testbase

Year 6: Statistics

Name: _____

Class: _____

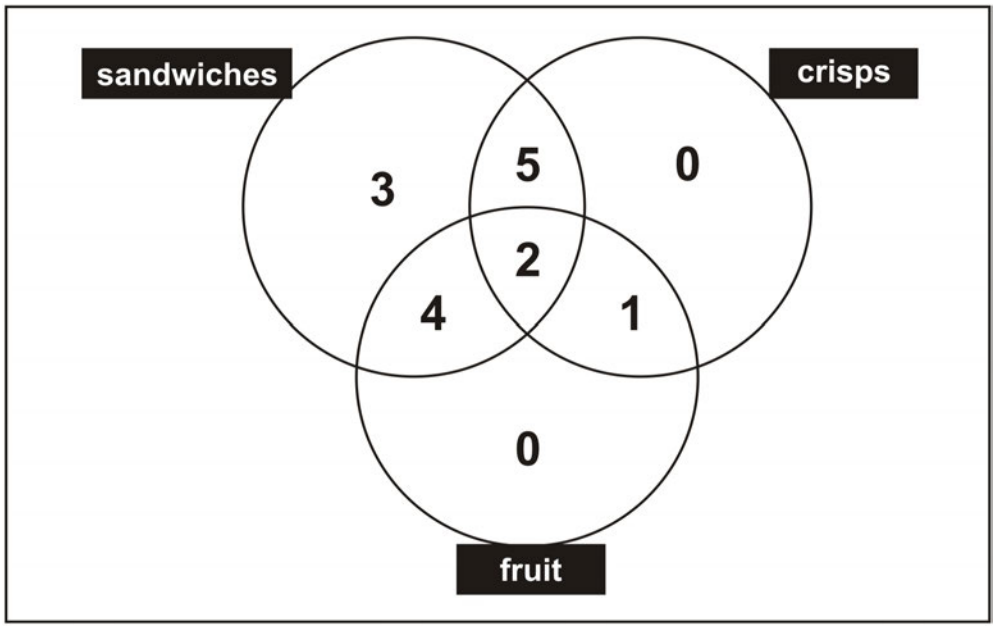
Date: _____

Time:

Marks: **33 marks**

Comments:

1 This diagram shows how many children had sandwiches, crisps and fruit in their lunchboxes.



(a) How many children had **only** sandwiches?

1 mark

(b) How many children had crisps?

1 mark

2

Here are the times of some television programmes.

Channel 1	
7.00	Cartoon
7.15	Film
9.00	News
9.30	Weather
9.35	Sport
10.20	Drama

Channel 2	
7.00	Local News
7.45	Quiz Show
8.30	Comedy
9.00	Hospital Drama
10.00	Pop Chart
10.40	Film

What is showing on **Channel 2** at **ten minutes to eight**?

_____

1 mark

Tom watches **Hospital Drama** and then **changes** to **Channel 1** at the end.

What is showing on **Channel 1** when he changes channel?

_____

1 mark

The film on **Channel 2** starts at **10.40**

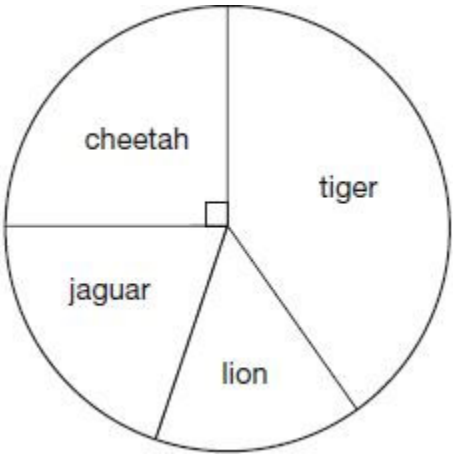
It lasts for **one and a half hours.**

At what time does the film **end**?

1 mark

3 This chart shows the number of different types of big cat in a zoo.

There are **20** big cats in the zoo altogether.



