Write your name here

Surname	JustMaths	Other names

Centre Number

Candidate Number

Mathematics
worked solutions

Paper 1 (Non-Calculator)

Foundation Tier

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser.

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.
- Answer the questions in the spaces provided
  – *there may be more space than you need.*
- **Calculators may not be used.**
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- You must **show all your working out**.

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.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ▶

S48571A0120

PEARSON

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

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

          0.61   0.1   0.16   0.106

          0·610   0·100   0·160   0·106
           ④   ①   ③   ②

                                    0·1, 0·106, 0·16, 0·610

(Total for Question 1 is 1 mark)

2   Write 0.037 as a fraction.

    Reminder = $\frac{37}{100}$ = 0·37

    so 0·037 = $\frac{37}{1000}$

                                              $\frac{37}{1000}$

(Total for Question 2 is 1 mark)

3   Write down the 20th odd number.

    1, 3, 5, 7, 9
    11, 13, 15, 17, 19
                  29
               39

                                              39

(Total for Question 3 is 1 mark)

4 Write down all the factors of 20

1, 20
2, 10
4, 5
~~5, 4~~

1, 2, 4, 5, 10, 20 ....

(Total for Question 4 is 2 marks)

5 Tanya needs to buy chocolate bars for all the children in Year 7
Each of the (130) children get one chocolate bar.

There are 8 chocolate bars in each packet.

Work out the least number of packets of chocolate bars that Tanya needs to buy.
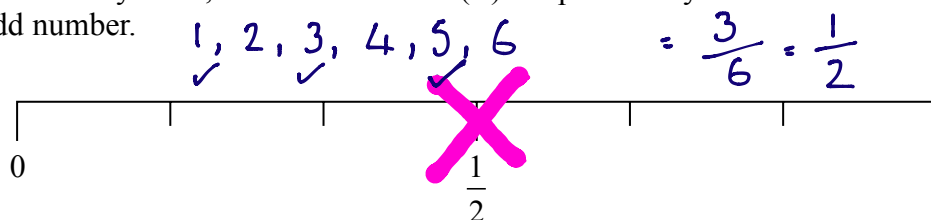
$$\times 10 \begin{cases} 1 \text{ packet} = 8 \text{ bars} \\ 10 \text{ packets} = 80 \text{ bars} \end{cases} \times 10$$

5 packets = 40 bars.

15 packets = 120 bars
16 packets = 128 bars   NOT ENOUGH
17 packets = 136 bars.

17 packets ....

(Total for Question 5 is 3 marks)

6 Greg rolls a fair ordinary dice once.

(i) On the probability scale, mark with a cross (×) the probability that the dice will land on an odd number.

1, 2, 3, 4, 5, 6 $= \dfrac{3}{6} = \dfrac{1}{2}$

(ii) On the probability scale, mark with a cross (×) the probability that the dice will land on a number (less than 5)

1, 2, 3, 4, 5, 6 $\dfrac{4}{6} = \dfrac{2}{3}$
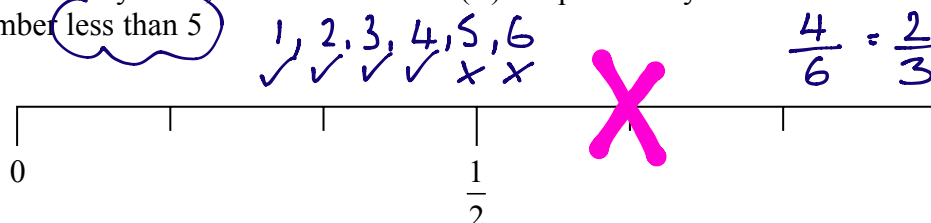
(Total for Question 6 is 2 marks)

7 One day Sally earned £60
She worked for 8 hours.

Work out Sally's hourly rate of pay.

$$60 \div 8$$

$$\begin{array}{r} 07.5 \\ 8\overline{\smash)60.^{4}0} \end{array}$$

£ 7.50

(Total for Question 7 is 2 marks)

8 Work out 15% of 80

$$10\% = 8$$
$$5\% = 4$$
$$\overline{15\% = 12}$$

12

(Total for Question 8 is 2 marks)

9 There are 3 red beads and 1 blue bead in a jar.   Total beads = 4
A bead is taken at random from the jar.

What is the probability that the bead is blue?

