

Please check the examination details below before entering your candidate information

Candidate surname

MEL@JUSTMATHS.CO.UK

Other names

Centre Number

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Candidate Number

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Pearson Edexcel Level 1/Level 2 GCSE (9–1)

Thursday 16 May 2024

Morning (Time: 1 hour 30 minutes)

Paper
reference

1MA1/1F

Mathematics

PAPER 1 (Non-Calculator)

Foundation Tier

WORKED SOLUTIONS



You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB or B pencil, eraser, Formulae Sheet (enclosed). Tracing paper may be used.

Total Marks

Instructions

- Use **black** ink or ball-point pen.
- If pencil is used for diagrams/sketches/graphs it must be dark (HB or B).
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided
– *there may be more space than you need.*
- You must **show all your working**.
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- **Calculators may not be used.**

Information

- The total mark for this paper is 80
- 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.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ►

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P 7 6 9 2 2 A 0 1 2 4

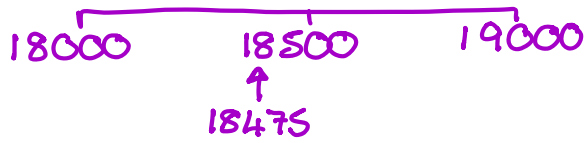

Pearson

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

- 1 Write the number 18475 correct to the nearest thousand.



18000

(Total for Question 1 is 1 mark)

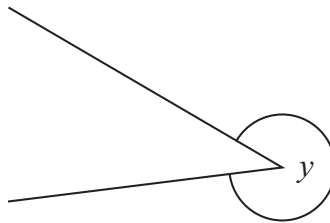
- 2 Write 0.3 as a percentage.

30

%

(Total for Question 2 is 1 mark)

- 3 Write down the mathematical name for the type of angle marked y .



reflex

(Total for Question 3 is 1 mark)

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

0.21 5
0.20 4
0.03 1
0.10 2
0.16 3

0.21 0.2 0.03 0.1 0.16

0.03 0.1 0.16 0.2 0.21

(Total for Question 4 is 1 mark)

- 5 Find the square root of 64

$$8 \times 8 = 64$$

$$8^2 = 64 \text{ so } \sqrt{64} = 8$$

8 (or ± 8 or -8)

(Total for Question 5 is 1 mark)



6 Ryan buys

4 cakes at £1.30 each
2 identical tins of soup.

Ryan pays with a £10 note.
He gets £1.80 change.

How much does Ryan pay for each tin of soup?

