Please check the examination details below before entering your candidate information

Candidate surname	Other names

Centre Number | Candidate Number

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

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 ▶

P76922A

F:1/1/1/

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.

thousands

since 4 is < 5, we round down to 18 000

18 000 (1)

(Total for Question 1 is 1 mark)

2 Write 0.3 as a percentage.

$0.3 \times 100\% = 30\%$

30 (1) %

(Total for Question 2 is 1 mark)

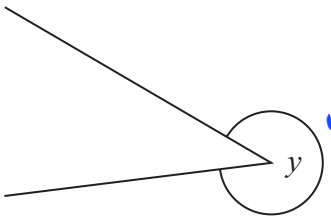
3 Write down the mathematical name for the type of angle marked y.

$\theta < 90^\circ$ = acute angle

$\theta = 90^\circ$ = right angle

$90^\circ < \theta < 180^\circ$ = obtuse angle

$180^\circ < \theta < 360^\circ$ = reflex angle



angle more than 180°

reflex angle (1)

(Total for Question 3 is 1 mark)

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

0.21 0.2 0.03 0.1 0.16

0.03, 0.1, 0.16, 0.2, 0.21 (1)

(Total for Question 4 is 1 mark)

5 Find the square root of 64

$\sqrt{64} = 8$

8 (1)

(Total for Question 5 is 1 mark)

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

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?

Finding total items Ryan buys : (let price of 1 tin of soup = x)

$4 \times £1.30 + 2 \times x = £5.20 + 2x$ (1)

$$\begin{array}{r} {\scriptstyle 1}\,1.30 \\ \times \quad 4 \\ \hline 5.20 \end{array}$$

Finding price for one tin of soup :

$£10 - (£5.20 + 2x) = £1.80$ (1)

$£10 - £5.20 - £1.80 = 2x$

$£3.00 = 2x$ (1)

$£1.50 = x$ (1)