$$\frac{1}{4}$$

(Total for Question 9 is 1 mark)

10 There are only black pens and green pens in a box.
The ratio of the number of black pens in the box to the number of green pens in the box
is 2 : 5

What fraction of the pens are black?

$$B : G$$
$$2 : 5$$

fraction of black pens = $\frac{2}{7}$

$$\frac{2}{7}$$

(Total for Question 10 is 1 mark)

11 Sally has three tiles.
Each tile has a different number on it.
Sally puts the three tiles down to make a number.
Each number is made with all three tiles.

$$\boxed{1}\ \boxed{2}\ \boxed{3}$$
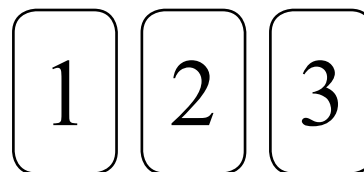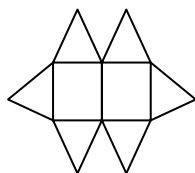
How many different numbers can Sally make?
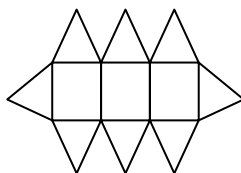
123
132
213
231
312
321

6 different numbers

(Total for Question 11 is 2 marks)

12 Here are the first three patterns in a sequence.
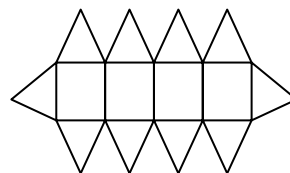The patterns are made from triangles and rectangles.

[handwritten:]
pattern no: 1   2   3
Rectangles: 2   3   4
triangles: 6   8   10

pattern number 1   pattern number 2   pattern number 3

(a) How many triangles are there in pattern number 7?

[handwritten:]
pattern   4   5   6   7
$\triangle$'s   12   14   16   18

18

(2)

Charlie says

"There are 4 rectangles in pattern number 3 so there will be 8 rectangles in pattern number 6"

(b) Is Charlie right?
Give a reason for your answer.

[handwritten:]
Pattern: 4   5   6
Rectangles   5   6   7

No, pattern 6 will have 7 rectangles

(1)

(Total for Question 12 is 3 marks)

13 Paul organised an event for a charity.

Each ticket for the event cost £19.95 $\simeq$ £20
Paul sold 395 tickets. $\simeq$ 400

Paul paid costs of £6000
He gave all money left to the charity.

(a) Work out an estimate for the amount of money Paul gave to the charity.

400 × 20 = £8000

Money given to charity = 8000 − 6000 = £2000

£ 2000

(3)

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

This will be an overestimate as the numbers have been rounded up.

(1)

(Total for Question 13 is 4 marks)

14 The table shows information about the numbers of fruit trees in an orchard.

Apple tree	Pear tree	Plum tree
45	20	25

(a) The pictogram shows this information.

Complete the key for the pictogram.

Apple tree	△△△△△△△△△ 45
Pear tree	△△△△ 20
Plum tree	△△△△△ 25

Key: △ represents ...5... trees

(1)

(b) There are 90 fruit trees in the orchard.

Apple tree	Pear tree	Plum tree
45	20	25

×4 180° 80° 100° = 90 trees.

Draw an accurate pie chart for this information.

1 tree = 360 ÷ 90
= 4°

45 × 4 = 180°

Pear Tree
80° (20 trees)

Apple tree
180° (45 trees)

