
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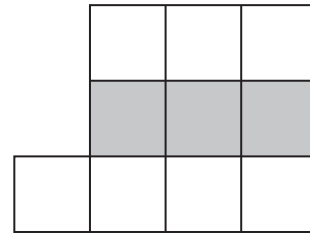
- 17 Here is a sequence of patterns made from white centimetre squares and grey centimetre squares.



Pattern  
number 1



Pattern  
number 2



Pattern  
number 3

This rule can be used to find the total number of centimetre squares in each pattern.

Multiply the Pattern number by 3 and then add 1

- (a) Work out the total number of centimetre squares in Pattern number 6

.....  
(1)

- (b) Work out the number of white centimetre squares in Pattern number 20

.....  
(1)

A pattern in this sequence has a total of 88 centimetre squares.

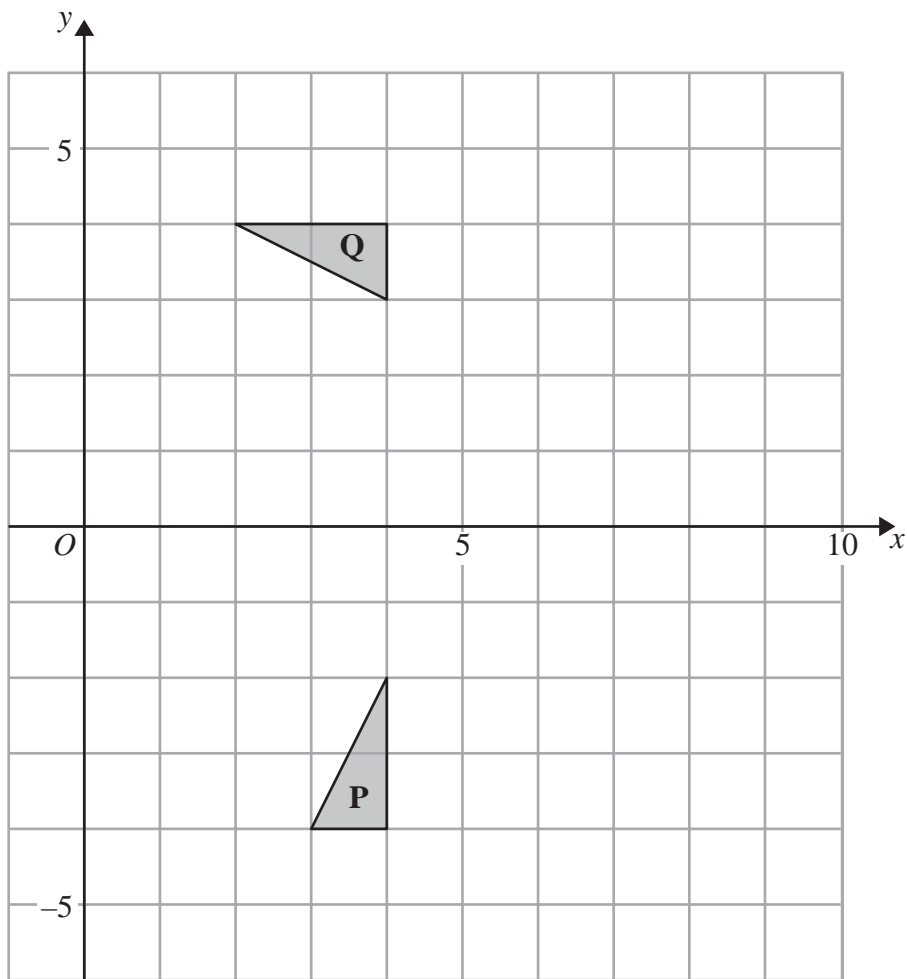
- (c) Work out the Pattern number of this pattern.

.....  
(2)

(Total for Question 17 is 4 marks)



18



(a) Describe fully the single transformation that maps triangle **P** onto triangle **Q**.

.....

.....

(3)

(b) On the grid, translate triangle **P** 3 squares to the right and 5 squares up.  
Label the new triangle **R**.