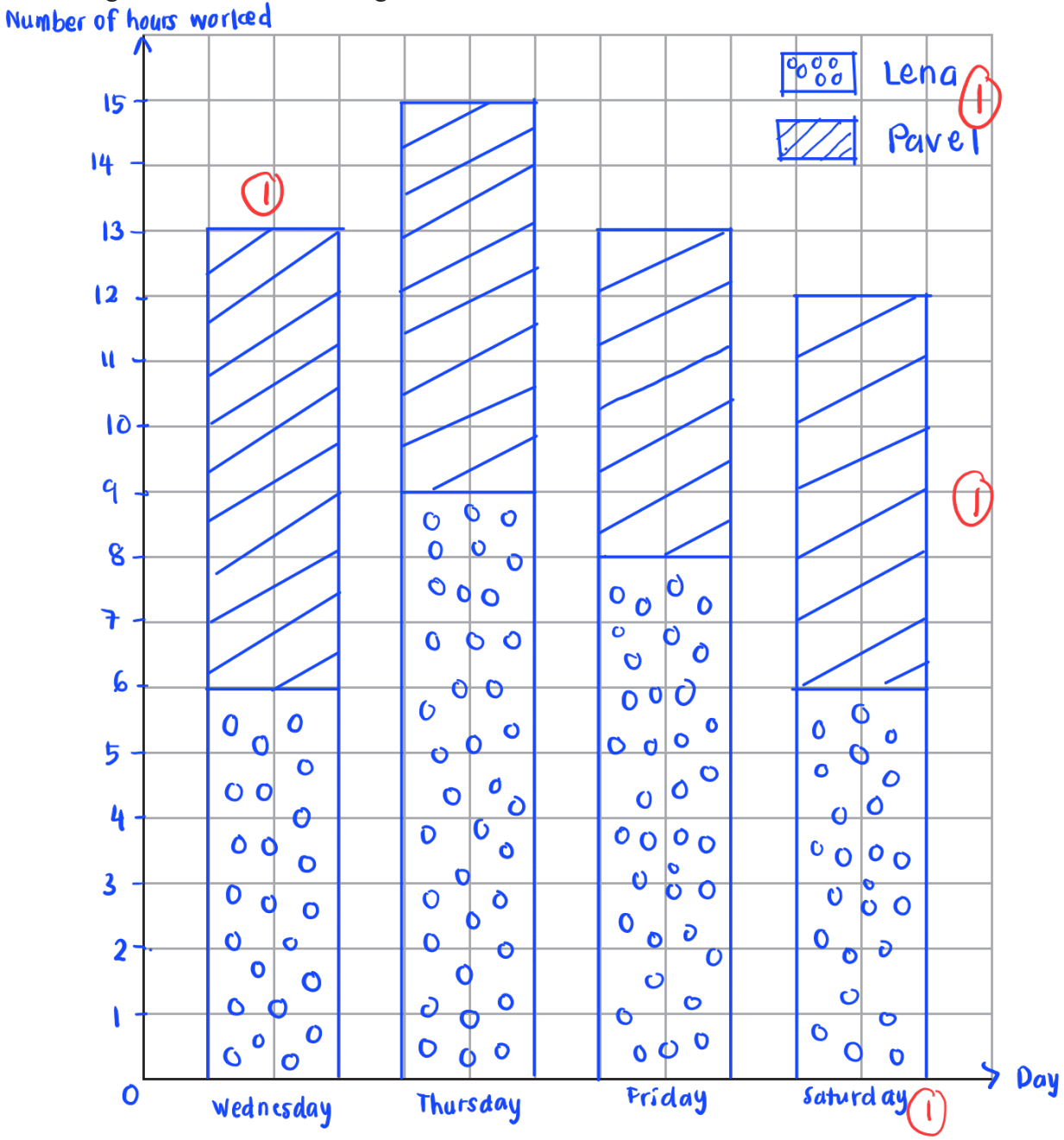
£ 1.50

(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.

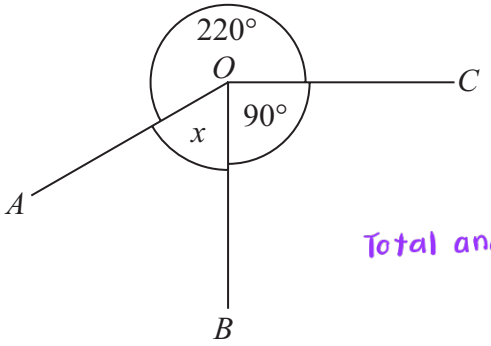
	Wednesday	Thursday	Friday	Saturday
Lena	6	9	8	6
Pavel	7	6	5	6

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.



Total angle around a point = 360°

360
- 220
140
- 90
50

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

$x = 360° - 220° - 90°$ (1)

$= 50°$ (1)

50°

(2)

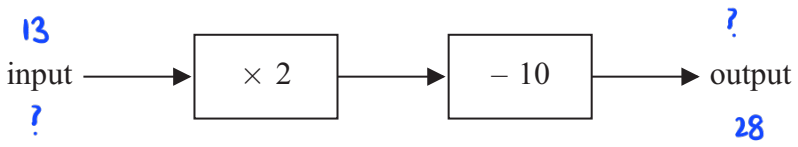
(ii) Give a reason for your answer.

Angles at a point add up to 360° (1)

(1)

(Total for Question 8 is 3 marks)

9 Here is a number machine.



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

When input = 13,

$(13 \times 2) - 10 = \text{output}$

$26 - 10 = \text{output}$

$16 =$

16 (1)

(1)

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

when output = 28,

$(\text{input} \times 2) - 10 = 28$

$\text{input} \times 2 = 38$

$\text{input} = \frac{38}{2} = 19$

19 (1)

(2)

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

when output = input,

let output = input = x,

$(x \times 2) - 10 = x$

$2x - 10 = x$ (1)

$2x - x = 10$

$x = 10$

if input = 10, $(10 \times 2) - 10 = \text{output}$

$20 - 10 = \text{output}$

$10 = \text{output}$ (1)

$\therefore$ input = output = 10

(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.

	cows	sheeps
number	24	36

factor of both 24 and 36 ✓ simplest form ✓

ratio : $\frac{\text{cows}}{\text{sheeps}} = \frac{24 \div 12}{36 \div 12} = \frac{2}{3}$ (1)

cows : sheeps = 2 : 3 (1)

2 : 3

(Total for Question 10 is 2 marks)

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

$-4 \overline{)-12}$ → 3

3 (1)

(1)