Plum trees
100° (25 trees)
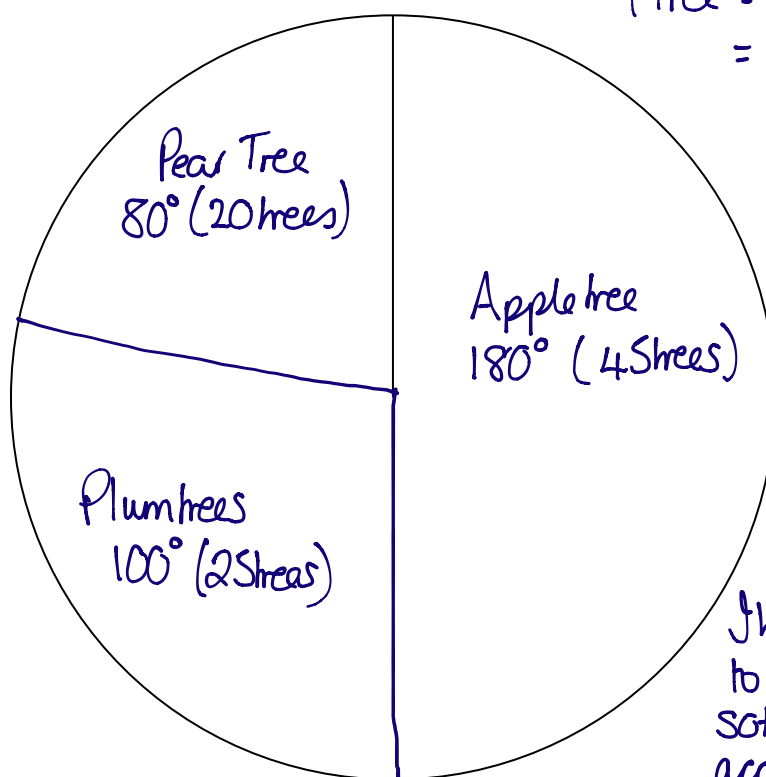
I haven't been able to use a protractor so these angles aren't accurate

(3)

(Total for Question 14 is 4 marks)

15 Carpet tiles are going to be used to cover a floor.

The floor is a 1200 mm by 1000 mm rectangle. ~~1·2m = 120cm~~ ~~1000mm = 1m = 100cm~~
Each carpet tile is a 40 cm by 30 cm rectangle.

Exactly 10 carpet tiles can be used to cover the floor completely.

Show in a labelled sketch how this can be done.
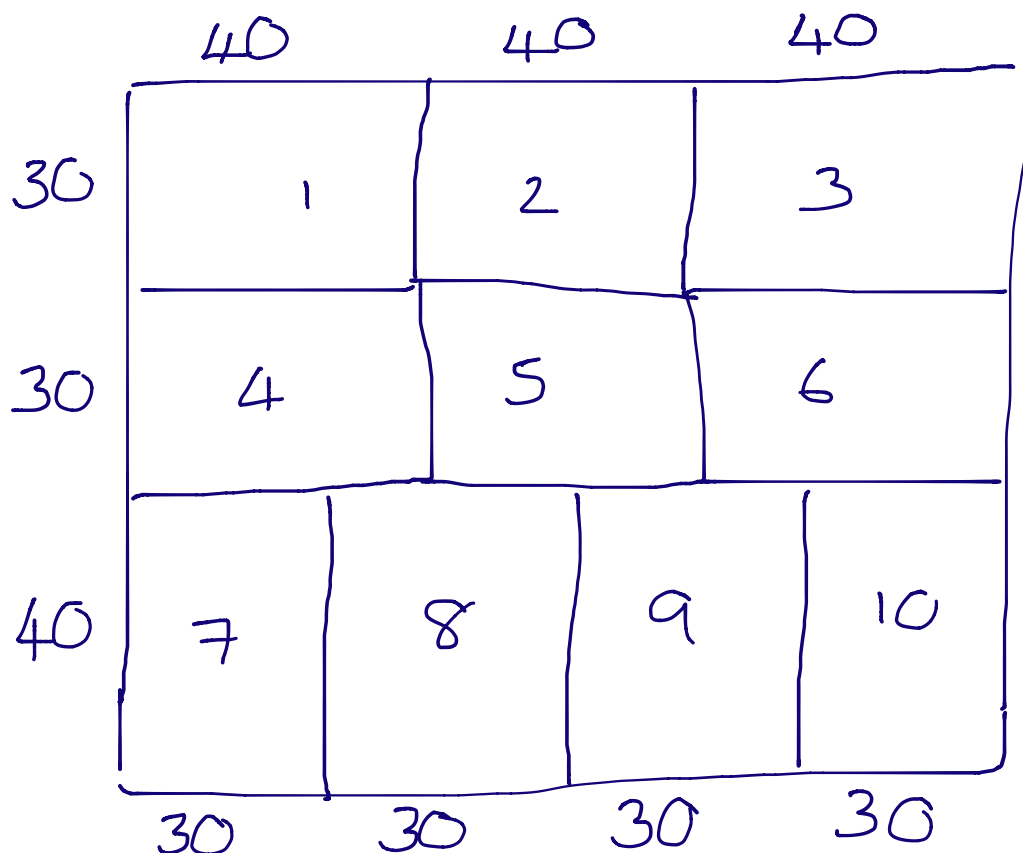
(Total for Question 15 is 3 marks)

16 Sam buys 20 boxes of oranges.
There are 25 oranges in each box.

Each boxes of oranges costs £7

Sam sells $\frac{2}{5}$ of the oranges he bought.