$$4 \text{ cakes} \Rightarrow 4 \times 1.30 = 5.20$$

$$2 \text{ soups} \Rightarrow ?$$

$$\text{Spends } £10 - £1.80 = £8.20$$

$$\begin{aligned} \text{so cost of 2 soups} &= 5.20 \\ &= £3 \end{aligned}$$

$$\text{which means } 1 \times \text{soup} = £3 \div 2$$

$$£1.50$$

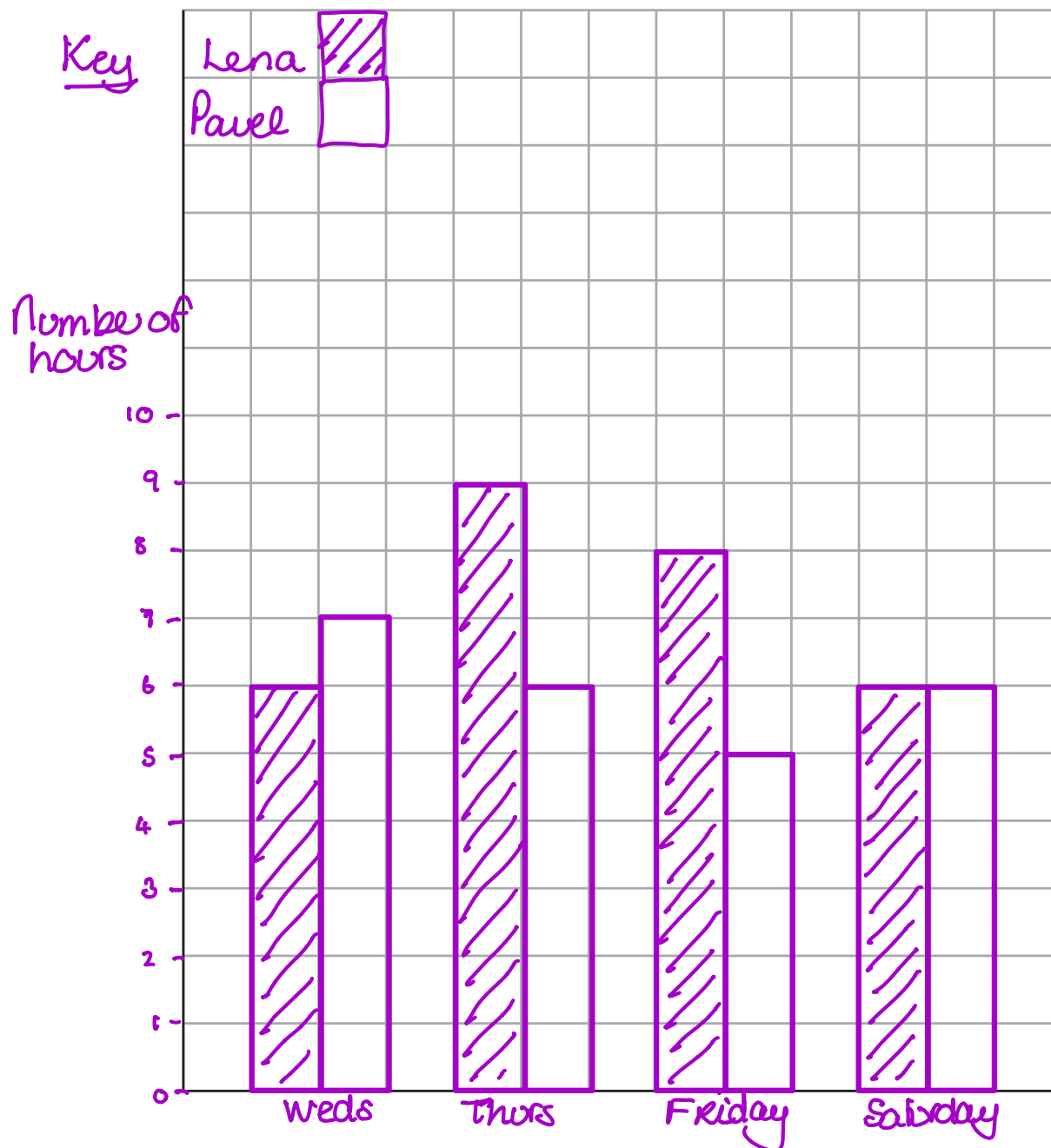
(Total for Question 6 is 4 marks)



- 7 The table shows the number of hours that Lena and Pavel worked on each of four days last week.

	Wednesday	Thursday	Friday	Saturday
Lena	6	9	8	6
Pavel	7	6	5	6

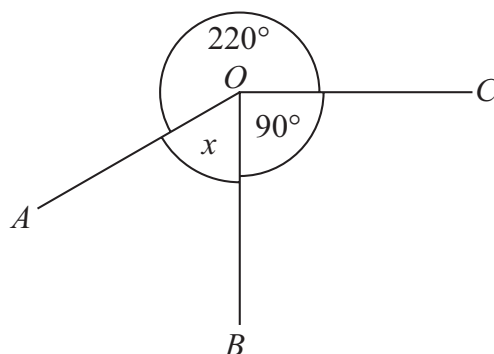
On the grid, draw a suitable diagram or chart for this information.



(Total for Question 7 is 4 marks)



8 OA , OB and OC are three straight lines.



(i) Work out the size of the angle marked x .

$$\begin{array}{r} 0 \\ 310 \end{array} \quad 360 - 310 = 50$$

$$\begin{array}{r} 50 \\ \hline \end{array} \quad (2)$$

(ii) Give a reason for your answer.

Angles that meet at a point add up to 360°

(1)

(Total for Question 8 is 3 marks)

9 Here is a number machine.



(a) Work out the output when the input is 13

$$\begin{array}{rcl}
 13 & \times 2 & = 26 \\
 & & 26 - 10 = 16
 \end{array}$$

16
.....
(1)

(b) Work out the input when the output is 28

$$\begin{array}{rcl}
 & & 28 + 10 \\
 & & = 38 \\
 \leftarrow & 38 \div 2 & \leftarrow \\
 & = 19 &
 \end{array}$$

19
.....
(2)

(c) Show that there is a number for which the output is the same as the input.

$$x \rightarrow \boxed{\times 2} \rightarrow 2x \rightarrow \boxed{- 10} \rightarrow 2x - 10$$

$$\text{so } x = 2x - 10$$

$$10 = x$$

when 10 is input

$$10 \times 2 = 20 \quad 20 - 10 = 10$$

so output is the same as the input (2)

(Total for Question 9 is 5 marks)



- 10 There are 24 cows and 36 sheep on a farm.

