Q32.

Five muffins cost £2.65 and three coffees cost £3.21

What is the total cost of one muffin and one coffee?

$$\begin{array}{r} 0.53 \\ 5\overline{)2.^26^15} \end{array}$$ One muffin → £0.53

$$\begin{array}{r} 1.07 \\ 3\overline{)3.2^2 1} \end{array}$$ One coffee → £1.07

$$\begin{array}{r} 1.07 \\ + 0.5_13 \\ \hline £1.60 \end{array}$$

£1.60

Q33.

Alex weighs 81.2 kg, Katie weighs 63.8 kg and Coby weighs 69.4 kg. What is the range of their weights?

Range = Biggest − Smallest

Range = 81.2 − 63.8

Range = 17.4 kg

$$\begin{array}{r} ^7 8\,^1\!\overset{0}{1}.^12 \\ - 63.8 \\ \hline 17.4 \end{array}$$

17.4 kg

Q34.

Rowan has 18 cards. 3 of his cards are queens. Sophie takes a card at random from Rowan. What is the probability that Sophie does not take a queen?
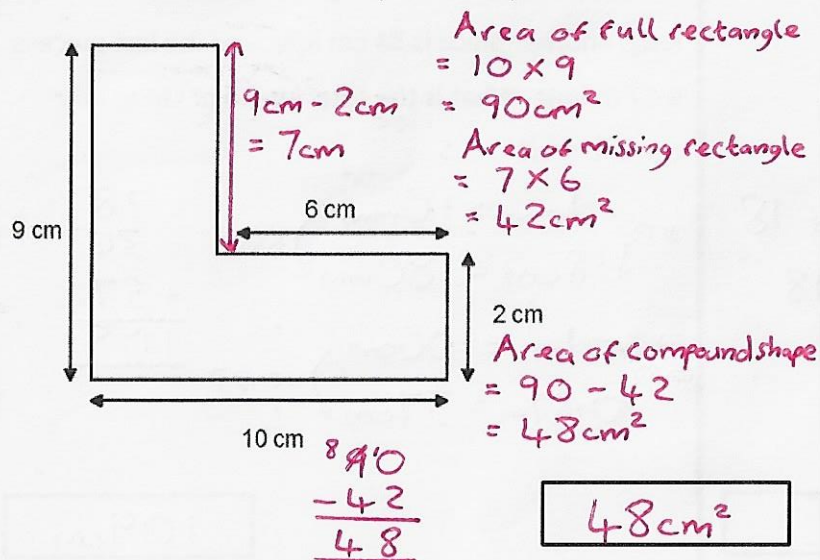
Not a queen = 18 − 3 = 15

Probability not a queen = $\frac{15}{18}\,\boxed{\div 3}\!\!\boxed{\div 3}$

$= \frac{5}{6}$

$\frac{5}{6}$

Q35.

Area of a rectangle = length x width

Work out the area of the compound shape below:

9 cm

6 cm

9 cm

2 cm

10 cm

9cm − 2cm = 7cm

Area of full rectangle
= 10 × 9
= 90 cm²

Area of missing rectangle
= 7 × 6
= 42 cm²

Area of compound shape
= 90 − 42
= 48 cm²

$$\begin{array}{r} ^8\overset{9}{\cancel{9}}\,^1 0 \\ - 4\,2 \\ \hline 4\,8 \end{array}$$

48 cm²

Q36.

Roger is building a model ship. He uses 64 pieces of wood which weigh 52 g each. What is the total weight, in kilograms, of the wood used in the model ship?

1 kg = 1000 g

$$\begin{array}{r} ^2 6\,4 \\ \times\ 5\,2 \\ \hline 0\,1\,2\,8 \\ + 3\,2\,0\,0 \\ \hline 3\,3\,2\,8\,g \end{array}$$

3328 ÷ 1000
= 3.328 kg

3.328 kg

Q37.

Angles in a triangle → 180°

The hexagon below is made up of equilateral triangles. What is the value of the angle marked?

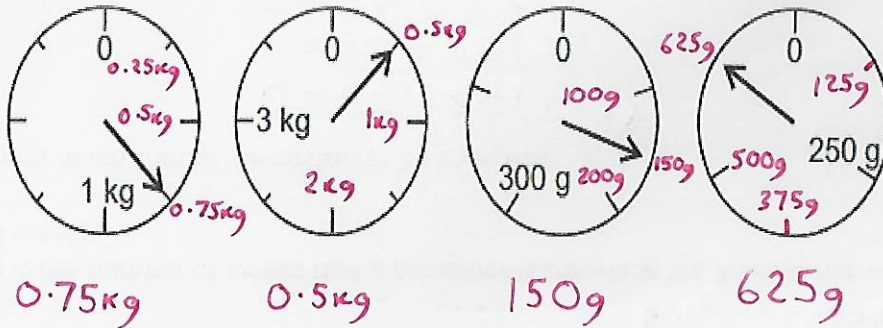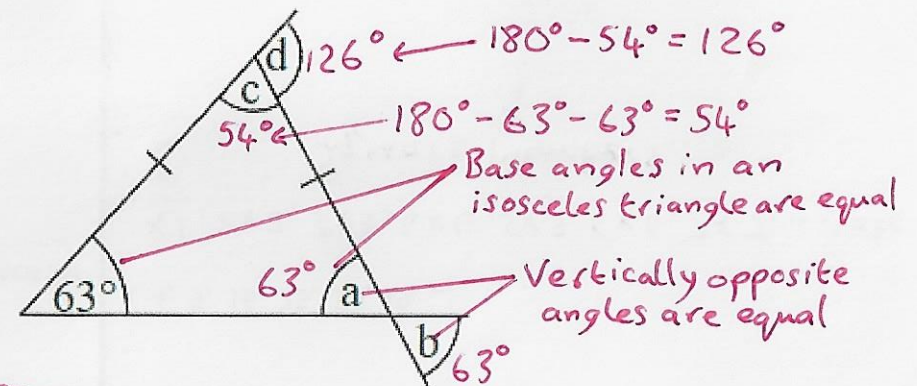Equilateral triangle → each angle is 60°

60° 60° 60° 60° 60°

$$\begin{array}{r} 6\,0 \\ \times\ \ 4 \\ \hline 2\,4\,0 \end{array}$$
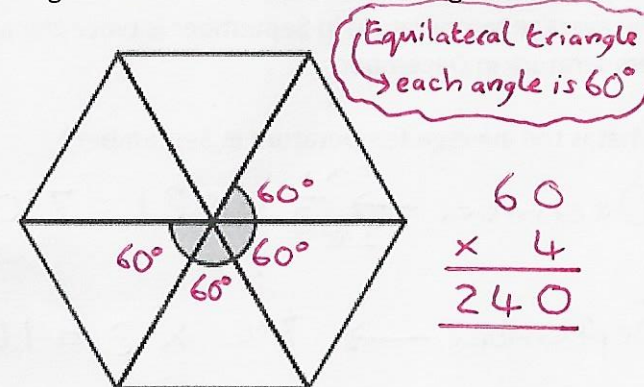
240°

Q43.