He sells each of these oranges for 40p.

He then sells each of the remaining oranges at 3 oranges for 50p.

Did Sam make a profit or did Sam make a loss?
You must show working to justify your answer.

Total oranges = 20 × 25
= 500

(10 × 25 = 250)

Total cost = 20 boxes × £7 = £140

$\frac{2}{5}$ of 500 = 200 × 40p = 8000p = £80

300 left = 100 × 50p = 5000p = £50
3 for 50p

50 + 80 = £130

140 − 130 = £10 LOSS

(Total for Question 16 is 5 marks)

17 100 students had some homework.

$100 - 42 = 58$

42 of these students are boys.
8 of the 100 students did **not** do their homework.
53 of the girls did do their homework.

(a) Use this information to complete the frequency tree.

(3)
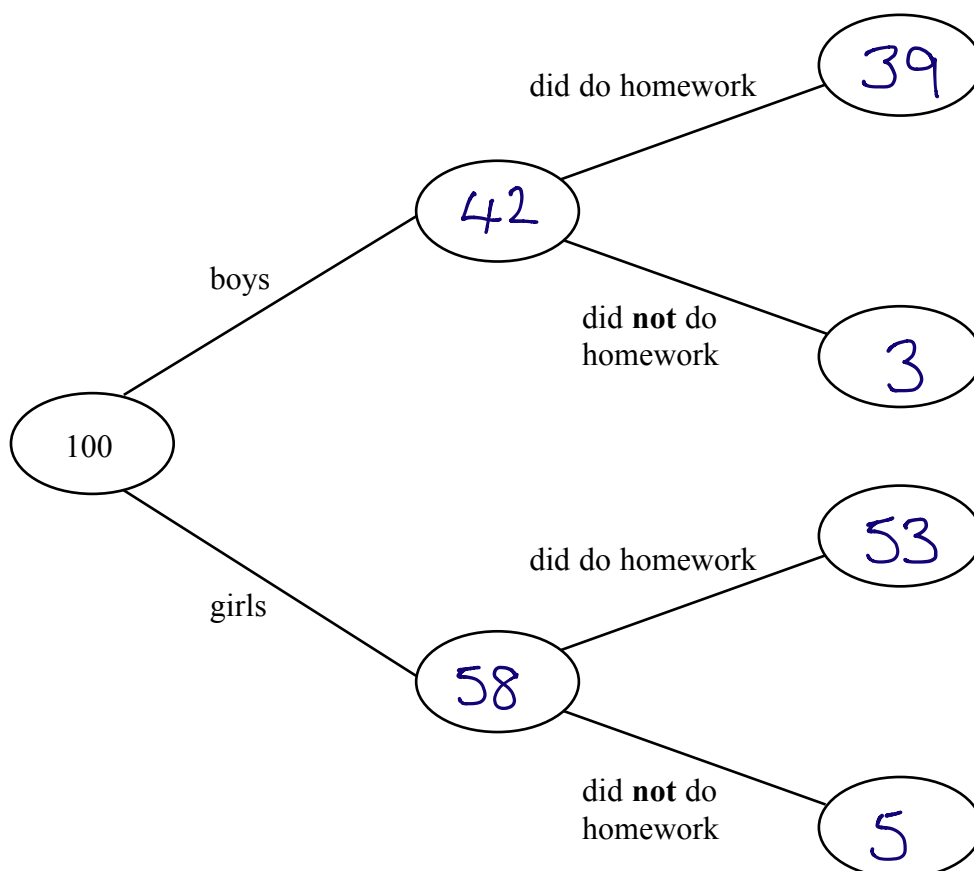
One of the girls is chosen at random.

(b) Work out the probability that this girl did **not** do her homework.