(b) Find the value of 2^5

$2^5 = 2 \times 2 \times 2 \times 2 \times 2$

$= 32$

32 (1)

(1)

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

if $(30 \div 3) + 2 - 4 = 8$ ×

$30 \div 3 + (2 - 4) = 8$ ×

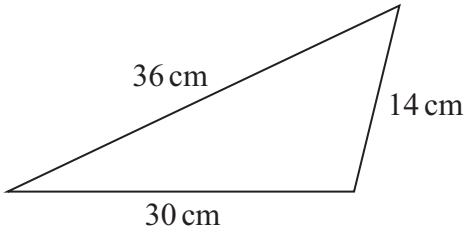
$30 \div (3 + 2) - 4 = 2$ ✓

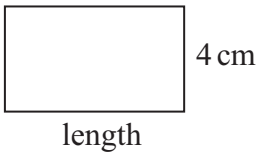
$30 \div (3 + 2) - 4 = 2$ (1)

(1)

(Total for Question 11 is 3 marks)

12 The diagram shows a triangle and a rectangle.





Perimeter of rectangle :
2 × length + 2 × height

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

Work out the length of the rectangle.

Perimeter of rectangle $= \frac{1}{4} \times$ perimeter of triangle

$2 \times \text{length} + 2 \times 4 = \frac{1}{4} \times (36 + 30 + 14)$ (1)

$2 \times \text{length} + 8 = \frac{1}{4}(80)$ (1)

$2 \times \text{length} = 20 - 8$

$\text{length} = \frac{12}{2}$ (1)

$= 6$ cm (1)

$4 \overline{)80}$ → 20, -80

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 because both £10 and £20 notes are more than £5

1 (1)

(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.

Total value of 1p is the same as 2p :

Hence, value of 1p = value of 2p = $\frac{40\text{ p}}{2}$ = 20 p

Finding number of 1p and 2p coins :

1p coins : $\frac{20\text{ p}}{1\text{ p}}$ = 20 coins (1)

2p coins : $\frac{20\text{ p}}{2\text{ p}}$ = 10 coins

Finding probability of 1p coins :

$p = \frac{\text{number of 1p coins}}{\text{total number of coins}} = \frac{20\text{ coins}}{(20+10)\text{ coins}} = \frac{20}{30} = \frac{2}{3}$ (1)

$\frac{2}{3}$

(2)

(Total for Question 13 is 3 marks)

14 Work out 273×54

$$\begin{array}{r} {}^{2}{}^{1} \\ 273 \\ \times \quad 54 \\ \hline 1092 \\ +\ 13650 \\ \hline 14742 \\ \hline \end{array}$$

(1) (1) (1)

14 742

(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.

4	5 9
5	3 7 8
6	1 2 4 5 7 7
7	2 6 7
8	1

Key:
4 | 5 represents 45 minutes

(a) Find the median.

median for odd data sets :
$\frac{n+1}{2}$ th term
Median = $\frac{15+1}{2}$ = 8th term (from stem and leaf diagram)
= 64 (1)

64 minutes
(1)

(b) Find the range.

range : largest data - smallest data
= 81 - 45 (1)
= 36 (1)

$\begin{array}{r} {}^{7}\not{8}1 \\ -\ 45 \\ \hline 36 \end{array}$

36 minutes
(2)

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

For the children, the median was 75 minutes.

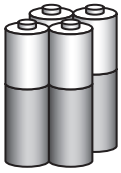
(c) Compare the times that the adults took with the times that the children took.

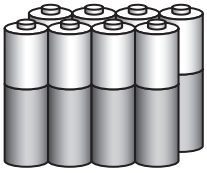
The adults were faster because they have smaller median . (1)

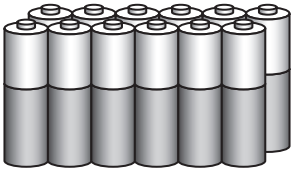
(1)

(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.

