Rectangle **H** has length 7 cm and width 3 cm.
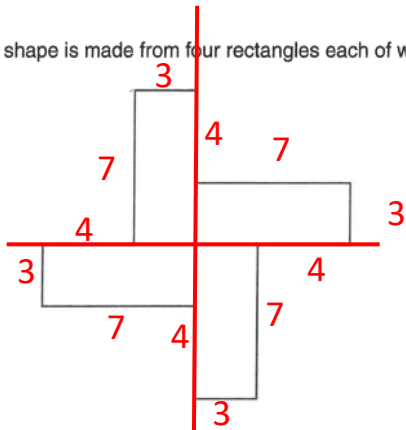
Not to scale

H   3 cm

7 cm
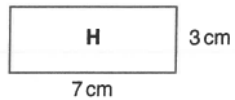
3cm x 7cm = 21cm²

(a) Work out the area of the rectangle.

(a) .... cm² [1]

(b) This shape is made from four rectangles each of which is identical to **H**.

3

4   7

7

Not to scale

4

3

3

4

7   4   7

3

(i) How many lines of symmetry does this shape have?

0

(b)(i) .... [1]

(ii) What is the order of rotation symmetry of this shape?

4

(ii) .... [1]

(iii) What is the perimeter of this shape?

+ 4 + 7 + 3 + 4 + 7 + 3 + 4 + 7 +
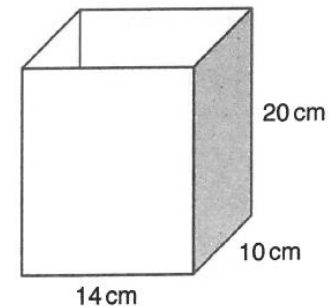**3 + 4 + 7 + 3 = 56cm**

land

North

A

sea

C

Measure bearings from north clockwise, using 3 digits. 125° or close

He then sailed directly from B to C.

On what bearing did he sail?

Zoe needs a container that can hold at least 2.5 litres of water.
This container is a cuboid.

20 cm

10 cm

14 cm

Volume = L X W X H

= 14 X 10 X 20 = 2800cm³

2800cm ÷ 1,000 = 2.8 litres

1000 cm³ = 1 litre

Could this container hold the amount of water that Zoe wants?
Show working to support your answer.

(a) Simplify fully.

$\frac{12}{30}$ ÷6 $\frac{2}{5}$
÷6

(a) .... [1]

(b) Write this improper fraction as a mixed number.

$\frac{23}{6}$ 23÷6 = 3 with remainder of 5

$3\frac{5}{6}$ (b) .... [1]

(c) Write these fractions in order of size, smallest first.

$\frac{37}{40}$ $\frac{19}{20}$ $\frac{9}{10}$ $\frac{3}{4}$

x 2   x 4   x 10

$\frac{37}{40}$ $\frac{38}{40}$ $\frac{36}{40}$ $\frac{30}{40}$

$\frac{3}{4}$ $\frac{9}{10}$ $\frac{37}{40}$ $\frac{38}{40}$

(c) .... [2]
smallest

(d) Work out.

$\frac{3}{7}+\frac{1}{2}$ $\frac{6}{14}$ + $\frac{7}{14}$ $\frac{13}{14}$

Complete the table for $y = x^2 - 4x$.

x	-1	0	1	2	3	4	5
y	5	0	-3	-4	-3	0	5

-1² - 4 x -1 = 5

5² - 4 x 5 = 5

The table summarises information about the visitors to a library on one day.

	Under 18	18 to 60	Over 60	Total
Male	38	12	50	100
Female	56	49	45	150
Total	94	61	95	250

(i) Complete the table. [2]

(ii) Find the ratio of male to female visitors.
Write the ratio in its simplest form.

100 : 150
÷50   ÷50
2 : 3

(a)(ii) .... : .... [2]

(iii) What fraction of the total number of visitors were females aged over 60?
Write the fraction in its simplest form.