$\dfrac{5}{58}$

(2)

(Total for Question 17 is 5 marks)

18 (a) Work out $\frac{2}{7} + \frac{1}{5}$

$\frac{10}{35} + \frac{7}{35}$

$\frac{17}{35}$

(2)

(b) Work out $1\frac{2}{3} \div \frac{3}{4}$

$\frac{5}{3} \div \frac{3}{4}$

$\frac{5}{3} \times \frac{4}{3} = \frac{20}{9}$

$2\frac{2}{9}$

(2)

(Total for Question 18 is 4 marks)

19 Solve $4x + 5 = x + 26$

$-5 \quad\quad -5$

$4x = x + 21$
$-x \quad\quad -x$

$\frac{3x}{3} = \frac{21}{3}$

$x = 7$

(Total for Question 19 is 2 marks)

20 In a sale, normal prices are reduced by 20%.
The normal price of a coat is reduced by £15

Work out the normal price of the coat.

100%

80%   20%

£15

$\div 2 \left(\begin{array}{l} 20\% = 15 \\ 10\% = 7.50 \end{array} \right) \div 2$

$\times 10 \left(\begin{array}{l} 100\% = £75 \end{array} \right) \times 10$

£ ....75........

(Total for Question 20 is 2 marks)

21 Work out 6.34 × 5.2

```
   634
 ×  52
 ─────
  1268
 31700
 ─────
 32968
```

32.968

32.968

(Total for Question 21 is 3 marks)

22 Expand and simplify $(m + 7)(m + 3)$

$$m^2 + 3m + 7m + 21$$

$$m^2 + 10m + 21$$

(Total for Question 22 is 2 marks)

23

$$\begin{array}{r} 104 \\ 104 \\ \hline 208 \end{array} \quad \begin{array}{r} 360 \\ -208 \\ \hline 52 \end{array}$$
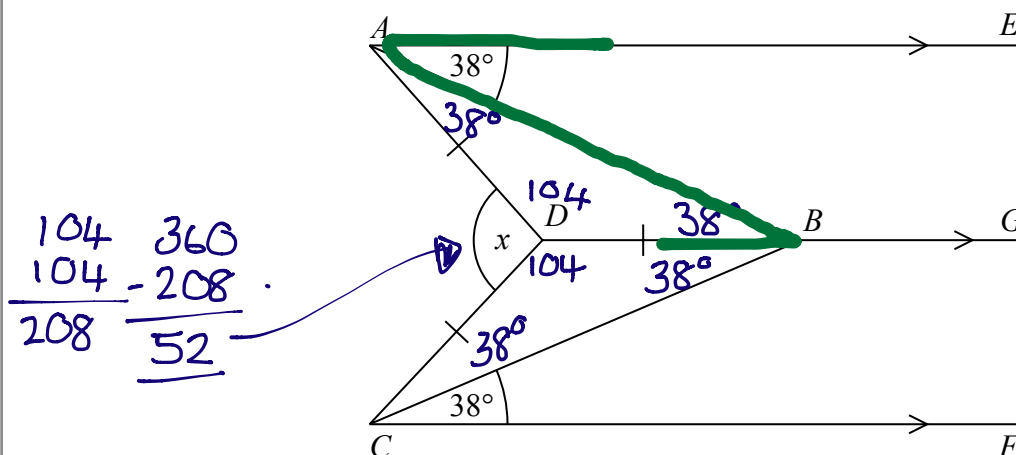
AE, *DBG* and *CF* are parallel.
DA = DB = DC.
Angle *EAB* = angle *BCF* = 38°

Work out the size of the angle marked *x*.
You must show your working.

$$38 + 38 = 76$$
$$180 - 76 = 104$$

alternate angles are
equal

· in an isosceles triangle, there are 2 equal angles
· angles in a triangle add up to 180
· angles around a point = 360

52 °

(Total for Question 23 is 3 marks)

24 Gary drove from London to Sheffield.
It took him 3 hours at an average speed of 80 km/h.

Lyn drove from London to Sheffield.
She took 5 hours.

Assuming that Lyn
        drove along the same roads as Gary
    and did not take a break,

(a) work out Lyn's average speed from London to Sheffield.

$$\begin{array}{r} 048 \\ 5\overline{)2^24^40} \end{array}$$

Gary London ⟶ Sheffield

3 hours

80 km/hr

so distance = 240 km

Lyn London ⟶ Sheffield

5 hours

Assuming distance = 240 km

Speed = $\frac{240}{5}$

........48........ km/h

(3)

(b) If Lyn did **not** drive along the same roads as Gary, explain how this could affect your answer to part (a).

her distance may be different and so her average speed would be affected

(1)

(Total for Question 24 is 4 marks)

25 In a company, the ratio of the number of men to the number of women is 3:2

40% of the men are under the age of 25
10% of the women are under the age of 25

What percentage of all the people in the company are under the age of 25?

assume 100 in
total.