Write as a ratio the number of cows to the number of sheep.
Give your ratio in its simplest form.

$$\begin{array}{rcl} \text{cows} & : & \text{sheep} \\ 24 & : & 36 \\ \div 12 & & \div 12 \\ 2 & : & 3 \end{array}$$

$$2:3$$

(Total for Question 10 is 2 marks)

- 11 (a) Work out $-12 \div -4$

$$12 \div 4 = 3 \quad -12 \div 4 = -3 \quad 12 \div -4 = -3$$

$$\text{so } -12 \div -4 = 3$$

$$3$$

(1)

- (b) Find the value of 2^5

$$2 \times 2 \times 2 \times 2 \times 2$$

$$4 \quad 8 \quad 16 \quad 32$$

$$32$$

(1)

- (c) Write **one** pair of brackets in this calculation so that the answer is correct.

$$30 \div (3 + 2) - 4 = 2$$

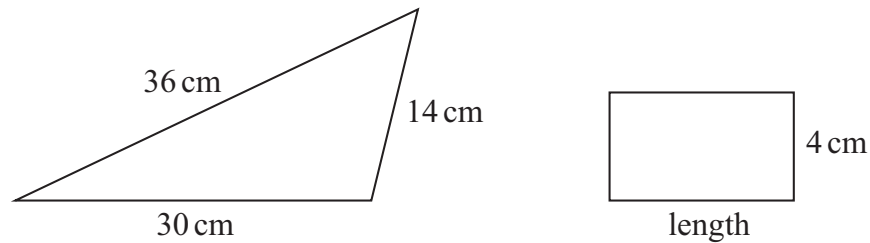
$$30 \div 5 = 6 \text{ and } 6 - 4 = 2$$

(1)

(Total for Question 11 is 3 marks)



12 The diagram shows a triangle and a rectangle.



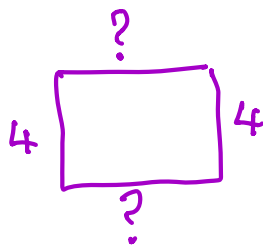
The perimeter of the rectangle is a quarter of the perimeter of the triangle.

Work out the length of the rectangle.

$$\text{Perimeter of triangle} = 36 + 30 + 14 = 80 \text{ cm}$$

$$\text{Rectangle} = \frac{1}{4} \text{ of triangle}$$

$$\text{so } \frac{1}{4} \text{ of } 80 = 80 \div 4 = 20 \text{ cm}$$



$$20 - 4 - 4 = 12$$

$$12 \div 2 = 6$$

6

..... cm

(Total for Question 12 is 4 marks)



13 There are only £10 notes and £20 notes in a wallet.

Ali takes at random a note from the wallet.

(a) Write down the probability that Ali takes a note with a value of more than £5

1 (or 100%)
(1)

There are only 1p coins and 2p coins in a bag.

The total value of the coins in the bag is 40p

The total value of the 1p coins is the same as the total value of the 2p coins.

Simon takes at random a coin from the bag.

(b) Find the probability that Simon takes a 1p coin.

	1p coins	2p coins
value	20p	20p
number of coins	20	10

$20p \div 2p = 10 \text{ coins}$

Total number of
coins : $20 + 10$
 $= 30$

$\frac{20}{30}$ or $\frac{2}{3}$
(2)

(Total for Question 13 is 3 marks)



14 Work out 273×54

other methods are valid too!

