Q1.

The International Space Station orbits the Earth at a height of 250 miles.
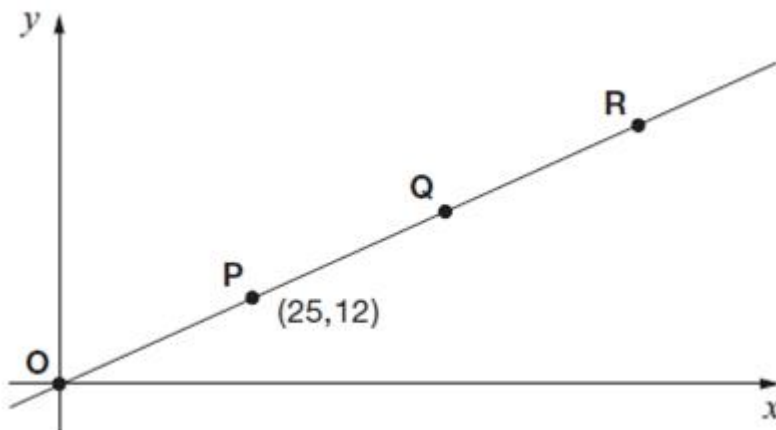
What is the height of the International Space Station in **kilometres?**

Use 8 kilometres equals 5 miles.

km

1 mark

Q2.

Here is a line on coordinate axes.

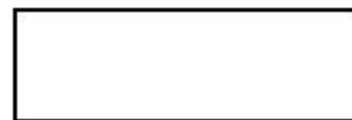Points **O**, **P**, **Q** and **R** are equally spaced.

The coordinates of **P** are (25,12).

What are the coordinates of **R**?

R = (,)

Q3.
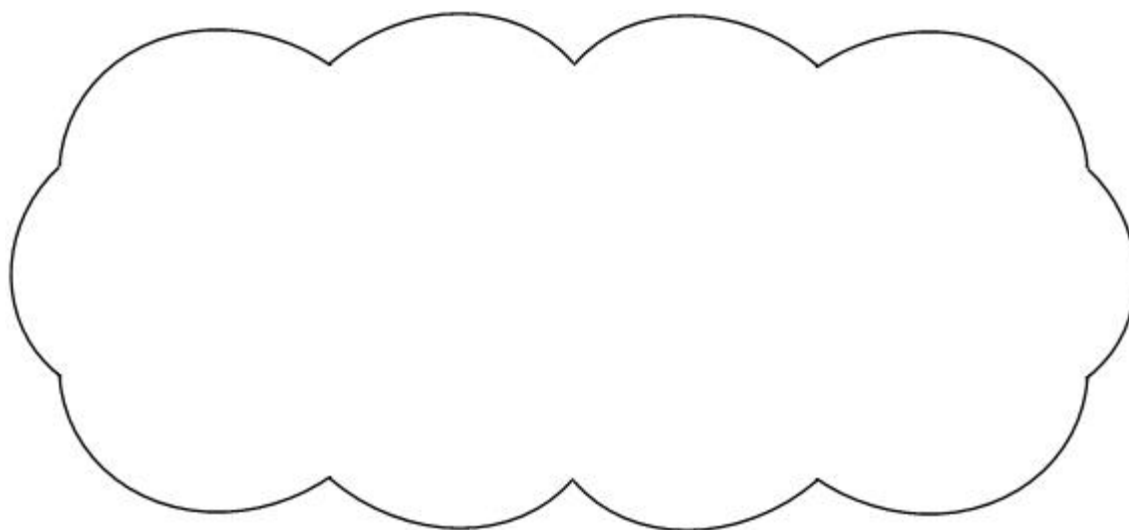
Calculate 55% of 640

Q4.

Liam did a survey of 55 people to see how many were left-handed.