M : W
3 : 2

40% under 25   10% under 25

using a total of 100
m : w
60 : 40

10% = 6   10% = 4
40% = 24

under 25 = 24 + 4
= $\frac{28}{100}$ = 28%

.........................%

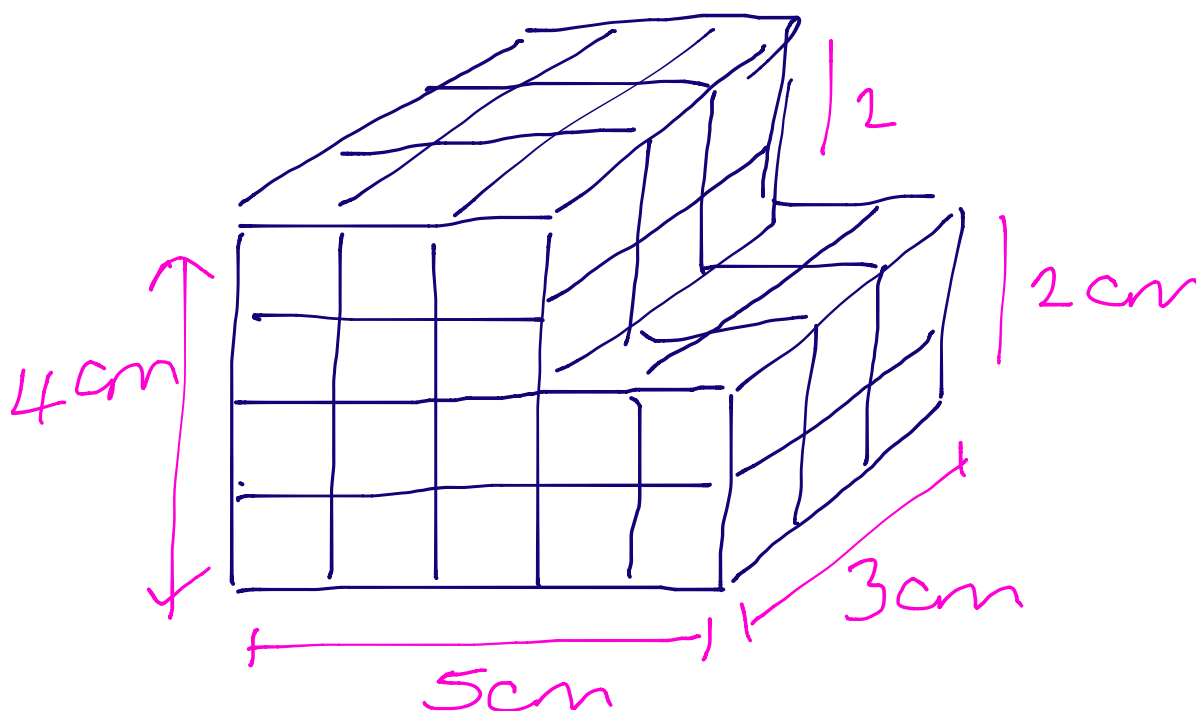**(Total for Question 25 is 4 marks)**

26 The plan, front elevation and side elevation of a solid prism are drawn on a centimetre grid.

plan

front elevation   **side elevation**
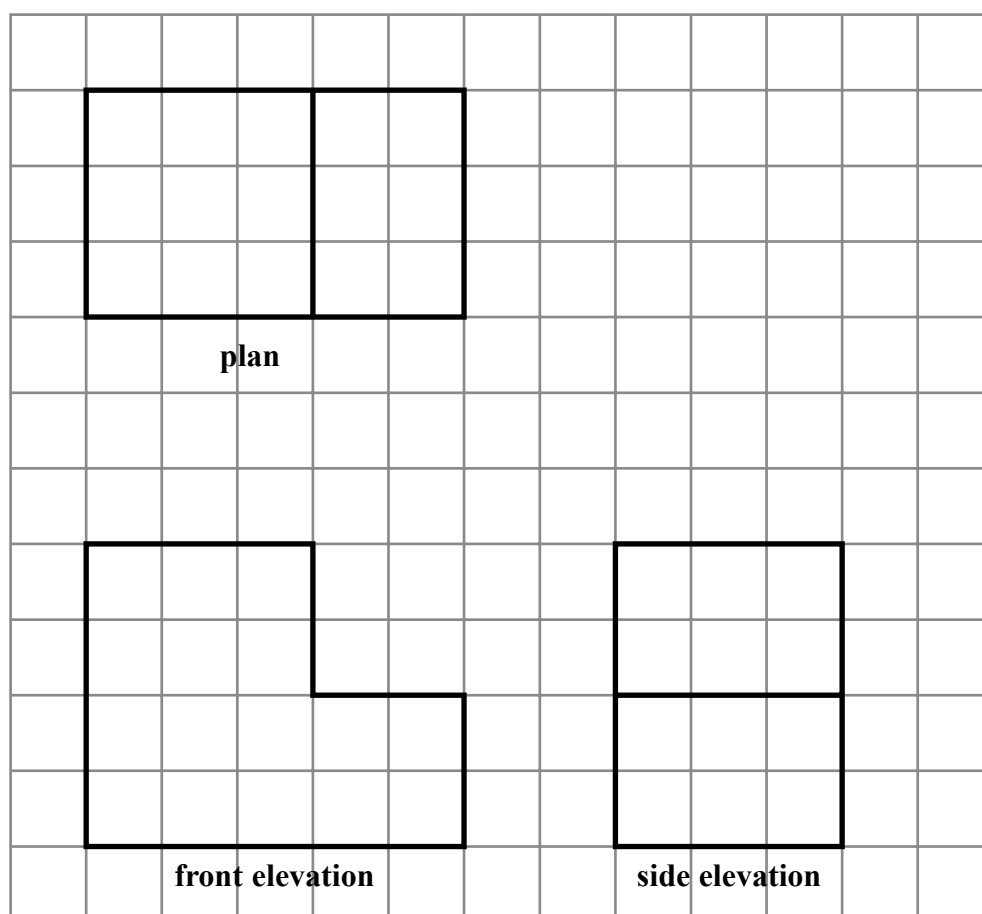
In the space below, draw a sketch of the solid prism.
Write the dimensions of the prism on your sketch.

4cm

5cm

2

2cm

3cm

(Total for Question 26 is 2 marks)

27 There are 1200 students at a school.

Kate is helping to organise a party.
She is going to order pizza.

Kate takes a sample of 60 of the students at the school.