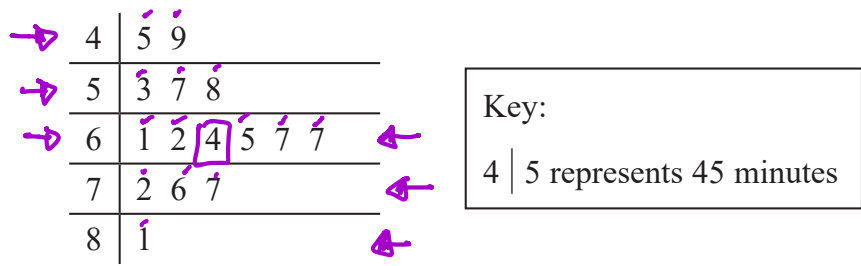
$$\begin{array}{r} 273 \\ \times 54 \\ \hline 1092 \\ 13650 \\ \hline 14742 \end{array}$$

14742

(Total for Question 14 is 3 marks)



15 Tessa recorded the times that 15 adults took to complete a run. She showed her results in a stem and leaf diagram.



(a) Find the median.

..... minutes
(1)

(b) Find the range.

81 - 45

$$\begin{array}{r} 81 \\ - 45 \\ \hline 36 \end{array}$$

..... minutes
(2)

Tessa also recorded the times that 15 children took to complete the run.

For the children, the median was 75 minutes. For the adults median = 64

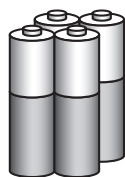
(c) Compare the times that the adults took with the times that the children took.

The adults were on average faster to complete the race as they had a smaller median

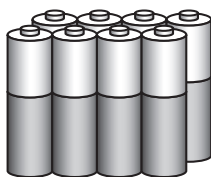
(1)

(Total for Question 15 is 4 marks)

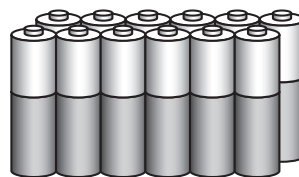
16 Batteries are sold in packs of 4, in packs of 8 and in packs of 12



£1.80



£3.20



£6.00

A pack of 4 batteries costs £1.80

A pack of 8 batteries costs £3.20

A pack of 12 batteries costs £6.00

Which pack gives the best value for money?

You must show how you get your answer.

You could also find the cost of 24 batteries for each pack.

$$\begin{array}{r} 4 \\ \hline 4 = £1.80 \\ \div 4 \quad \div 4 \\ = 1 = 45p \end{array}$$

$$\begin{array}{r} 8 \\ \hline 8 = £3.20 \\ \div 8 \quad \div 8 \\ 1 = 40p \end{array}$$

$$\begin{array}{r} 12 \\ \hline 12 = £6 \\ \div 12 \quad \div 12 \\ 1 = 50p \end{array}$$

$$40p < 45p < 50p$$

The pack of 8 is the best value.

(Total for Question 16 is 3 marks)

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA



DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

17 Solve $2(4x - 5) = 18$

$$2 \times 4x = 8x$$

$$2x - 5 = -10$$

$$8x - 10 = 18$$
$$+10 \quad +10$$

$$8x = 28$$

$$x = \frac{28}{8}$$

$$= 3\frac{4}{8}$$

8, 16, 24

$$x = 3.5 \text{ or } 3\frac{1}{2}$$

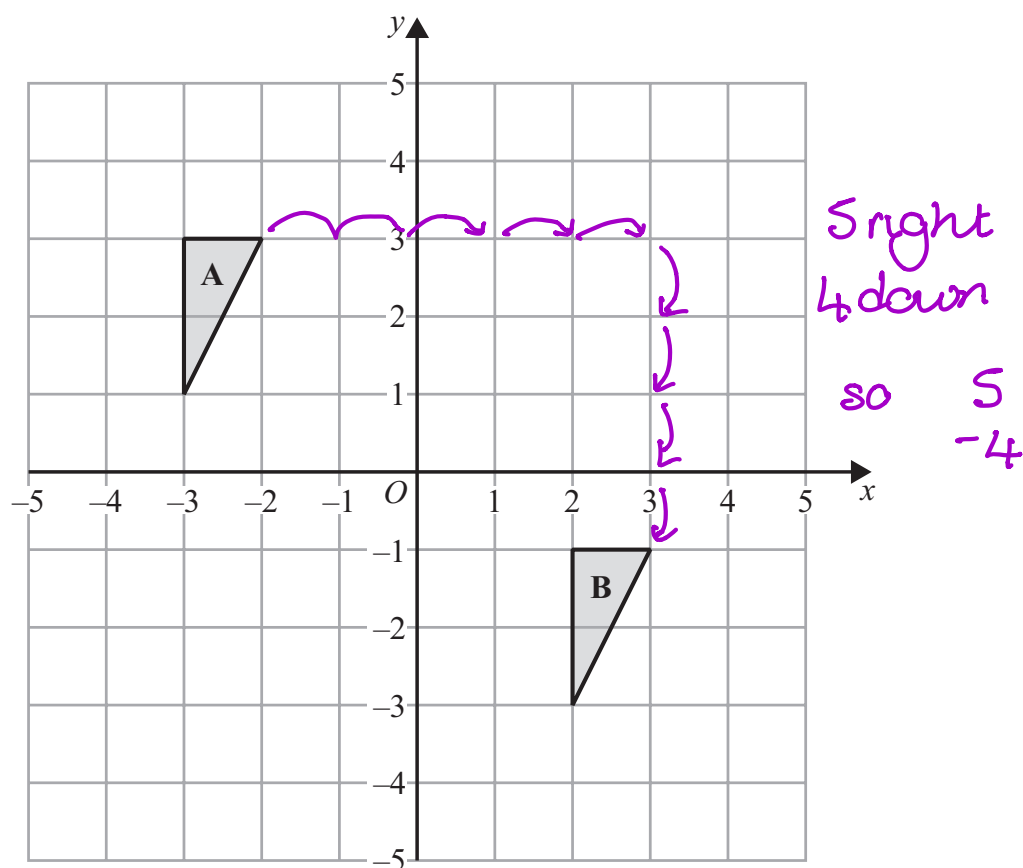
(Total for Question 17 is 3 marks)