Liam says,

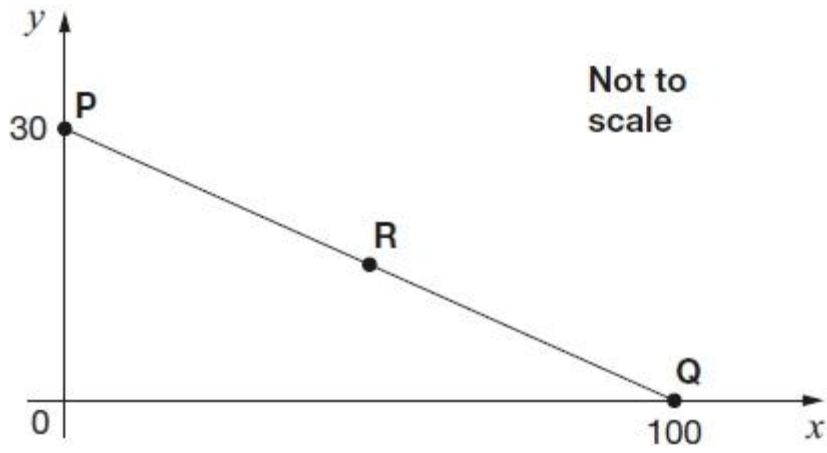> *'The results show that exactly 10% of the people in the survey are left-handed.'*

Explain why Liam cannot be correct.

Q5.

In this diagram **R** is an equal distance from **P** and **Q**.

What are the coordinates of **R**?

R = (,   )

1 mark

Q6.

This table shows the areas of the United Kingdom and Jamaica.

Country	Area (square kilometres)
United Kingdom	240,000
Jamaica	10,000

The area of the United Kingdom is larger than the area of Jamaica.

How many times larger is the United Kingdom?

times larger

1 mark

Q7.

Here are two similar right-angled triangles.
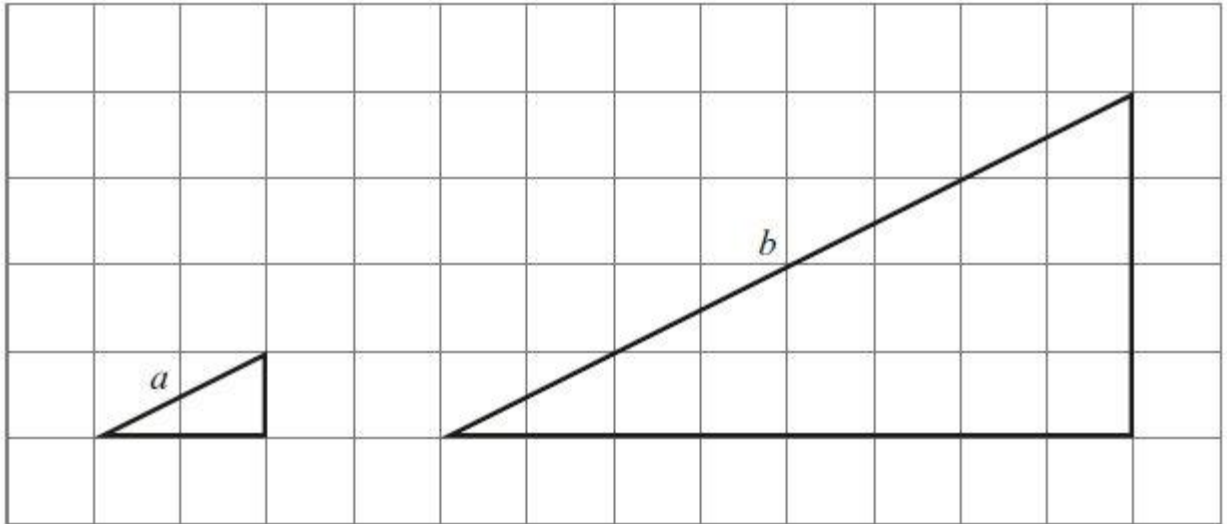
Write the ratio of side a to side b.

$$a : b = \boxed{\qquad : \qquad}$$

Q8.