Finding value of 1 battery for each pack :

Pack of 4 : £1.80 ÷ 4 = £0.45 (1 battery) (1)

$$4\overline{)1.80} = 0.45,\quad -0,\quad 1.8,\quad -1.6,\quad 20,\quad -20$$

Pack of 8 : £3.20 ÷ 8 = £0.40 (1 battery)

$$8\overline{)3.20} = 0.40,\quad -3.2$$

Pack of 12 : £6.00 ÷ 12 = £0.50 (1 battery) (1)

$$12\overline{)6.00} = 0.50,\quad -6.0$$

∴ Pack of 8 gives the best value for money with only £0.40 per battery. (1)

(Total for Question 16 is 3 marks)

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

$2(4x - 5) = 18$

$(+10)\ 8x - 10 = 18\ (+10)$ (1)

$(\div 8)\ 8x = 28\ (\div 8)$

$x = \frac{28}{8} = 3.5$ (1) (1)

$8\overline{)28}$ → 3.5, -24, 40, -40

$x =$ 3.5

(Total for Question 17 is 3 marks)

18 Write down the value of 10^0

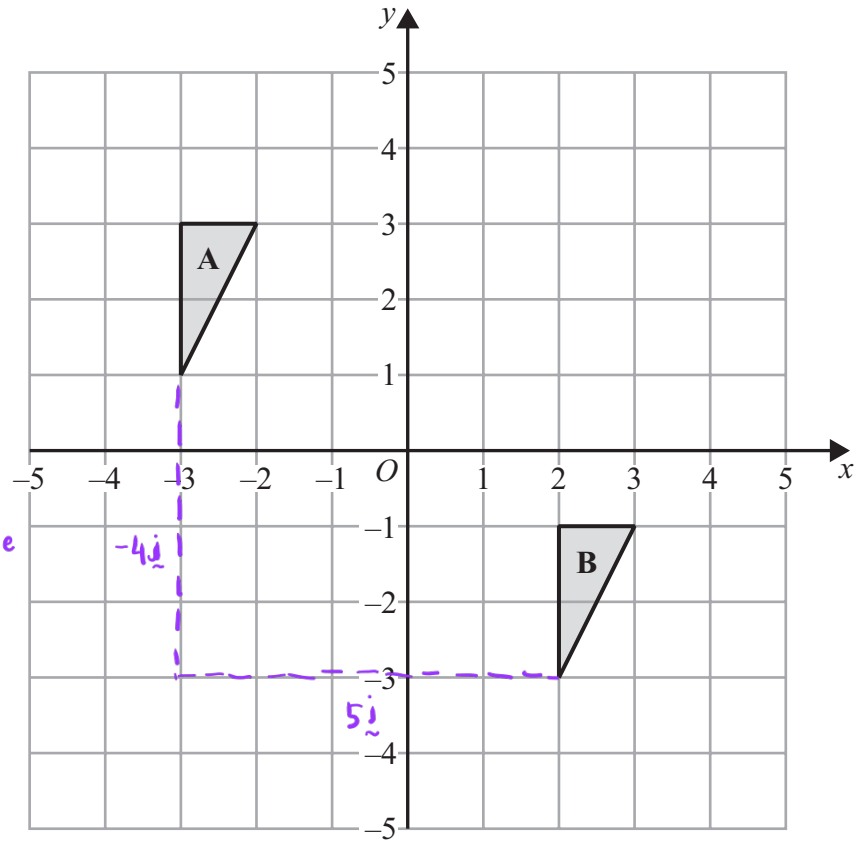
1 (1)

(Total for Question 18 is 1 mark)

19

Translation :

the object and image are of the same size and shape. Only position have changed.



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

Translation of $\begin{pmatrix} 5 \\ -4 \end{pmatrix}$ (1)

(1)

.....

.....

.....

(Total for Question 19 is 2 marks)

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

common difference, $d = 4$

first term, $a = 1$

1 +4 5 +4 9 +4 13

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

nth term : $u_n = a + (n-1)d$

$u_n = 1 + (n-1)4$

$= 1 + 4n - 4$

$= 4n - 3$ (2)

$4n - 3$

.....

(Total for Question 20 is 2 marks)

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

$a\frac{+b}{\times c} = \frac{ac+b}{c}$

$3\frac{+4}{\times 5} - 1\frac{+2}{\times 3}$

$= \frac{19 \times 3}{5 \times 3} - \frac{5 \times 5}{3 \times 5}$ — method of having common denominator

$= \frac{57}{15} - \frac{25}{15} = \frac{57-25}{15}$ (1)

$= \frac{32}{15} = 2\frac{2}{15}$ (1)

$2\frac{2}{15}$

(2)

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

Here is his working and his answer.