$\frac{45}{250}$

(iii) .... [2]

Work out the size of the exterior angle of a regular 9-sided polygon.

$\frac{360}{n}$ $\frac{360}{9}$ = 40

(a) ....° [2]

Hence work out the size of the interior angle of a regular 9-sided polygon.

180 - 40 = 140

(b) ....° [1]
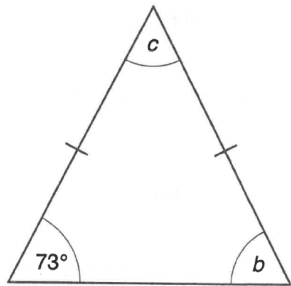
Not to scale

(i) Work out angle *b*.

73°

(b)(i) ....° **[1]**

(ii) Work out angle *c*.

180° - 73° - 73°= 34°
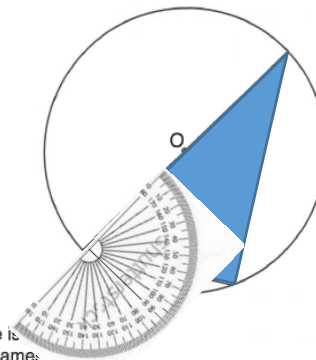
(a) What type of angle is
Choose from the names

| obtuse | acute | right angle | reflex |

Right angle

(a) .... **[1]**

(b) Measure and write down

(i) angle *x*,

58°

(b)(i) ....° **[1]**

(ii) the diameter of the circle.

3.7cm
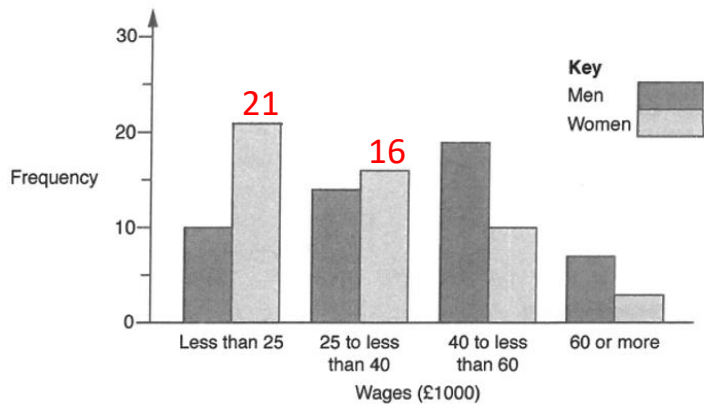
(ii) .... cm **[1]**

Fifty men and fifty women were asked:

'How much did you earn last year?'

The results are recorded in this bar chart.

21

16

Key
Men
Women

Frequency

Wages (£1000)

(iii) Work out the **percentage** of women who earned less than £40 000.

$$\frac{37}{50} = \frac{74}{100} = 74\%$$

(iii) .... % **[2]**
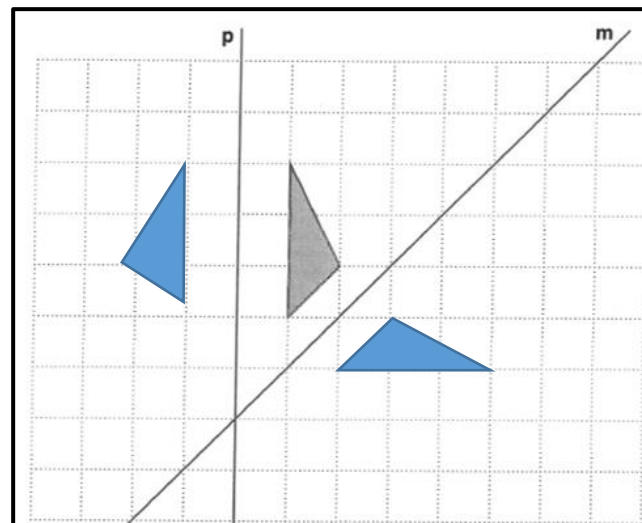
Reflect the triangle in line **p** on the grid.