Amina planted some seeds.

For every 3 seeds Amina planted, only 2 seeds grew.

Altogether, 12 seeds grew.

How many seeds did Amina **plant**?

Q9.

The Angel of the North is a large statue in England.

It is 20 metres tall and 54 metres wide.

54m

20m

Not to scale
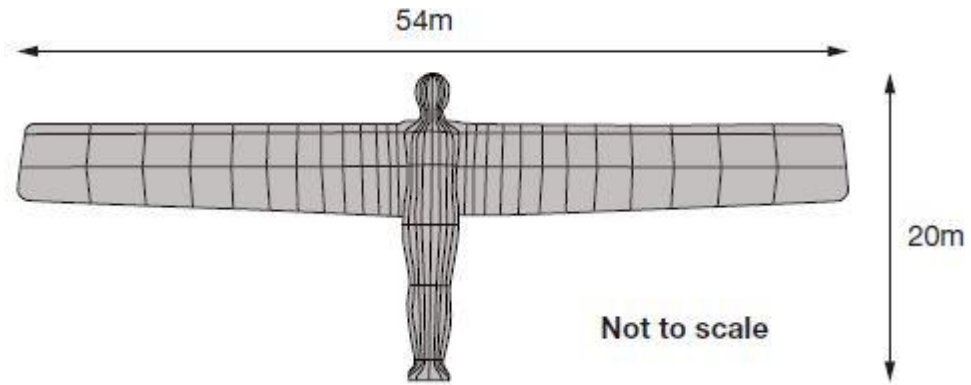
Ally makes a scale model of the Angel of the North.

Her model is 40 centimetres tall.

How **wide** is her model?

cm

1 mark

Q10.

Two letters have a total weight of **120 grams.**
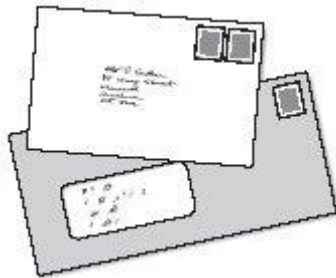
One letter weighs **twice as much** as the other.

Write the weight of the **heavier** letter.

g

1 mark

Q11.

There are 25 children in the lunch queue, including Nik.

Nik says,

'There are twice as many children in front of me as there are behind me'.

How many children are **in front** of Nik?

Show your method																				

children

2 marks

Q12.

How fast you can type accurately is called your typing speed.

The regions of the graph show information about different typing speeds.
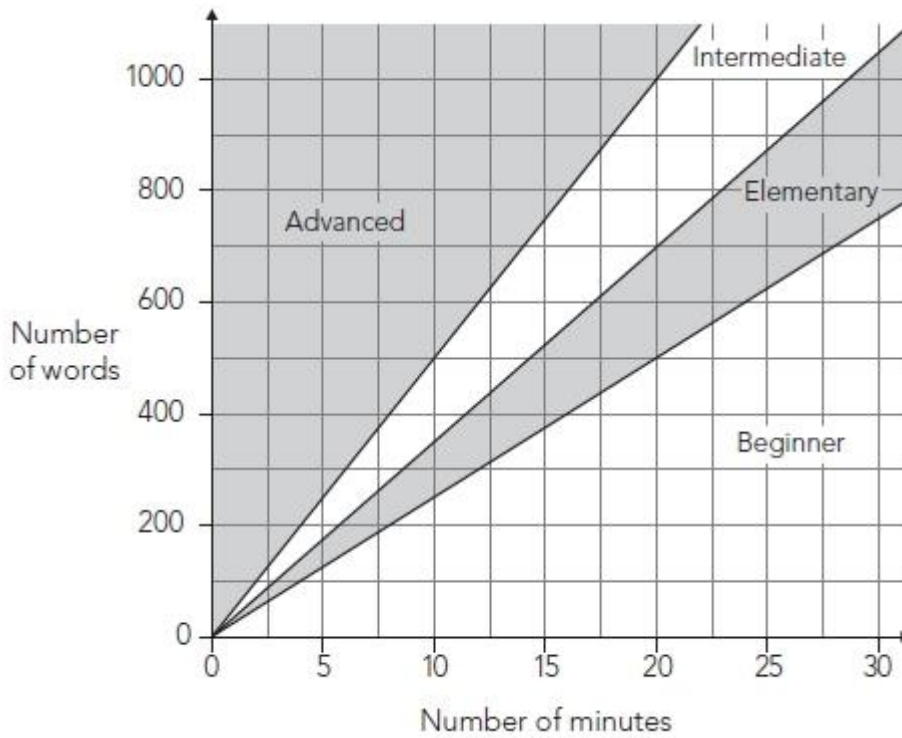
Darren's level of typing is **elementary**.