Here are some statements about the chart.

Tick the statements that are **true**.

There are more cheetahs than jaguars. ☐

The total number of lions and tigers is 10 ☐

One-quarter of the big cats are cheetahs. ☐

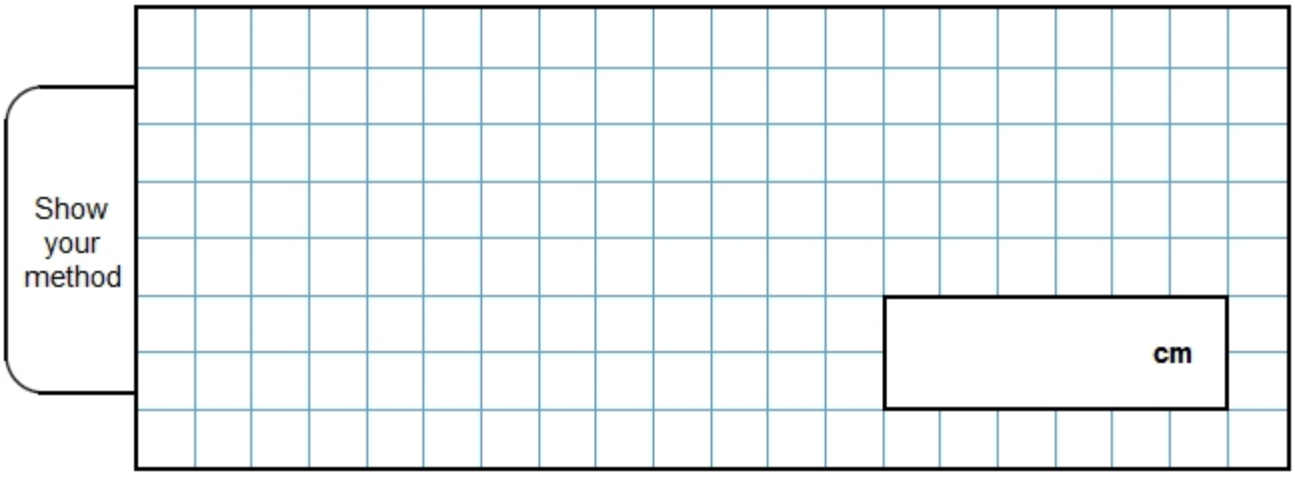
There are more than 5 jaguars. ☐

2 marks

4 Seven children measured their heights.

Children	Height (cm)
Stefan	144
Lara	136
Olivia	142
Chen	143
Maria	152
Dev	148
Sarah	150