Mark on the values on the dials below:

0.75kg   0.5kg   150g   625g

Q44.

Work out the missing angles a, b, c and d below:

d) 126° ← 180° − 54° = 126°

54° ← 180° − 63° − 63° = 54°

Base angles in an isosceles triangle are equal

63°   63°   a   Vertically opposite angles are equal

b 63°

Angles in a triangle → 180°
Angles on a straight line → 180°

As shown

Q45.

A bucket holds 4 litres of water. 125 ml of water is drained from the bucket every minute. How many minutes will it take for the bucket to be empty?

×4 (1 Litre = 1000ml) ×4
(4 litres = 4000ml)

4000 ÷ 125 = 32 minutes

$$125 \overline{)4000} \quad \begin{array}{r} 0032 \end{array}$$

32 minutes

Q46.

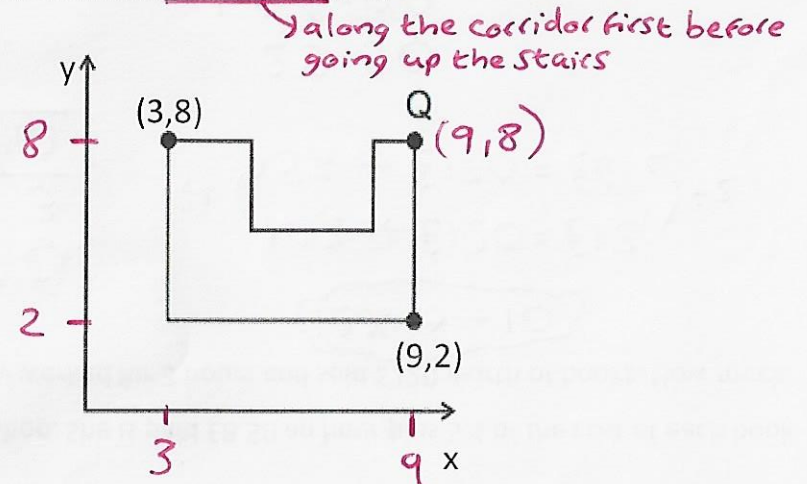Zoe has 5 dogs. She has to buy each dog a collar (c) and three tins (t) of dog food.

Write an expression to show how many collars and tins of food she needs to buy?

$(5 \times c) + (5 \times 3t)$

$= 5c + 15t$

or

$5(c + 3t)$

5c + 15t

Q47.

Write down the <u>co-ordinates</u> of Q.

→ along the corridor first before going up the stairs

(3,8)   Q (9,8)

(9,2)

Q (9,8)

Q52.

If you need 7 pears to make a crumble, how many crumbles can be made with 123 pears?

$$7 \overline{\smash{\big)}\, 1\,{}^12\,{}^53} = 017\ r4$$

17

Q53.

In a Magic Square the rows, columns and diagonals all add up to the same number. Fill in the magic square below.

5	4	9	=18
10	6	2	=18
3	8	7	=18

=18 =18 =18   5+6+7=18

As shown

Q54.

In the number 69581, what is the

value of the digit 9?

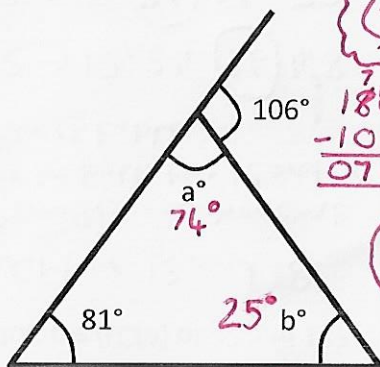Thous. Hund. Tens Ones
6 9 5 8 1

9000

Q55.

A metal pole is 5 m 7 cm long. It is cut into three equal pieces. How long is each piece?

$$\times 5 \left(\begin{array}{l} 1m = 100cm \\ 5m = 500cm \end{array}\right) \times 5$$

$$500 + 7 = 507cm$$

$$3 \overline{\smash{\big)}\, 5\,{}^20\,{}^27} = 169$$

169cm

Q56.

Work out the missing angles a and b below:

Angles on a straight line → 180°

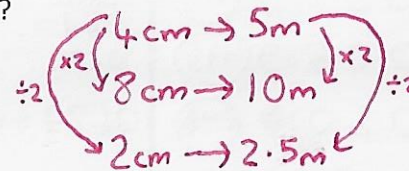$$\begin{array}{r} {}^7 18\!\!\!\!0 \\ -106 \\ \hline 074 \end{array}$$

Angles in a triangle → 180°

$$\begin{array}{r} 81 \\ +74 \\ \hline 155 \end{array} \qquad \begin{array}{r} {}^7 18\!\!\!\!0 \\ -155 \\ \hline 025 \end{array}$$

a=74° b=25°

Q57.

Elle is drawing a plan of her house. Her scale is 4 cm to 5 m. The garden is 12.5 m long. How long is the garden on her plan?

$$\div 2 \left(\begin{array}{l} \times 2 \left(\begin{array}{l} 4cm \rightarrow 5m \\ 8cm \rightarrow 10m \end{array}\right) \times 2 \\ 2cm \rightarrow 2\cdot 5m \end{array}\right) \div 2$$

$$12\cdot 5m = 10m + 2\cdot 5m$$
$$= 8cm + 2cm$$
$$= 10cm$$

10cm

Q58.

Steve thought of a number. He halved it, then added 8. The answer was 40. What number did Steve think of?

$$x \longrightarrow \boxed{\div 2} \longrightarrow \boxed{+8} \longrightarrow 40$$

$$64 \longleftarrow \boxed{\times 2} \longleftarrow \boxed{-8} \longleftarrow 40$$

64

Q66.

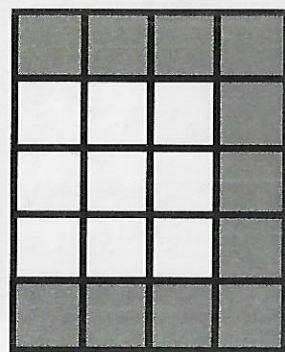What is 5.637951 to two decimal places?

$5 \cdot 6 \, 3 \, \textcircled{7} \, 9 \, 5 \, 1$

If 5 or more you round the number to the left up by one

$5 \cdot 64$

Q67.

↗ means 'out of 100'

What <u>percentage</u> of the shape is shaded?

Squares shaded = 11

Total squares = 20

$\dfrac{11}{20} \xrightarrow{\times 5} \dfrac{55}{100} = 55\%$

55%

Q68.

Amy spends £3.50 on the lunch at school each weekday. How much does she spend in a <u>week</u>?

Five school days in a week

$\begin{array}{r} {}^{2}3 \cdot 50 \\ \times \qquad 5 \\ \hline 17 \cdot 50 \end{array}$

£17·50

Q69.

Work out 2^3

$2^3 = (2 \times 2) \times 2$

$= 4 \times 2$

$= 8$

8

Q70.