18 Write down the value of 10^0

1

(Total for Question 18 is 1 mark)





Describe fully the **single** transformation that maps triangle A onto triangle B.

Translation $\begin{pmatrix} 5 \\ -4 \end{pmatrix}$

(Total for Question 19 is 2 marks)

20 Here are the first four terms of an arithmetic sequence.

1 5 9 13
 —4—4—4

Find an expression, in terms of n , for the n th term of this sequence.

$4n$ 4 8 12 16
 -3 -3 -3 -3

$4n - 3$

(Total for Question 20 is 2 marks)



21 (a) Work out $3\frac{4}{5} - 1\frac{2}{3}$

$$3 \times 5 = 15$$

$$18 + 4 = 19$$

$$\frac{19}{5} - \frac{5}{3}$$

$$1 \times 3 = 3$$

$$3 + 2 = 5$$

$$\begin{array}{r} \times 3 \\ \frac{57}{15} - \frac{25}{15} \end{array} \quad \begin{array}{r} \times 5 \end{array}$$

$$= \frac{32}{15}$$

$$\frac{32}{15} \text{ or } 2\frac{2}{15}$$

(2)

Kevin was asked to work out $2\frac{1}{3} \times \frac{5}{8}$

Here is his working and his answer.

$$2\frac{1}{3} \times \frac{5}{8} = \frac{7}{3} \times \frac{5}{8}$$

$$= \frac{35}{24}$$

$$= 1\frac{9}{24}$$

$$\frac{7}{3} \times \frac{5}{8} \checkmark$$

$$= \frac{35}{24} \checkmark$$

$$= 1\frac{11}{24}$$

$$35 - 24 = 11$$

Kevin's answer is wrong.

(b) What mistake has Kevin made?

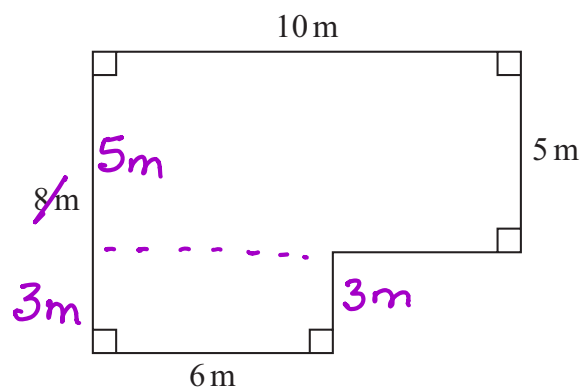
He hasn't converted to a mixed number correctly
it should be $1\frac{11}{24}$

(1)

(Total for Question 21 is 3 marks)



22 The diagram shows a plan of a floor.



Petra is going to cover the floor with paint.

Petra has 3 tins of paint.

There are 2.5 litres of paint in each tin.

Petra thinks 1 litre of paint will cover 10m^2 of floor.