She asks each student to tell her **one** type of pizza they want.

The table shows information about her results.

Pizza	Number of students
ham	20
salami	15
vegetarian	8
margarita	17

Work out how much ham pizza Kate should order.
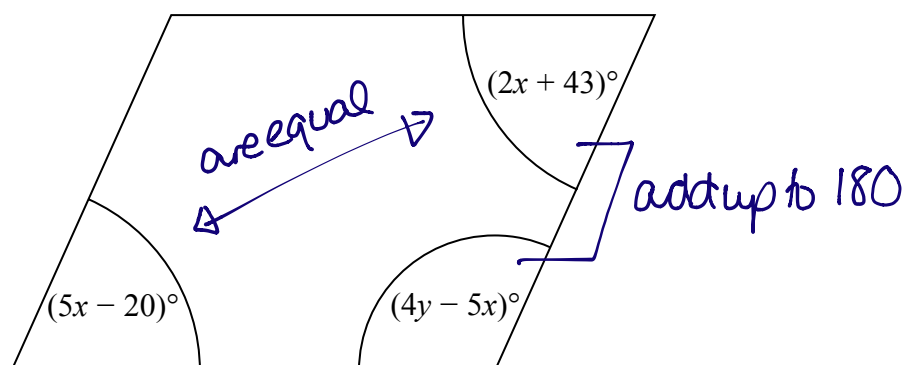Write down any assumption you make **and** explain how this could affect your answer.

Fraction of 60 students $= \dfrac{20}{60} = \dfrac{1}{3}$

All students $\dfrac{1}{3} \times 1200 = \underline{\underline{400}}$

assuming that the sample of 60 represents the whole school ... if its not representative she may need more or less pizza

(Total for Question 27 is 3 marks)

28 Here is a parallelogram.

$(2x + 43)°$

are equal

add up to 180

$(5x − 20)°$

$(4y − 5x)°$

Work out the value of x and the value of y.