Derek earns £1800 a month. The pie chart below shows how his wages are spent. How much money did Derek spend in total on Clothes, Bills and Savings? $5\% + 15\% + 15\%$

$= 35\%$

Rent 25%

Car 20% $10\% = £180$
$\div 2 \,^{\times 3}$ $30\% = £540 \,^{\times 3}$
$5\% = £90 \,^{\div 2}$

Miscellaneous 5%

Entertainment 5%

Bills 15%

Clothes 5%

$35\% = 30\% + 5\%$
$= £540 + £90$
$= £630$

Food 10%   Savings 15%

£630

Q71.
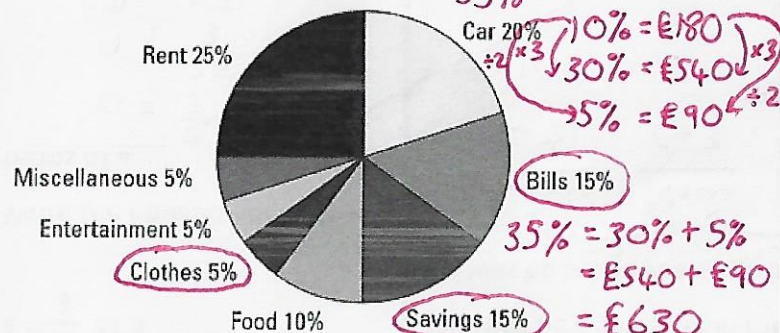
↗ biggest to smallest

Write these fractions in descending order:

$\underset{\textcircled{3rd}}{\dfrac{19}{24}}$ $\underset{\textcircled{4th}}{\dfrac{9}{12}} \,^{\times 2}_{\times 2}$ $\underset{\textcircled{5th}}{\dfrac{2}{3} \,^{\times 8}_{\times 8}}$ $\underset{\textcircled{2nd}}{\dfrac{5}{6} \,^{\times 4}_{\times 4}}$ $\underset{\textcircled{1st}}{\dfrac{7}{8} \,^{\times 3}_{\times 3}}$

$\dfrac{19}{24}$ $\dfrac{18}{24}$ $\dfrac{16}{24}$ $\dfrac{20}{24}$ $\dfrac{21}{24}$

As shown

Q72.

Here are five scores in a cricket match:

$14, 24, s, 54, 9$

The mean score was 30. What is the value of s?

Total = Mean × Amount of numbers
$= 30 \times 5$
$= 150$

$\begin{array}{r} 14 \\ 24 \\ 54 \\ + \,{}_{0}9 \\ \hline 101 \end{array}$

$\begin{array}{r} {}^{4}1 \, {}^{1}5 \, 0 \\ - 1 \, 0 \, 1 \\ \hline 0 \, 4 \, 9 \end{array}$

$s = 49$

Q102.

The nth term of a sequence is $3n^2 + 1$.

What are the first three terms of the sequence?

1st term $= 3(1)^2 + 1$
$= 3 \times 1 + 1$
$= 3 + 1$
$= 4$

2nd term $= 3(2)^2 + 1$
$= 3 \times 4 + 1$
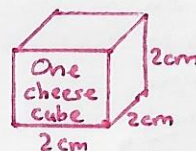$= 12 + 1$
$= 13$

3rd term $= 3(3)^2 + 1$
$= 3 \times 9 + 1$
$= 27 + 1$
$= 28$

$\boxed{4, 13, 28}$

Q103. Volume of a cube = length x width x height

Gina has 5 cubes of cheese with sides of 2cm. A mouse eats 28cm³ of the cheese. What volume of cheese does Gina have left?

One cheese cube 2cm 2cm 2cm

Volume $= 2 \times 2 \times 2$
$= 4 \times 2$
$= 8 cm^3$

Volume of five cubes
$= 8 \times 5$
$= 40 cm^3$

Volume Gina has left
$= 40 - 28$
$= 12 cm^3$

$\begin{array}{r} ^3\cancel{4}^1 0 \\ -2\ 8 \\ \hline 1\ 2 \end{array}$

$\boxed{12cm^3}$

Q104. Length around the outside

Work out the perimeter of the hexagon below:

$2c - d$ (each side)
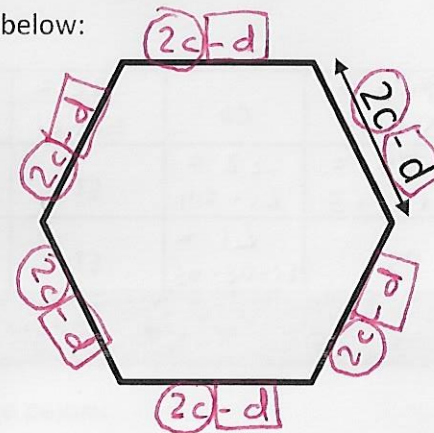
$\boxed{12c - 6d}$

Q105.

A barrel contains 4 litres of water. There are 5 holes in the bottom of the barrel and each hole loses 50 ml of water each hour. How many hours will it take for the barrel to completely empty?

1 litre = 1000ml
4 litres = 4000ml

Water lost per hour
$= 50 \times 5$
$= 250 ml$

Hours until empty
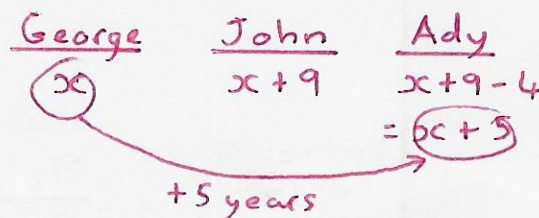$= 4000 \div 250$
$= 16$

$250\overline{\smash{)}4000}$ = 0016

$\boxed{16 \text{ hours}}$

Q106.

Ady is 4 years younger than John. John is 9 years older than George. How much older is Ady than George?

George x

John $x + 9$

Ady $x + 9 - 4$
$= x + 5$

$+5$ years

$\boxed{5 \text{ years}}$

Q107.

What is the missing number in this equation?

$2808 + 2808 + 2808 = \boxed{} \times 8$

8424

$\begin{array}{r} ^22^80^28 \\ \times \quad 3 \\ \hline 8\ 4\ 2\ 4 \end{array}$

$\begin{array}{r} 1053 \\ 8\overline{\smash{)}8\ 4^2 2^4 4} \end{array}$

$\boxed{1053}$

Q114.

James has 3.6 litres of apple juice, 800 √0.8 litres millilitres of pineapple juice and 0.09 litres of orange juice. He mixes them together in a bucket. How many litres of liquid is in the bucket?
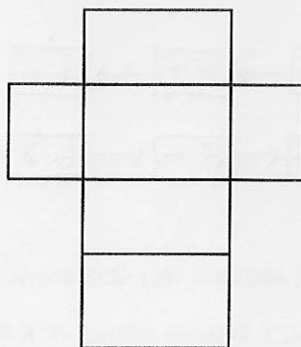
1 litre = 1000ml

0.8 Litres = 800ml

```
  3.60
  0.80
+ 0.09
―――――
  4.49
```

4.49 litres

Q115.