In **20 minutes** he should be able to type between 500 and 700 words.

Jo's level of typing is **intermediate**.

How many words should she be able to type in **20 minutes**?

Between _____ and _____

1 mark

Kath's typing speed is **30 words per minute**.

What level is Kath's typing?

☐ Advanced   ☐ Intermediate   ☐ Elementary   ☐ Beginner

Explain how you know.

Q13.

A gardener plants tulip bulbs in a flower bed.

She plants 3 red bulbs for every 4 white bulbs.

She plants 60 red bulbs.

How many **white** bulbs does she plant?

Show
your
method

2 marks

Q14.

On a sheet of stickers there are 5 circles, 2 stars and one rectangle.
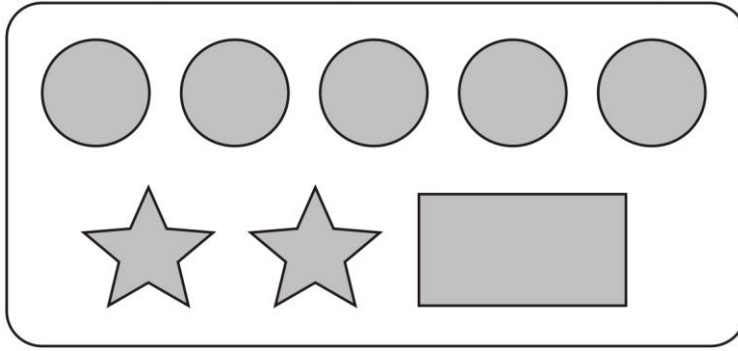
How many stickers are there altogether on **4** sheets?

1 mark

Nisha needs 55 circles.

How many sheets of stickers does she need?

1 mark

Ben has 10 sheets of stickers.

How many **more** circles than rectangles does he have?

1 mark

Q15.

P   Q   R
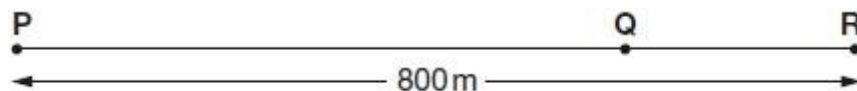
— 800 m —

Not to scale

The distance from point **P** to point **R** is 800 metres.

The distance from point **P** to point **Q** is **4 times** the distance from point **Q** to point **R**.

Olivia says,

It is 600 metres from point **P** to point **Q**.

Explain why Olivia is **not** correct.

1 mark

Mark schemes

Q1.
    400

[1]

Q2.
    (75, 36)

Accept unambiguous answers written on the diagram.

[1]

Q3.
    352

Do not *accept 352%*

[1]

Q4.
An explanation which recognises that 10% of 55 is not a whole number, eg:

■   '10% of 55 is $5\frac{1}{2}$, and you can't have $5\frac{1}{2}$ people'

■   'It wouldn't be a whole number of people'

■   'No whole number out of 55 will give you 10%'

■   'If it was 5 people, 5 out of 55 isn't 10%.
6 out of 55 isn't 10% either'

■   'Because you can't have half a person.'