$5x - 20 = 2x + 43$
$\quad +20 \qquad\qquad +20$
$\quad 5x = 2x + 63$
$\quad -2x \quad -2x$
$\quad 3x = 63$
$\quad x = 21°$

$2x + 43 + 4y - 5x = 180$
$2 \times 21 + 43 + 4y - 5 \times 21 = 180$
$42 + 43 - 105 + 4y = 180$
$\quad -20 + 4y = 180$
$\quad +20 \qquad\qquad +20$
$\quad \dfrac{4y}{4} = \dfrac{200}{4}$
$\quad y = 50°$

$x = $ 21°

$y = $ 50°

(Total for Question 28 is 5 marks)

29
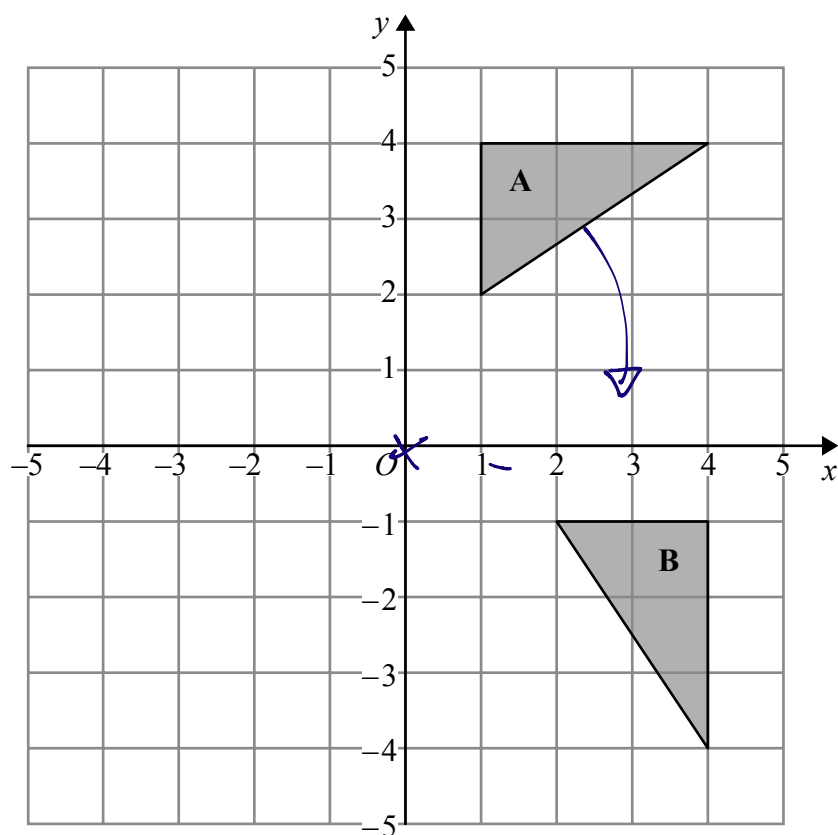
Describe fully the single transformation that maps triangle **A** onto triangle **B**.

Rotation, 90° clockwise centre O,O

(Total for Question 29 is 2 marks)

30 $\mathbf{a} = \begin{pmatrix} 3 \\ -7 \end{pmatrix}$, $\qquad \mathbf{b} = \begin{pmatrix} 4 \\ 2 \end{pmatrix}$

Work out $\mathbf{b} - 2\mathbf{a}$ as a column vector.

$$\begin{pmatrix} 4 \\ 2 \end{pmatrix} - 2 \begin{pmatrix} 3 \\ -7 \end{pmatrix} = \begin{pmatrix} 4 \\ 2 \end{pmatrix} - \begin{pmatrix} 6 \\ -14 \end{pmatrix} = \begin{pmatrix} -2 \\ 16 \end{pmatrix}$$

(Total for Question 30 is 2 marks)

TOTAL FOR PAPER IS 80 MARKS

Pearson Edexcel Level 1/Level 2 GCSE (9-1) in Mathematics - Sample Assessment Materials (SAMs) - Issue 2 - June 2015
© Pearson Education Limited 2015