- (a) Assuming Petra is correct, does she have enough paint to cover the floor?
You must show all your working.

$$\begin{aligned}\text{Area to be painted} &= 10 \times 5 + 3 \times 6 \\ &= 50 + 18 = 68\text{m}^2\end{aligned}$$

$$\begin{aligned}\text{Petra has } 3 \times 2.5 &= 7.5 \text{ litres} \\ 1 \text{ litre} &= 10\text{m}^2\end{aligned}$$

$$\text{so } 7.5 \text{ litres} = 7.5 \times 10 = 75\text{m}^2$$

She does have enough $75 > 68$

(4)



Actually, 1 litre of paint will cover 11 m^2 of floor.

- (b) Does this affect your answer to part (a)?
You must give a reason for your answer.

No, she will still have enough

(1)

(Total for Question 22 is 5 marks)

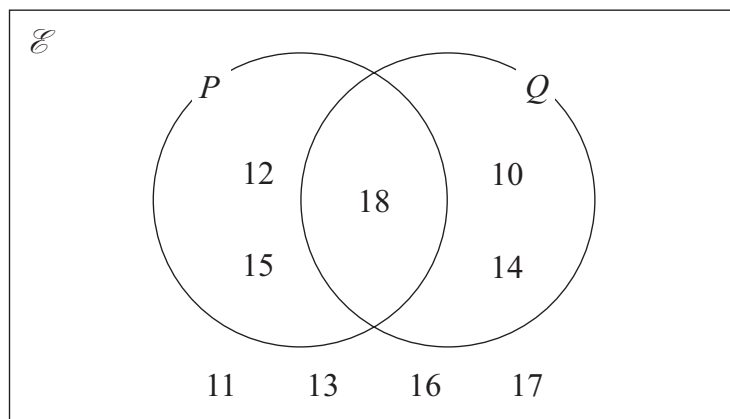
DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA



23 Here is a Venn diagram.



- (a) Write down the numbers that are in set P' *← LOOK means not in P*

11, 13, 16, 17, 10, 14

(1)

A number is chosen at random from the universal set, $\mathcal{E}$

- (b) Find the probability that this number is in the set $P \cup Q$
union

5/9

(2)

(Total for Question 23 is 3 marks)



- 24 Sophie drives a distance of 513 kilometres on a motorway in France.
She pays 0.81 euros for every 10 kilometres she drives.

(a) Work out an estimate for the total amount that Sophie pays.

$$513 \approx 500 \text{ km}$$

$$0.81 \approx 0.8 \text{ euros}$$

$$500 \div 10 = 50$$

$$50 \times 0.8 = 40$$

.....40..... euros
(3)

- (b) Is your answer to part (a) an underestimate or an overestimate?
Give a reason for your answer.

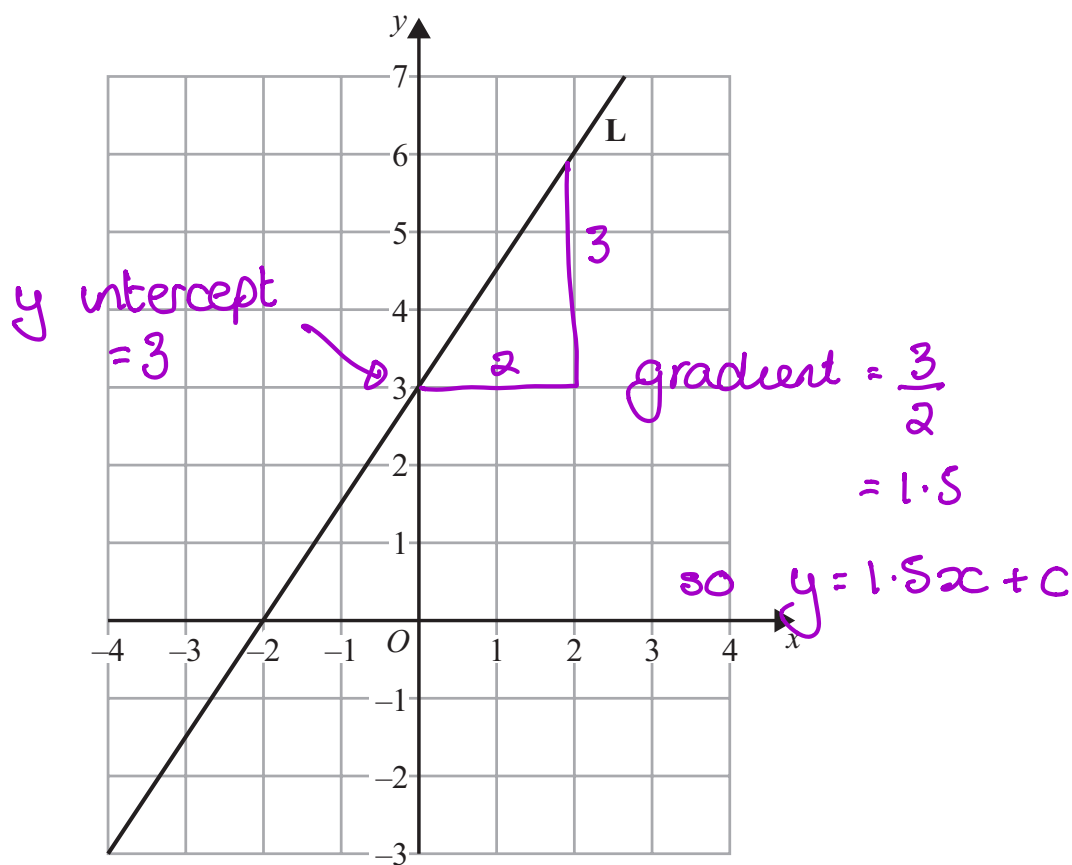
underestimate as both numbers were rounded down