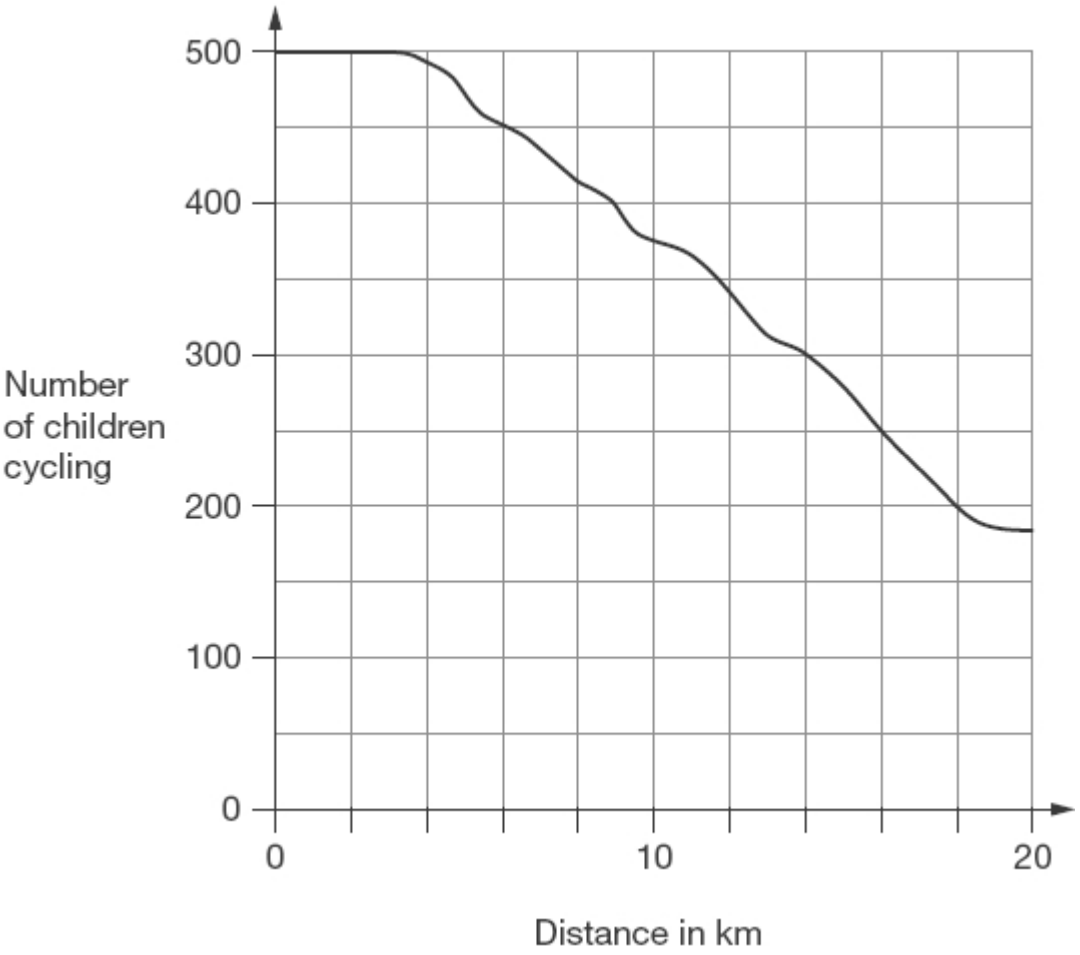
What is the mean height of the children?



2 marks

5 500 children started a 20 kilometre sponsored cycle ride.

This graph shows how far they cycled.



At what distance were exactly half of the children still cycling?