This is a net of a solid. What is the name of the solid?

If you fold the net up to make a 3D shape, it will make a cuboid

Cuboid

Q116.

The table shows information written on a tin of fruit. Grace eats 3 tins of fruit. How many grams of fibre did Grace eat?

	Per ½ tin ──x6→ 3 tins	
Protein	0.9g	
Carbohydrate	24.6g	
Fat	0.3g	
Fibre	2.6g ──x6→	15.6g

```
  ³2.6
 x   6
―――――
 15.6
```

15.6g

Q117.

Lucy collects books. 5 out of every 9 of her books are fiction. The rest are non-fiction. Lucy has 20 fiction. How many books does she have in total?

Fiction → 5/9   Total → 9/9

÷5 (5/9 → 20 books) ÷5
   (1/9 → 4 books)
x9 (9/9 → 36 books) x9

36 books

Q118.

Which of the following is equal to 24?

A) 48 − (8 × 3) = 48 − 24 = 24

B) 2 + (4 × 4) = 2 + 16 = 18

BODMAS
B rackets (1st)
O rder / indices (2nd)
D ivision (3rd)
M ultiply (3rd)
A ddition (4th)
S ubtract (5th)

A) 48 − 8 × 3

Q119.

All angles and sides are equal

Work out the interior angle (d) in the regular hexagon below:

Angles in a hexagon → 720°

① ② ③ ④ d°

Hexagon → 4 triangles
= 4 × 180°
= 720°

Hexagon → 6 angles

d = 720° ÷ 6 = 120°

```
    120
 6 | 720
```

120°

Q132.

What is the nth term of this sequence?

5 , 1 , -3 , -7 , ...

+9 (-4) -4 -4

$-4n + 9$

$-4n + 9$

Q133.

Amy starts out on a 195 km journey at 8:55 am. She travels on average at 60 km per hour. What time does she arrive at her destination?

$\text{Time} = \dfrac{\text{Distance}}{\text{Speed}}$

$\text{Time} = \dfrac{195}{60}$ 003.25
60|195.00

Time = 3.25 hours

Time = 3 hours 15 minutes

8:55am + 3 hours 15 minutes

= 11:55am + 15 minutes

= 12:10pm

12:10pm

Q134.

The picture shows a cube on top of a cuboid. What is the total volume of the shapes?
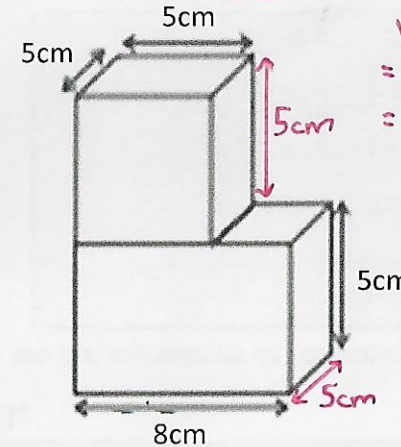
Volume of a cube/cuboid = Length x width x height

5cm
5cm
5cm
5cm
5cm
8cm

Volume of cube
= 5 × 5 × 5
= 125 cm³

Volume of cuboid
= 8 × 5 × 5
= 200 cm³

Total Volume
= 125 + 200
= 325 cm³

325cm³

Q135.

Write $\dfrac{18}{60}$ as a percentage

means 'out of 100'

$\dfrac{18 \;÷6}{60 \;÷6}$

$= \dfrac{3 \;×10}{10 \;×10}$

$= \dfrac{30}{100}$

$= 30\%$

30%

Q136.

Eric works in a games shop and is given a discount card.
Eric uses his card to buy a game for £24.75.
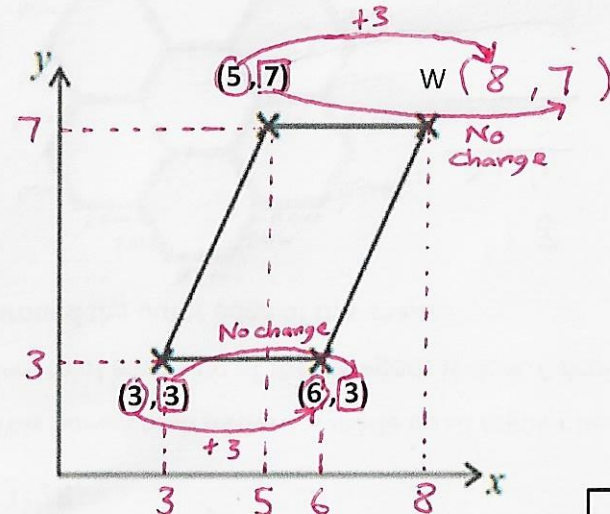The game originally cost £27.50. What discount does he receive?

2 7 . 5 0
– 2 4 . 7 5
0 2 . 7 5

£2.75

Q137.

Work out the co-ordinates of W for the parallelogram below:

+3

(5, 7)   W (8, 7)

No change

(3, 3)   (6, 3)

No change

+3

W(8,7)

Q183.

Find the missing number which goes in the blank:

13 x 1☐1 = 1703

$$13 \overline{)1'7^40'3}$$ quotient: 0 1 3 1

3

Q184.

1 day = 24 hours *1 week = 168 hours*

Simplify the ratio 12 hours : 1 week

168 hours

$$\div 12 \left(\begin{array}{c} 12 : 168 \\ 1 : 14 \end{array} \right) \div 12$$

1 : 14

Q187.

The pie chart shows results of a survey of 60 people.

Football 40%
Darts 15%
Table Tennis 25% → 25% of 60 = $\times \frac{1}{4}$ of 60 = **15**
Hockey 20% → 20% of 60 = 12
10% → ÷10
$\times 2 \left(\begin{array}{c} 10\% = 6 \\ 20\% = 12 \end{array} \right) \times 2$
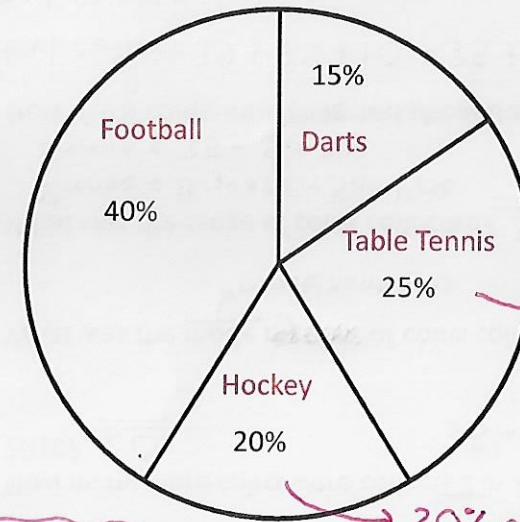
a) How many people chose darts? **9**
15% of 60 = 6 + 3 = 9
$\div 2 \left(\begin{array}{c} 10\% = 6 \\ 5\% = 3 \end{array} \right) \div 2$

b) How many more members chose Table Tennis over Hockey? **3**
15 - 12 = 3

c) Show that 7/20 of the people surveyed chose Hockey and Darts.