(1)

(Total for Question 24 is 4 marks)



25 Here is a straight line **L** drawn on a grid.



(a) Find an equation for **L**.

$$y = 1.5x + 3$$

(3)

$$\text{or } y = \frac{3}{2}x + 3$$

M is a different straight line with equation $y = 5x$

(b) Write down the equation of a straight line parallel to **M**.

$$y = 5x \pm \text{"a number"}$$

$$\text{e.g. } y = 5x + 7$$

(1)

(Total for Question 25 is 4 marks)



- 26 Kasim has some small jars, some medium jars and some large jars.
He has a total of 400 jars.

$\frac{3}{8}$ of the 400 jars are empty.

For the empty jars, **READ THIS!!**

number of small jars : number of medium jars = 3 : 4

number of medium jars : number of large jars = 1 : 2

Work out the percentage of Kasim's jars that are empty small jars.

$$\begin{aligned} & 400 \\ & \frac{3}{8} \times 400 = 400 \div 8 \times 3 \\ & = 150 \quad \leftarrow \text{EMPTY} \end{aligned}$$

$$\begin{array}{rcl} S : m & M : L & \\ 3 : 4 & 1 : 2 & \\ & \times 4 \quad \times 4 & \\ 3 : 4 & 4 : 8 & \end{array}$$

$$\begin{array}{rcl} SO & S : M : L & | \text{ TOTAL} \\ & 3 : 4 : 8 & | 15 \\ & 30 \quad 40 \quad 80 & | 150 \times 10 \end{array}$$

% THAT ARE EMPTY SMALL

$$= \frac{30}{400} \times 100$$

$$= \frac{30}{4} = \frac{15}{2}$$

$$= 7.5$$

$$7.5\%$$

(Total for Question 26 is 5 marks)



27 In a sale, normal prices are reduced by 30%

The sale price of a TV is £280

Work out the normal price of the TV.

$$\begin{array}{|c|c|} \hline 70\% & 30\% \\ \hline \end{array}$$

280

$$\begin{array}{rcl} 70\% & = & 280 \\ \div 7 & & \div 7 \end{array}$$

$$\begin{array}{rcl} 10\% & = & 40 \\ \times 10 & & \times 10 \end{array}$$

$$100\% = 400$$

£ 400

(Total for Question 27 is 2 marks)

28 Solve $x + 11 \leq 5 - \frac{1}{2}x$

$$\begin{array}{rcl} x + 11 & \leq & 5 - 0.5x \\ +0.5x & & +0.5x \end{array}$$

$$\begin{array}{rcl} 1.5x + 11 & \leq & 5 \\ -11 & & -11 \end{array}$$

$$\begin{array}{rcl} 1.5x & \leq & -6 \\ \div 1.5 & & \div 1.5 \end{array}$$

$$x \leq -4$$

$$x \leq -4$$

(Total for Question 28 is 3 marks)

TOTAL FOR PAPER IS 80 MARKS