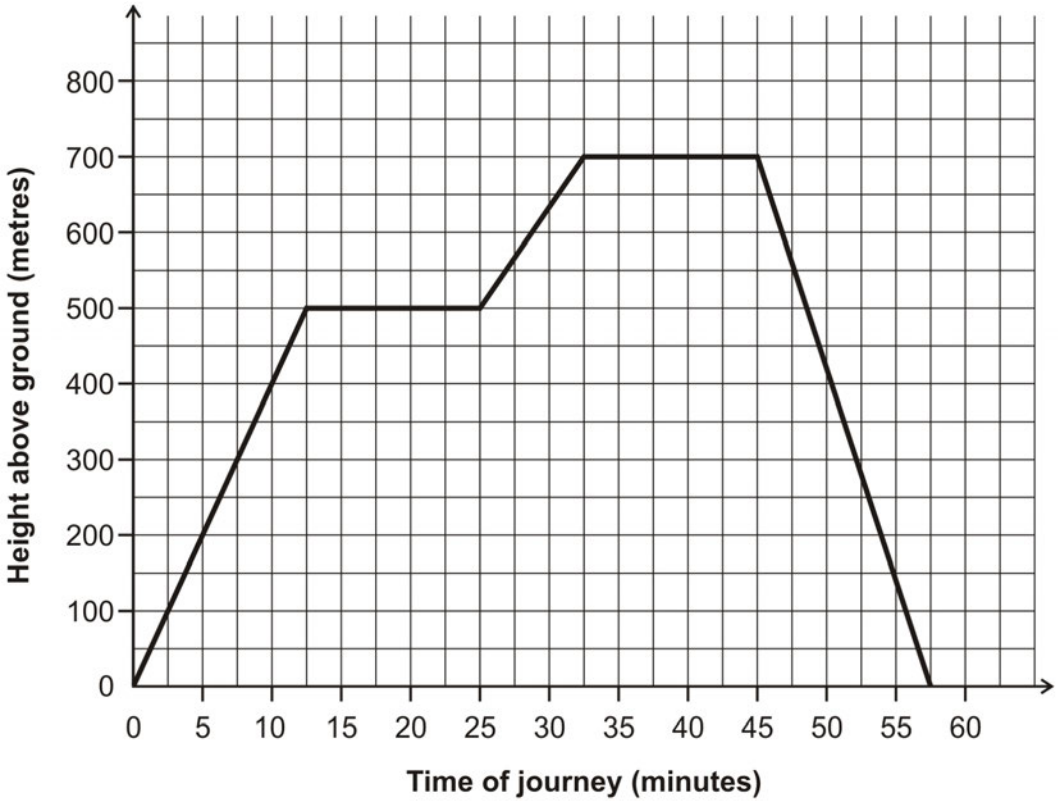
km

1 mark

Estimate how many children completed the 20 kilometre cycle ride.

1 mark

6 The graph shows the journey of a hot-air balloon.



(a) At what **height** above the ground was the balloon after **10 minutes?**

metres

1 mark

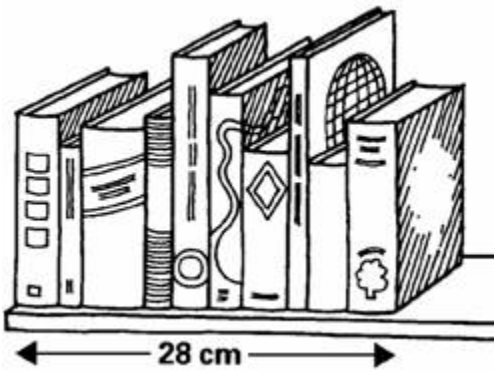
(b) After how many **minutes** of the journey did the balloon begin to go down?

minutes

1 mark

7 Vicki puts 10 books on a shelf.

The **10 books** take up **28 centimetres**.



What is the **mean (average)** thickness of her books?

Show your method

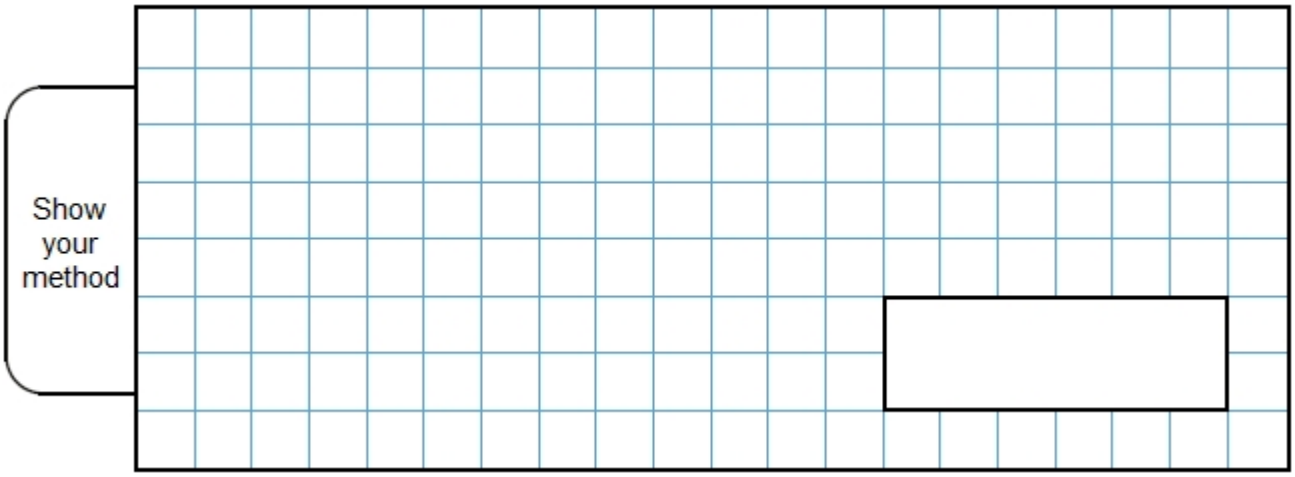
cm

2 marks

The shelf is **120 centimetres** long.