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

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

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

Kevin's answer is wrong.

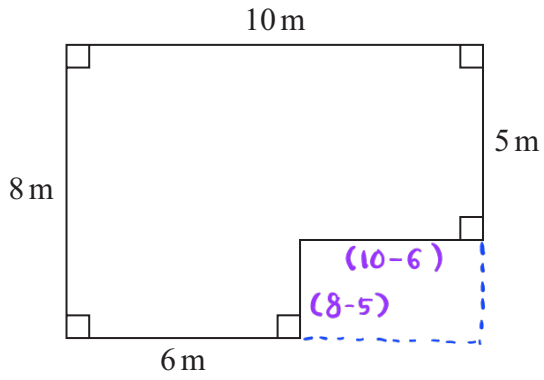
(b) What mistake has Kevin made?

The numerator in his final answer should be 11 instead of 9. (1)

(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 $10\,m^2$ of floor.

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

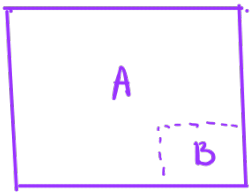
Finding how many litre of paints Petra has :

$$3 \text{ tins} \times \frac{2.5 \text{ litres}}{1 \text{ tin}} = 7.5 \text{ litres}$$

Finding area of floor can be covered with Petra's paint :

$$7.5 \text{ litres} \times \frac{10 \text{ m}^2}{1 \text{ litre}} = 75 \text{ m}^2 \quad (1)$$

Finding area of Petra's floor :



Area of A : 10 m × 8 m

: 80 m^2

Area of B : (10-6) m × (8-5) m

: 4 m × 3 m

: 12 m^2 (1)

(4)

Area of floor : Area A - area B : 80 - 12 : 68 m^2 (1)

∴ 68 < 75. Yes, Petra has enough paint. (1)

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

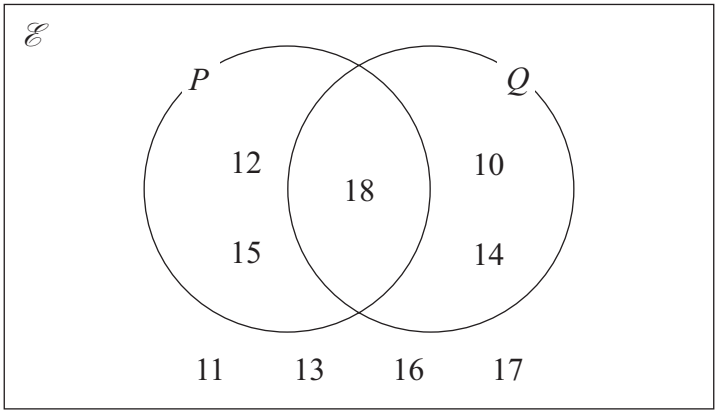
(b) Does this affect your answer to part (a)?
You must give a reason for your answer.

No. She will have more paint since 1 litre of paint can cover more than what she had assumed. (1)

(1)

(Total for Question 22 is 5 marks)

23 Here is a Venn diagram.



(a) Write down the numbers that are in set P' — numbers other than in set P

10, 11, 13, 14, 16, 17 (1)

(1)

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

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

$P \cup Q$ = numbers that are in set P and Q

= 10, 12, 14, 15, 18 (1)

$P(P \cup Q)$ = $\frac{\text{numbers in set P and Q}}{\text{total numbers}}$

= $\frac{5}{9}$ (1)

$\frac{5}{9}$

(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.

→ round the number to nearest 1 s.f

Total distance travelled : 500 km (1 s.f) (1)

81
× 50
4050

if 10 km, she pays 0·81 euros,

500 km, she pays = 0.81 euros × $\frac{500 \text{ km}}{10 \text{ km}}$ (1)

= 40.5 euros (1)

40.5 ..... euros

(3)