Hockey + Darts
= 20% + 15%   % → means 'out of 100'
= 35%
= $\frac{35}{100}$ ÷5
= $\frac{7}{20}$

As shown

Q185.

How many square numbers are there between 101 and 200?

$11^2 = 11 \times 11 = 121$
$12^2 = 12 \times 12 = 144$
$13^2 = 13 \times 13 = 169$
$14^2 = 14 \times 14 = 196$

4 square numbers

4

Q186.

BODMAS

$(3 \times 5^2 - 3) \div (3^2 + 3) \times 2^2$

$= (3 \times 25 - 3) \div (9 + 3) \times 4$
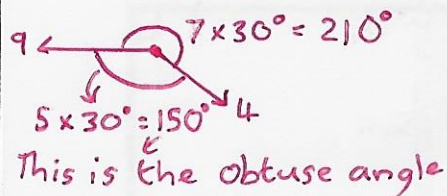$= (75 - 3) \div (9 + 3) \times 4$
$= (72) \div (12) \times 4$
$= 6 \times 4$
$= 24$

24

Q222.

If you look at a clock and the time is a quarter to 4, what is the obtuse angle between the hands?

Every hour → 30°

$7 \times 30° = 210°$

$5 \times 30° = 150°$

This is the obtuse angle

$\boxed{150°}$

Q223.

BODMAS

Work out:

$$8 \times (9 - 4) \times 2.5$$

$$= (8 \times 5) \times 2.5$$

$$= 40 \times 2.5$$

$$= (40 \times 2) + (40 \times 0.5)$$

$$= 80 + 20$$

$$= 100$$

$\boxed{100}$

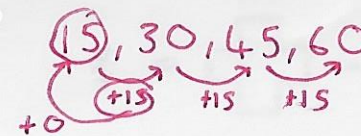## Q224.

Part of a number sequence is shown.

1st 2nd 3rd 4th 5th 6th 7th 8th 9th
15, 30, 45, 60, 75, 90, 105, 120, 135, ...
-15 -15 -15 -15 -15 -15 -15 -15

If these are the 7th, 8th and 9th values in the sequence, what is the 100th?

15, 30, 45, 60
+15 +15 +15
+0

$15n + 0$

N^{th} term $= 15n$

100 term $= 15 \times 100$
$= 1500$

$\boxed{1500}$

Q225.

A row of houses are numbered 1 – 70. What fraction of the doors have either a 1 or a 9 on them?

1, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 21, 29, 31, 39, 41, 49, 51, 59, 61, 69

$$\frac{22}{70} \underset{\div 2}{\overset{\div 2}{=}} \frac{11}{35}$$

$\boxed{\dfrac{11}{35}}$

Q226.

Solve each of the following equations:

a) $50 - 6m = 26$

[-50]   [-50]

$-6m = -24$

[÷-6] [÷-6]

$m = 4$

$(- \div - = +)$

b) $4k + 2 = 7k - 25$

[-4k] [-4k]

$2 = 3k - 25$

[+25] [+25]

$27 = 3k$

[÷3] [÷3]

$9 = k$ $\underline{k = 9}$

Q227.

Volume of a cube = length x width x height

The volume of a cube is 64cm³. What is the total surface area?

4cm
4cm
4cm
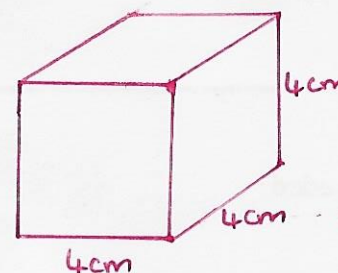
total area of all 6 faces

Area of one face = 4×4
$= 16cm^2$

Total surface area = 16×6
$= 96cm^3$

$\sqrt[3]{64} = 4$

Volume $= 4 \times 4 \times 4$
$= 16 \times 4$
$= 64cm^3$

$\begin{array}{r} {}^3 16 \\ \times\ 6 \\ \hline 96 \end{array}$

$\boxed{96 cm^3}$

Q271.

In a bowl there are 6 apples, 3 plums and 4 peaches. If I choose one piece of fruit at random, what is the probability.

Total $= 6 + 3 + 4 = 13$

a) That it is not a plum?

$$\frac{6+4}{13} = \frac{10}{13}$$

b) That it is a banana?

$$\frac{0}{13} = 0$$

Q272.

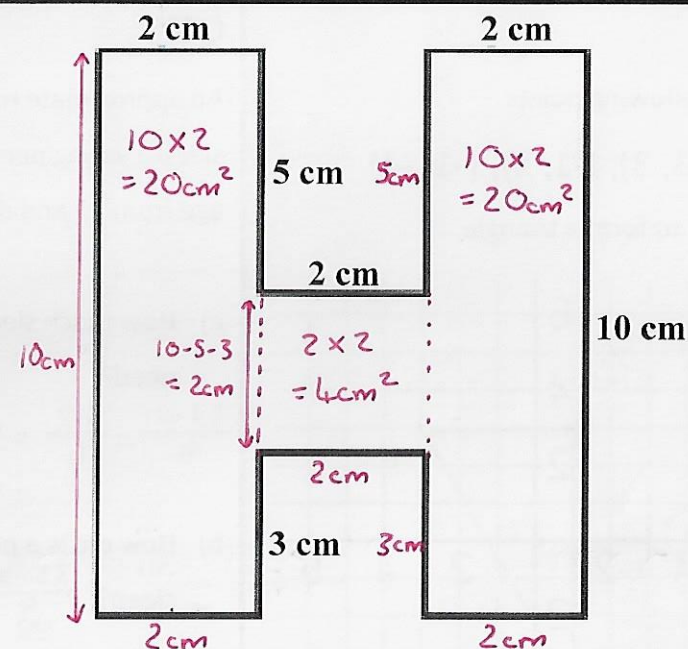a) Find the area of this shape.

(Area of a rectangle = length x width)

Area $= 20 + 4 + 20$

Area $= 44 cm^2$

b) Find the perimeter.

↳ length all the way around the shape

Perimeter $= 10 + 2 + 5 + 2 + 5 + 2 + 10 + 2 + 3 + 2 + 3 + 2$

Perimeter $= 48 cm$

2 cm   2 cm

10×2
$= 20 cm^2$ 5 cm   5cm 10×2
$= 20 cm^2$

2 cm

10cm $10 - 5 - 3$
$= 2 cm$ 2×2
$= 4 cm^2$ 10 cm

2cm

3 cm   3cm

2cm   2cm

Q273.

1st 2nd 3rd 4th 5th

In the sequence 1, 3, 4, 7, 11.................... each number after the second is the sum of the two previous numbers of the sequence. What is the 9th number of the sequence?

$7 + 11 = 18 \rightarrow 6th$
$11 + 18 = 29 \rightarrow 7th$
$18 + 29 = 47 \rightarrow 8th$
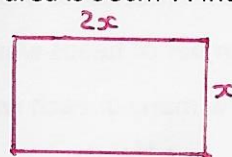$29 + 47 = \underline{76} \rightarrow 9th$

Q274.