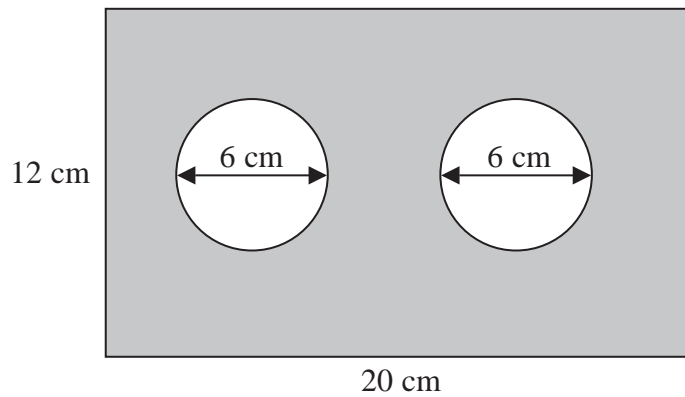
(1)

(Total for Question 18 is 4 marks)

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19

Diagram **NOT**  
accurately drawn

The diagram shows a metal plate in the shape of a rectangle.  
The rectangle has length 20 cm and width 12 cm.  
Two identical circles, each of diameter 6 cm, have been cut out of the plate.

Work out the area of the shaded region of the metal plate.  
Give your answer correct to the nearest  $\text{cm}^2$ .

.....  $\text{cm}^2$ 

(Total for Question 19 is 4 marks)

**Do NOT write in this space.**

**20** Kim bought 12 boxes of drinks.  
He paid \$15 for each box.  
There were 12 drinks in each box.

Kim sold  $\frac{3}{4}$  of the drinks for \$1.50 each.

He sold all of the other drinks at a reduced price.

He made an overall profit of 15%.

Work out how much Kim sold each reduced price drink for.

\$ .....

**(Total for Question 20 is 5 marks)**

**Do NOT write in this space.**



**21** Reeta has a biased dice.

Each time Reeta rolls the dice, the probability that she will get a six is 0.1

(a) Write down the probability that she will not get a six.

.....  
(1)

Reeta rolls the dice 50 times.

(b) Work out an estimate for the number of times that she will get a six.

.....  
(2)

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

---

**Do NOT write in this space.**



22 (a) Write 252 as a product of its prime factors.

.....  
(2)

Given that  $240 = 2^4 \times 3 \times 5$

and that  $y = 240 \times 252$

(b) write  $y$  as a product of powers of its prime factors.

.....  
(2)

(Total for Question 22 is 4 marks)

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23 The diagram shows a parallelogram  $ABCD$ .  
In the diagram, all the angles are in degrees.

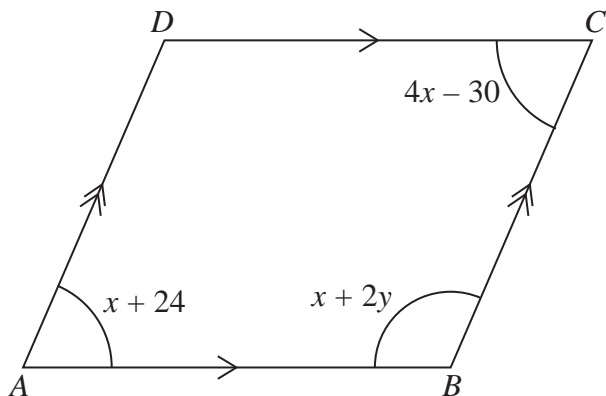


Diagram **NOT** accurately drawn

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

$x = \dots\dots\dots$

$y = \dots\dots\dots$   
(4)

(b) Find the size of angle  $BAD$ .

$\dots\dots\dots^\circ$   
(1)

(Total for Question 23 is 5 marks)





24 Mortar mix is made by mixing cement, sand and quicklime in the ratio 1 : 2 : 3

(a) Work out the volume of sand needed to make  $2.1 \text{ m}^3$  of mortar mix.

.....  $\text{m}^3$   
(2)

Julie has  $0.75 \text{ m}^3$  of quicklime.

She has plenty of sand and cement.

(b) Work out the greatest volume of mortar mix she could make.

.....  $\text{m}^3$   
(2)

(Total for Question 24 is 4 marks)

**TOTAL FOR PAPER IS 100 MARKS**

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