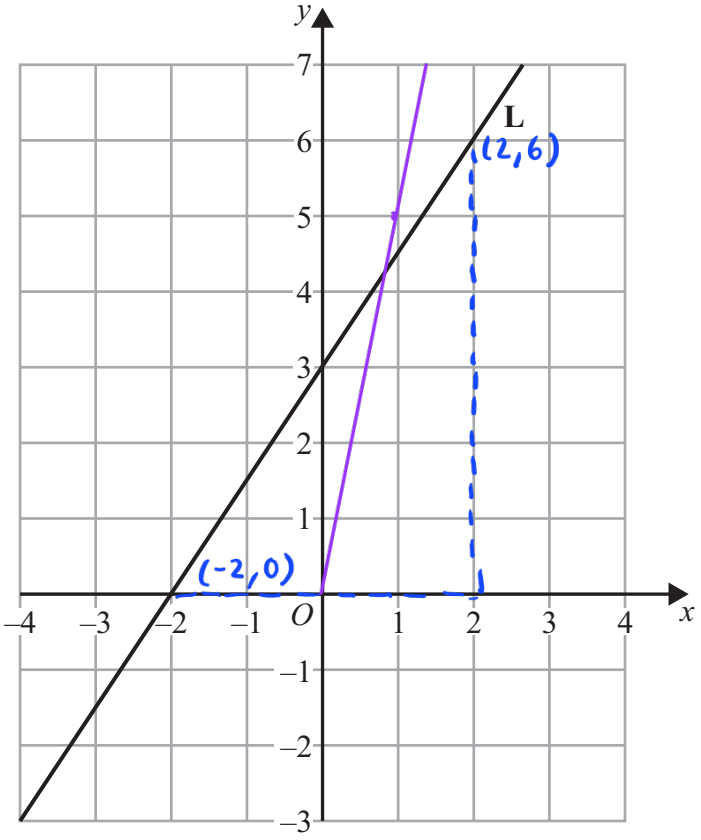
(b) Is your answer to part (a) an underestimate or an overestimate?
Give a reason for your answer.

Underestimate. Because the distance travelled is rounded down to 500 km from 513 km. (1)

(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**.

For equation of a straight line:
requires: x value, y value and a gradient.

Finding gradient:

$m = \frac{6-0}{2-(-2)} = \frac{6}{4} = \frac{3}{2}$ (1)

Equation of L: $y = \frac{3}{2}x + 3$ (1)

At (2,6): $6 = \frac{3}{2}(2) + c$ (1)

$c = 3$

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

(3)

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

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

gradient M = 5

$y = 5x + c$, where $c \neq 0$ (1)

if c = 0, will be line M.

$y = 5x + c$

(1)

(Total for Question 25 is 4 marks)

DO NOT WRITE IN THIS AREA

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,

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.

Finding numbers of empty jars :

$\frac{3}{8} \times 400 = 150$ empty jars (1)

For EMPTY JARS :

Finding ratio of small jars : medium jars : large jars

small jars : medium jars : large jars

3 : 4

1 × 4 : 2 × 4

3 : 4 : 8 (1)

Finding number of empty small jars :

$\frac{3}{3+4+8} \times 150 = \frac{3}{15} \times 150$ (1)

= 30 empty small jars

Finding percentage of empty small jars out of all Kasim's Jar :

$\frac{30}{400} \times 100\%$ (1) $= 7.5\%$ (1)

4) 30 = 7.5
− 28
20
− 20

7.5 .... %

(Total for Question 26 is 5 marks)

27 In a sale, normal prices are reduced by 30% → 70% of normal price

The sale price of a TV is £280

Work out the normal price of the TV.

to cancel out

$\frac{100}{70} \times \frac{70}{100} \times$ normal price $= £280 \times \frac{100}{70}$

normal price $= \frac{100}{70} \times £280$ (1)

$= £400$ (1)

$400 \div 7 = 2800 - 28$

£ 400

(Total for Question 27 is 2 marks)

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

$x + 11 \leqslant 5 - \frac{1}{2}x$

$x + 11 (-11) \leqslant 5 - \frac{1}{2}x (-11)$ (1)

$x \leqslant -6 - \frac{1}{2}x$

$x (+\frac{1}{2}x) \leqslant -6 - \frac{1}{2}x (+\frac{1}{2}x)$

(1)

$(2) \frac{3}{2}x \leqslant -6 (2)$

$(\div 3) 3x \leqslant -12 (\div 3)$

$x \leqslant -4$ (1)

$x \leqslant -4$

(Total for Question 28 is 3 marks)

TOTAL FOR PAPER IS 80 MARKS

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