(Area of a rectangle = length x width)

The length a rectangle is twice its width. Its area is 98cm². Find its length and width.

2x

[rectangle] x

$2x \times x = 98$
$2x^2 = 98$
$\boxed{\div 2} \quad \boxed{\div 2}$
$x^2 = 49$
$x = \sqrt{49}$
$x = 7cm$
↑
Width

Length $= 2x$
Length $= 2 \times 7cm$
Length $= 14cm$

Length = 14cm Width = 7cm

Q275.

In this question the diagram is not drawn accurately, so the angles cannot be found by measuring with a protractor. The angles of a triangle add up to 180°. In this triangle, angle A is the same as angle B, and angle C is twice angle B. Work out each of the three angles.
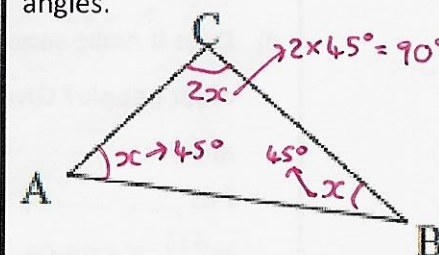
$2 \times 45° = 90°$

C
2x
A $x \rightarrow 45°$ 45° x
B

$x + x + 2x = 180$
$4x = 180$
$\boxed{\div 4} \quad \boxed{\div 4}$
$x = 45°$

$4 \overline{) 1^{1}8^{2}0}$
$\quad 045$

$A = 45°$ $B = 45°$ $C = 90°$

Q338.

Find the missing number below :

$\frac{3}{5}$ of $\boxed{45}$ = 27

$\times$ $\overset{\times 5}{\underset{\div 5}{\frac{5}{3}}}$ of 27

Q339.

The faces of a regular octahedron are to be painted so that no two faces which have an edge in common are painted in the same colour. What is the smallest number of colours required?
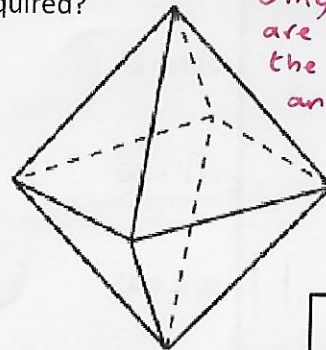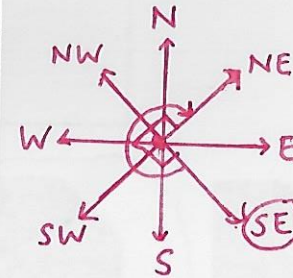
Only two colours are required for the upper four faces and lower four faces.

$\boxed{2}$

Q340.

Chandu is facing South East. In which direction will he be facing if he turns clockwise through 3 right angles?

$3 \times 90°$
$= 270°$

$\boxed{\text{North East}}$

Q341.

A group of 40 adults and 16 children paid £508 in total to watch a football match. Each child ticket cost £6. What was the cost of each adult ticket?

Child cost = £6 X 16
$\qquad$ = £96

$\begin{array}{r} {}^4 5'08 \\ -096 \\ \hline £412 \end{array}$

Adult ticket = 412 ÷ 40
$\qquad$ = 10.3
$\qquad$ = £10.30

$\begin{array}{r} 0\ 1\ 0.3 \\ 40\overline{)4\ ^4 1\ ^1 2.^2 0} \end{array}$

$\boxed{£10.30}$

Q342.

In a sale, prices are reduced by 19%.

What is the sale price of a hoody that originally cost £40?

$\boxed{\begin{array}{l} 10\% \rightarrow \div 10 \\ 1\% \rightarrow \div 100 \end{array}}$

$\times 2 \Big(\begin{array}{l} 10\% \text{ of } £40 = £4 \\ 20\% \text{ of } £40 = £8 \end{array} \Big) \times 2$

$\qquad 1\% \text{ of } £40 = £0.40$

19% = 20% - 1%
19% = £8 - £0.40
19% = £7.60

$\begin{array}{r} {}^3 4\overset{9}{0}.'00 \\ -07.60 \\ \hline £32.40 \end{array}$

$\boxed{£32.40}$

Q343.

Gus has twice as many stickers as Amin and five more than Kaylan. They have 35 stickers altogether. How many stickers does Gus have?

Gus	Amin	Kaylan
$2x$	x	$2x-5$

$\boxed{2x} + \boxed{x} + \boxed{2x} - 5 = 35$
$5x - 5 = 35$
$\qquad \boxed{+5} \quad \boxed{+5}$
$5x \quad = 40$
$\boxed{\div 5} \qquad \boxed{\div 5}$
$x \quad = 8$

Gus $\rightarrow 2x$
$\qquad \searrow 2 \times 8 = 16$

$\boxed{16 \text{ stickers}}$

Q432.

Find the value of y

Angles in a triangle → 180°

Angles on a straight Line → 180°

62°

28°   y
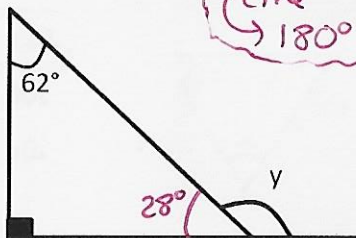
$$\begin{array}{r} 90 \\ + 62 \\ \hline 152 \end{array}$$

$$\begin{array}{r} 1\ 7 \\ 180 \\ -152 \\ \hline 028 \end{array}$$

$$\begin{array}{r} 180 \\ -028 \\ \hline 152 \end{array}$$

152°

Q433.

8 small blocks have the same mass as 5 large blocks. The mass of one small block is 4.3kg

4.3 4.3
4.3 4.3
4.3 4.3
4.3 4.3

$$\begin{array}{r} ^2 4 \cdot ^3 \!\!4 \\ \times \ \ 8 \\ \hline 34 \cdot 4 \end{array}$$
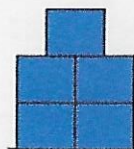
Find the mass of one large block.

×5 (5 large = 34.4kg) ÷5
1 large = 6.88kg

$$\begin{array}{r} 06 \cdot 88 \\ 5\overline{)3^34 \cdot ^44^40} \end{array}$$

6.88 kg

Q434.

A 2p coin has a mass of 7 grams. Find the total mass of £60 worth of 2p coins.

Give your answer in kilograms.

×60 (£1 → 50 2p coins) ×60
£60 → 3000 2p coins

3000 × 7
= 21000g

(1kg = 1000g)

= 21 kg

21 kg

Q435.

Write down all the factors of 88

↓

All the numbers which go into 88 exactly without a remainder

1,2,4,8,11,22,44,88

Q436.