Vicki fills the shelf with a mixture of books like the **first ten books.**

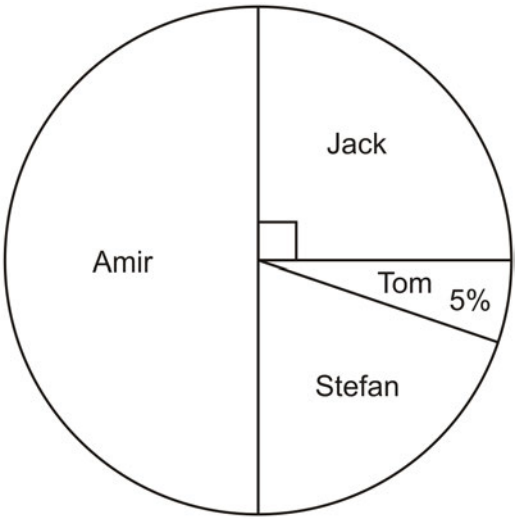
Estimate how many books she can get on the **120 cm shelf**.



2 marks

8 40 children predicted who would win the boys' race at sports day.

This pie chart shows their predictions.



What percentage of the children predicted that Stefan would win?

%

1 mark

10 children predicted the winner of the race **correctly**.

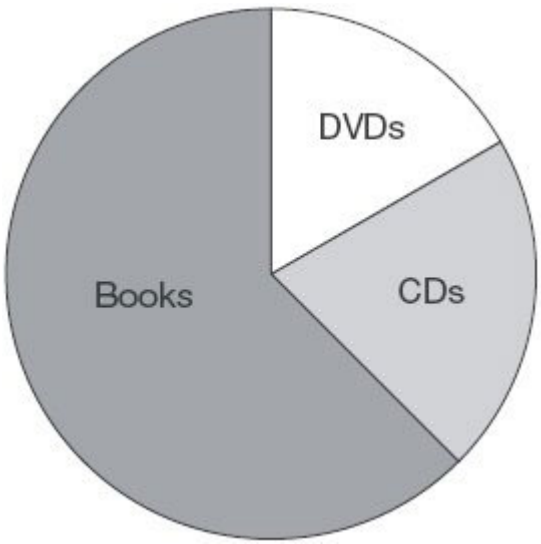
Who won the race?

Explain how you know.

1 mark

9 A shop sells books, CDs and DVDs.

This pie chart shows the sales of each in one week.



Estimate the **fraction** of the total sales that were DVDs.

1 mark

In this week, 200 **CDs** were sold.

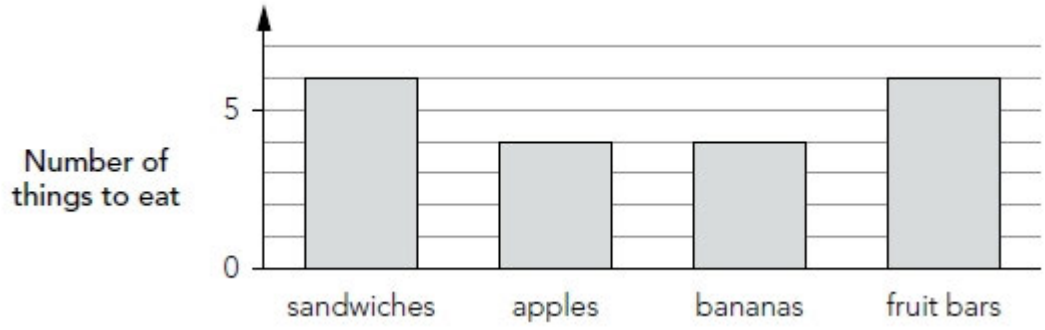
Estimate how many books were sold.