Morgan has 60 sweets.
She gives one fifth of the sweets to Phoebe.
Morgan then eats one third of the remaining sweets.

How many sweets does Morgan have left?

$\frac{1}{5}$ of 60 = 60 ÷ 5 = 12

Write these numbers in order of size, smallest first.

Give them all 3 decimals

7.037   7.307   7.30   7.737   7.37

7.037   7.307   7.300   7.737   7.370

7.037   7.30   7.307   7.37   7.737
.... **[2]**
smallest

Tony is making a journey of 180 miles.
He stops after 36 miles.

What percentage of the journey has he completed? $\frac{36}{180}$ = 0.2 x 100 = 20%

(c) .... % **[2]**

Calculate 17% of 2863. $\frac{17}{100}$ of 2863 = 2863 ÷ 100 x 17 =

486.71

Give your answer correct to 2 significant figures.
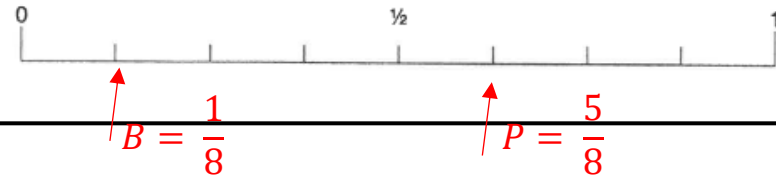
490

A fruit bowl contains 48 pieces of fruit.

3 Apples   6 Bananas   5 Plums   4 Oranges   30 Peaches

A piece of fruit is taken from the bowl at random.
Use arrows to mark the following on the probability line below.

(a) The probability that it is a banana. $\frac{6}{48} = \frac{1}{8}$
Label this arrow **B**.   **[1]**

(b) The probability that it is a peach. $\frac{30}{48} = \frac{5}{8}$
Label this arrow **P**.   **[1]**

0   ½   1

$B = \frac{1}{8}$ $P = \frac{5}{8}$

This table shows the distance in miles between some cities.

London					
208	Manchester				
100	162	Cambridge			
413	218	350	Edinburgh		
150	302	188	393	Cardiff	
275	143	193	120	315	Newcastle

(a) (I) How many miles is it between London and Edinburgh?

413

(a)(i) .... **[1]**

(ii) Colin drives from London to Cambridge and then from Cambridge to Manchester.
How many miles does he drive?

100 + 162 = 262

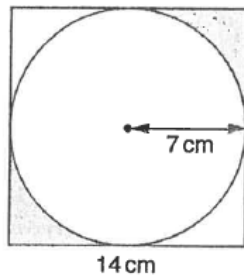**(ii)** .... **[2]**

A suitcase weighs 23 kilograms, correct to the nearest kilogram.

Write down the smallest possible weight and the largest possible weight of the suitcase.

smallest ....**22.5**............................ kg

largest ....**23.4̇9**............................. kg

[2]

This diagram shows a circle inside a square.

Not to scale

7 cm

14 cm

The radius of the circle is 7 cm.
The length of a side of the square is 14 cm.

Calculate the shaded area.

Square

14 x14 = 196cm²

Circle

∏r²

3.14 x 7²

3.14 x 49 = 153.86

Square – circle =196cm² -153.86 = 42.14cm²

42.14cm² ÷ 2 = 21.07cm²

Alan grows one group of tomato plants using fertiliser A and a second group of tomato plants using fertiliser B.

(a)* The stem and leaf diagrams show the heights, in centimetres, of the plants after a certain time.