■   '$5\frac{1}{2}$,'

Do not accept vague or incomplete explanations, eg:
■   *'You can't get 10% of 55'*
■   *'Some children write with both hands'.*

U1

[1]

Q5.
    (50, 15)

[1]

Q6.
    24

[1]

Q7.

    1:4

                Accept other equivalent ratios, e.g. 2:8 or 0.5:2

                Do not *accept reversed ratios, e.g. 4:1 or 8:2*

                                                                [1]

Q8.

    18

                Accept 18:12 **OR** *12:18*

                                                                  [1]

Q9.

    108

                                                                [1]

Q10.

    80

                                                                [1]

Q11.

    16   **2**

    or

    8

    or

Answer of 17 with $\dfrac{50}{3}$ or equivalent seen (the only error is to fail to subtract 1 at the start)

or

Shows understanding of a correct method even if there are computational errors
eg

- $\dfrac{2}{3}$ × 24 = 12

                Do not accept *answer of 17 without* $\dfrac{50}{3}$ *or equivalent seen*

                                                    1
                                                     U1

                                                     [2]

Q12.

(a) Gives both correct values, ie

700 (or 701) and 1000 (or 999)

(in either order)

1

(b) Indicates Elementary and gives a correct explanation that places the speed clearly within the correct section on the graph, eg:

- 30 words in one minute is 300 words in ten minutes

- 30 wpm = 900 words in 30 minutes

- Darren is between 25 and 35 words per minute so she is the same as Darren
  Accept minimally acceptable explanation, eg:
  - *300 every 10*
  - *Point equivalent to 30 words per minute*
      (eg 300 words in 10 minutes) clearly indicated on
  the graph
  - *25-35, same as Darren*
  - *20 × 30 = 600*
  ! Small number of minutes used, where regions are closer together
  Accept points equivalent to 30 words per minute where the number of minutes is 2.5 or greater
  eg, accept

  - *30 words in one minute is 75 words in $2\frac{1}{2}$ minutes*
  eg, do not accept
  - *I looked at 1 minute on the graph and found where 30 words is on the graph*
  ***Do not accept** incomplete explanation, eg:*
  - *I read up from 10 minutes*
  - *Between 25 and 30 words per minute*
  - *Same as Darren*

1
U1

[2]

Q13.

Award **TWO** marks for the correct answer of 80

If the answer is incorrect, award **ONE** mark for evidence of appropriate method, eg:

- 60 ÷ 3 = 20

  20 × 4

OR

- 3 red 4 white

30 red 40 white

60 red…

*Answer need not be obtained for the award of **ONE** mark.*

[2]

Q14.

(a)   32

1

(b)   11

1

(c)   40

1

[3]

Q15.

An explanation that gives the correct values for PQ and/or QR, e.g.

- PQ = 640 m
- QR is 160, 160 times 4 is not 600 m
-

OR

An explanation recognising PR is 800 m and must be 5 times QR, e.g.

- the total distance is 800 m. Divide by 5 to give 160 for distance between Q and R, so P and Q is 4 × 160 = 640 m (not 600 m)
- if QR is 200 m, then PR is 1000 m not 800m
- if PQ is 600 m then QR is 800 − 600 = 200 m. Then PR is 5 × 200 = 1000 m but it is only 800 m.

OR

An explanation that PQ is not 600 m, e.g.
- if it was 600 m then the shorter distance would be 200 m if added to make 800 m, 600 m is 3 times 200, not 4 times
- Olivia is not correct because 600 ÷ 4 = 150 and 600 + 150 doesn't equal 800
- Olivia is not correct because 800 − 600 = 200 and 600 is not 4 times 200

> ***Do not*** *accept vague, incomplete or incorrect explanations,*
> *e.g.*
> - *Olivia is not correct because you can't divide 600 by 4 like you can for 800*
>
> ***Do not*** *accept explanations which include incorrect mathematics or incorrect information that is relevant to the explanation.*

[1]