Luckman is playing a game. He throws 9 balls at a target, one at a time. Each hit is worth 8 points. Each miss is worth −5 points. Luckman hits the target with 5 of the balls and misses with the rest. How many points does Luckman score in total?
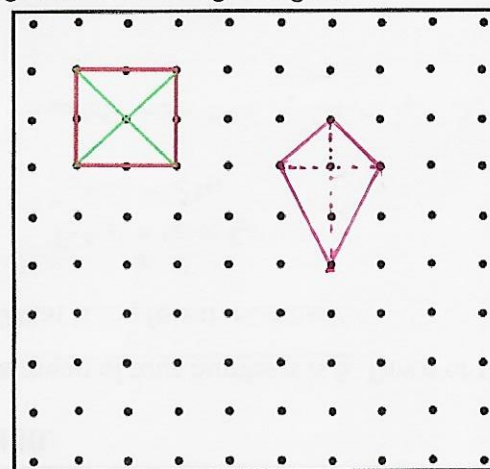
Hit	Miss
5 × 8	4 × −5
= 40	= −20

40 − 20
= 20 points

20 points

Q437.

The diagonals of a square cross at right angles.
On the grid, draw a different type of quadrilateral where the diagonals cross at right angles.

Kite

Q471.

$1m = 100cm$

I am making a scale model of my yacht, which is 9m long. If the scale is 1:30, how long will the model yacht be (in cm)?

$\rightarrow$ 900cm

$$\times 30 \left(\begin{array}{c} 1 : 30 \\ 30 : 900 \end{array} \right) \times 30$$

30 cm

Q472.

$1m = 100cm$

My friend Mike is making a scale model of Tower Bridge. Tower Bridge is 60m tall and his model is 120cm tall. What is the scale of the model, in its simplest form?

$\rightarrow$ 6000cm

$$\div 10 \left(\begin{array}{c} 120 : 6000 \\ 12 : 600 \end{array} \right) \div 10$$
$$\div 12 \left(\begin{array}{c} 12 : 600 \\ 1 : 50 \end{array} \right) \div 12$$

$$12 \overline{\smash{\big)}\, 6\,{}^60\,0} \quad 0\,5\,0$$

1:50

Q473.

$1m = 100cm$

An icicle measured 2.13m at the start of a sunny day, but only

$\rightarrow$ 213cm

88cm at the end of the day. What length of icicle had melted?

$$\begin{array}{r} 2\,{}^1\cancel{1}\,{}^{10}3 \\ -0\,8\,8 \\ \hline 1\,2\,5 \end{array}$$

125 cm

Q474.

When I lay a new patio in my back garden, I will need 290kg of gravel. How many 12kg bags do I need to buy?

$$12 \overline{\smash{\big)}\, 2\,{}^2 9\,{}^5 0} \quad 0\,2\,4\,{}^{\cdot 2}$$

Have to round up to 25 bags

25 bags

Q475.

Work out:

$$35425 \div 13$$

$$13 \overline{\smash{\big)}\, 3\,{}^3 5\,{}^9 4\,{}^3 2\,{}^6 5} \quad 0\,2\,7\,2\,5$$

2725

Q476.

120 miles in one hour

A train leaves London and travels at a steady speed of 120mph to Edinburgh. Before reaching Edinburgh, the train stops in Leeds after travelling for one and a half hours. The distance from London to Edinburgh is 420 miles. How long does the train take to travel from London to Edinburgh?

1 hour $\rightarrow$ 120 miles
$+\frac{1}{2}$ hour $\rightarrow$ 60 miles
$1\frac{1}{2}$ hours $\rightarrow$ 180 miles

$$\begin{array}{r} {}^3 4\,{}^1 2\,0 \\ -\,1\,8\,0 \\ \hline 2\,4\,0 \end{array}$$ miles from Leeds to Edinburgh

$$\times 2 \left(\begin{array}{c} 1 \text{ hour} \rightarrow 120 \text{ miles} \\ 2 \text{ hours} \rightarrow 240 \text{ miles} \end{array} \right) \times 2$$

240 miles $\rightarrow$ 2 hours
$+$ 180 miles $\rightarrow$ $1\frac{1}{2}$ hours

420 miles $\rightarrow$ $3\frac{1}{2}$ hours

$3\frac{1}{2}$ hours

Q537.

What is three-quarters of a quarter?

Of → x

$$\frac{3}{4} \text{ of } \frac{1}{4}$$

$$= \frac{3}{4} \times \frac{1}{4}$$

$$= \frac{3}{16}$$

$$\boxed{\frac{3}{16}}$$

Q538.

Find the sizes of angles x and y.

Angles in a triangle → 180°

Angles on a straight line → 180°

53.5°

y

107° x 73°

53.5°
y

$$\begin{array}{r} 1\,8^{7}0 \\ -0\,7\,3 \\ \hline 1\,0\,7 \end{array}$$

$$\begin{array}{r} 0\,5\,3.5 \\ 2\,\overline{)1\,0\,7.0} \end{array}$$

$$\begin{array}{r} 1\,8^{7}0 \\ -1\,0\,7 \\ \hline 0\,7\,3 \end{array}$$
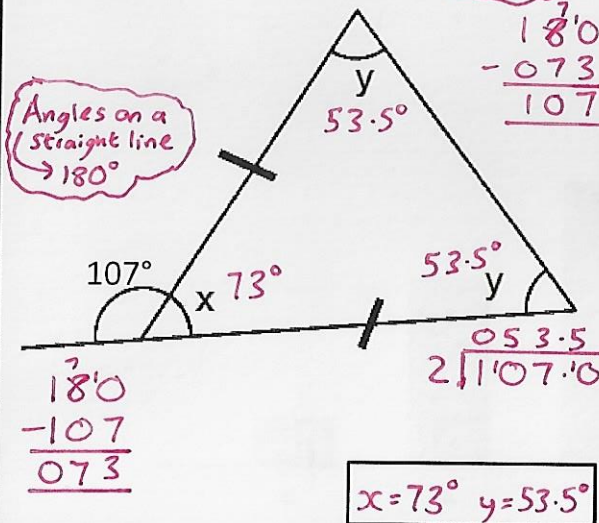
$$\boxed{x = 73° \quad y = 53.5°}$$

Q539.

13 friends win a prize of £385. They share the prize out equally in whole £1s (no pence). They give the remainder to charity. How much do they give to charity?

$$13\,\overline{)3\,3\,8^{12}5}\;\; \begin{array}{c}0\,2\,9\,(8)\end{array} \rightarrow \text{Amount given to charity}$$

$$\boxed{£8}$$

Q540.

321 × 57 = 18297

Use the answers to the multiplication above to answer the following questions:

(a) 18297 ÷ 57

$$321 = \frac{18297}{57}$$

$$\boxed{321}$$

(b) 570 × 3210
   ↑×10 ↑×10
   57 × 321

18297 × 10 × 10 = $\boxed{1829700}$

(c) 642 × 114
   ↑×2 ↑×2
   321 × 57
18297 × 2 × 2 = $\boxed{73188}$

Q541.

If the name KATHRYN is written over and over again like this:

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯ ⑰
K A T H R Y N K A T H R Y N K A ... T

a) What is the 17th letter?

$$\boxed{T}$$

b) What is the 47th letter?