Fertiliser A						
16	1	3	8	9		
15	0	2	2	3	8	9
14	0	1	2	3	6	7	9
13	1	1	4	7	8	
12	9					

Fertiliser B							
16	0	5	5				
15	0	1	2	5			
14	1	2	2	3	6	7	9
13	1	3	3	4	6	7	7	8
12							
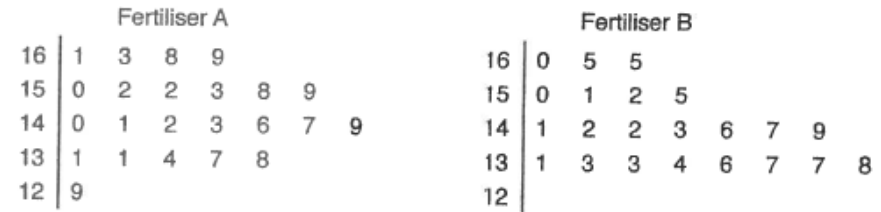
Key: 16 | 3 = 163

Make two different comparisons between the **heights** of the plants in the two groups. Give evidence to support your comparisons.

ABCD is a rectangle.

A ——— 12.3 cm ——— B

5.4 cm

D   C
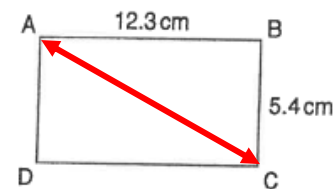
Not to scale

Calculate the length of a diagonal.

a² + b² = c²

12.3² + 5.4² = c²
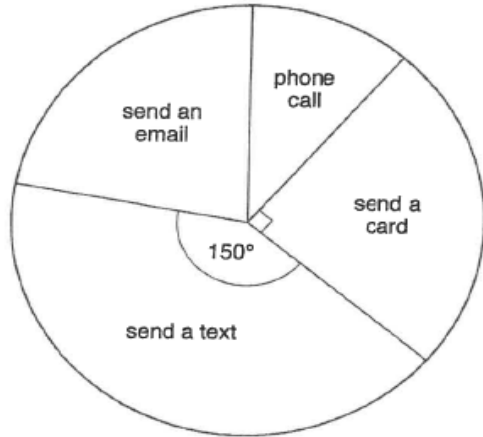
151.29 + 29.16 = c²

180.45 = c²

13.43 = c

Solve: $4x > 8$

$4x = 8$

$x = 2$

$x > 2$

The pie chart represents the way 144 people wish their friends Happy Birthday.

phone call

send an email

send a card
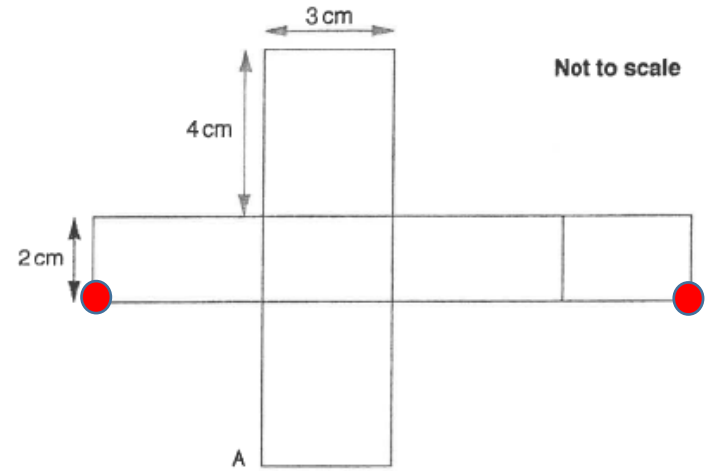
150°

send a text

(a) What fraction of the people send a card?

$$\frac{1}{4} \quad OR \quad \frac{90}{360}$$

(a) .... [1]

(b) How many of the 144 people send a text?

$$\frac{150}{360} \times 144 = 60 =$$

The net of a cuboid is drawn below.

3 cm

Not to scale

4 cm

2 cm

A

(a) The net is folded into a cuboid.

Mark on the net the **two** other points that will meet vertex A.   [1]

(b) Draw this cuboid on the isometric grid below.
One line has been drawn for you.