⑦→N ㉘→N ㊾→N
⑭→N ㉟→N   ↓2 less
㉑→N ㊷→N   R

$$\boxed{R}$$

Q542.

Which is greater 90% of 10 % of 300 or 80% of 20% of 200? You must show calculations to explain your answer.

10% → ÷10

90% of (10% of 300)

= 90% of 30

×9 (10% = 3
      90% = 27) ×9

80% of (20% of 200)

×2 (10% = 20
      20% = 40) ×2

80% of 40

×8 (10% = 4
      80% = 32) ×8

$$\boxed{80\% \text{ of } 20\% \text{ of } 200}$$

Q560.

What ratio is equivalent to 36 : 216?

$$\div 6 \left(\frac{36 : 216}{6 : 36} \right) \div 6$$
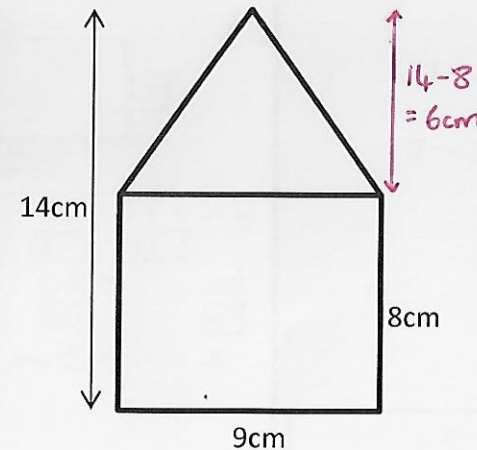
$$\div 6 \left(\frac{6 : 36}{1 : 6} \right) \div 6$$

1 : 6

Q561.

Alisha saves £12 in January, £18 in February, £5 in March and £38 in April. What is her mean monthly saving?

Mean = $\frac{\text{Sum of numbers}}{\text{Amount of numbers}}$

Mean = $\frac{12 + 18 + 5 + 38}{4}$

Mean = $\frac{73}{4}$

Mean = 18·25

```
  ²1 2
    1 8
    0 5
  + 3 8
    7 3
```

$$4\overline{)7^33\cdot^0 0^0 0}$$ 18·25

£18·25

Q562.

Find the area of the following shape.

14cm

14-8 = 6cm

8cm

9cm

Area of a rectangle
= length x width
= 9 x 8
= 72cm²

Area of a triangle
= $\frac{\text{base x vertical height}}{2}$

= $\frac{9 \times 6}{2}$

= $\frac{54}{2}$

= 27cm²

```
  72
+ 27
  99
```

99 cm²

Q563.

You are told that 82 × 107 = 8774 Use this to work out the value of the following:

a) 8200 × 107   **8774 00**

82 ×100 × 107

82 × 107

8774 × 100
= 877400

b) 8774 ÷ 107   **82**

82 = $\frac{8774}{107}$

Q564.

I get £8 pocket money every week. How much will I get in a year?

52 weeks

```
  ⁵5 2
×    8
4 1 6
```

£416

Q565.

Max has more than 4 apples but fewer than 7 apples. → 5 and 6 Alex has more than 5 apples and fewer than 8 apples. → 6 and 7 How many apples do Max and Alex have altogether?

Write down all the possible values.

4 5 6 7 8 9 10 ⑪ ⑫ ⑬ 14 15

5 + 6 = 11
5 + 7 = 12
6 + 6 = 12
6 + 7 = 13

11, 12, 13

Q580.

Write down the number represented by
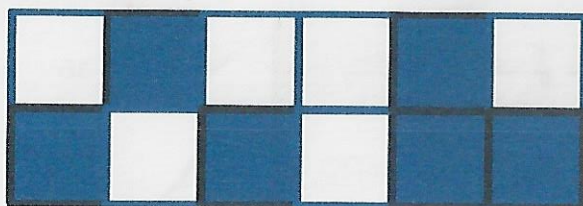
MCCCXIV

$M = 1000$
$C = 100$
$X = 10$
$V = 5$
$I = 1$

$\boxed{1314}$

Q581.

Write as a decimal the amount of this shape that is shaded.

Fraction shaded $= \dfrac{6}{12} = \dfrac{1}{2}$

$\dfrac{1}{2} = 0.5$

$\boxed{0.5}$

Q582.

There are 500 pupils at Maths school. There are 30 more girls than boys. How many girls are there?

$\dfrac{Boys}{x} + \dfrac{Girls}{x+30} = 500$

$2x + 30 = 500$
$\boxed{-30} \quad \boxed{-30}$

$2x = 470$
$\div 2 \qquad \div 2$

$x = 235$

$2\overline{)4\,7\,0}^{\,2\,3\,5}$

Girls $= x + 30$
Girls $= 235 + 30$
Girls $= 265$

$\boxed{265}$

Q583.

Simplify the following:

$\boxed{6a} - \boxed{2b} - \boxed{9a} + \boxed{6b}$

$= -3a + 4b$

$\boxed{-3a + 4b}$

Q584.

Identify the following shapes from their nets
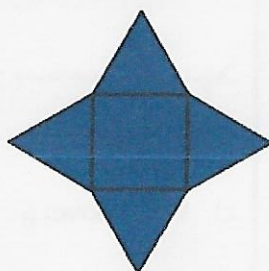
$\boxed{Square\ Based\ Pyramid}$ $\boxed{Triangular\ Prism}$
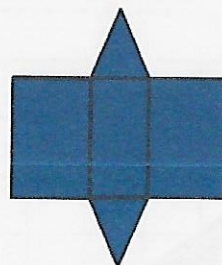
Q585.

$\boxed{1\ millimetre = 0.001\ metre}$

Here are two shapes which have the same vertical height:

(a)
6 m

(b) 10 mm
0.008 m

A

10 m
(b)

7 mm

B

8 mm
10 mm

7 mm
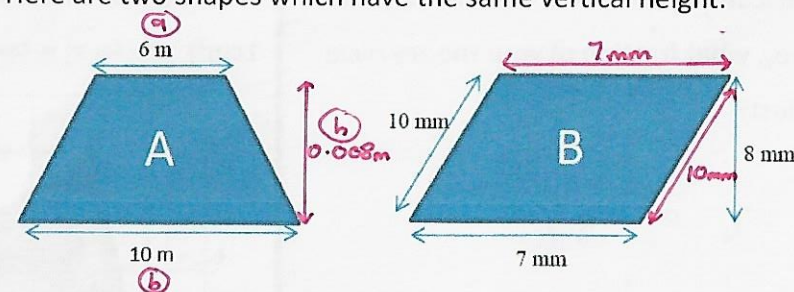
a) Work out the area of shape A

Area of a trapezium $= \frac{1}{2}(a+b)h$
$= \frac{1}{2}(6+10)0.008$
$= \frac{1}{2}(16)0.008$
$= 8 \times 0.008 = 0.064 m^2$

$\boxed{64000\ mm^2}$

$\boxed{0.064\ m^2}$

b) Find the perimeter of shape B

Perimeter of B $= 10 + 7 + 10 + 7 = 34\ mm$

$\boxed{34\ mm}$