1 mark

10 This table shows the number of things to eat in **five** children's lunch boxes.

	sandwiches	**apples**	**bananas**	**fruit bars**
Lisa	1	2	0	2
Jack	2	0	2	1
Kemi	1	1	0	2
Nik	1	2	1	0
Ben	2	1	2	1

Here is a graph of the information for **four** of the children.



Which child's information is missing from the graph?

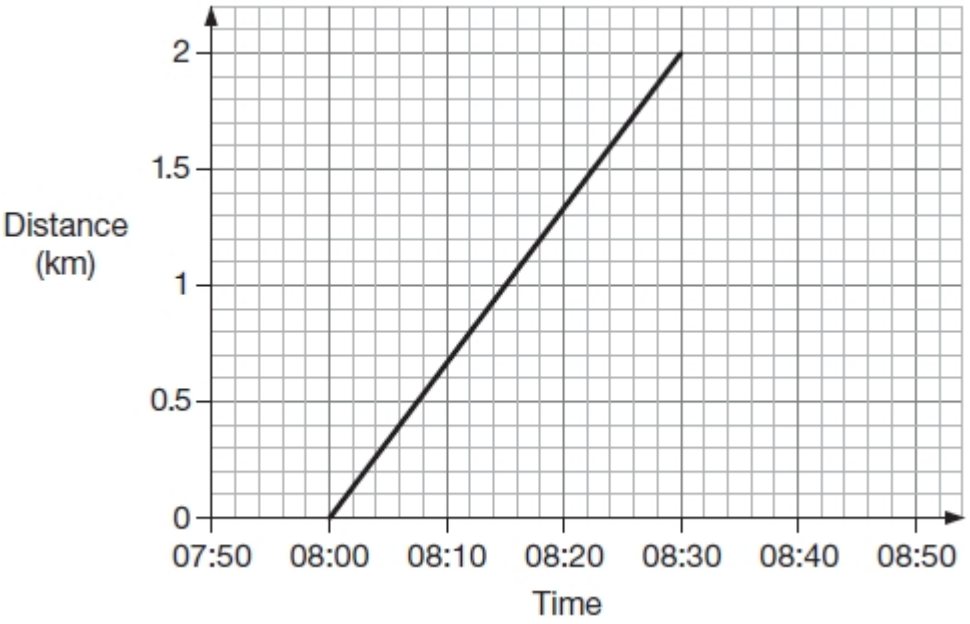
Explain how you know.

1 mark

11 Alfie and his brother walked from home to their school.

Their school is 2 kilometres from home.

The graph shows information about **Alfie's** journey.



(a) How does the graph show that Alfie walked at a **constant speed** for all of his journey?

_____

1 mark

(b) Alfie's brother left home **10** minutes **before** Alfie.

He arrived at school **20** minutes **after** Alfie.

He walked at a **constant speed** for all of his journey.

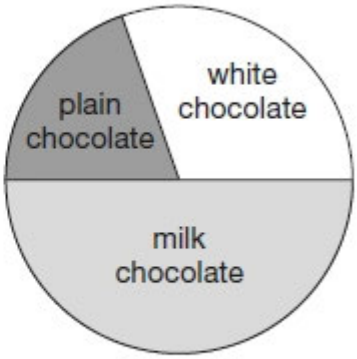
At what time did Alfie overtake his brother?

1 mark

12 100 girls and 50 boys were asked which kind of chocolate they like best.

These two pie charts show the results.

100 girls



50 boys

Dev says:

"The pie charts show that more girls than boys liked milk chocolate best."

Dev is correct.

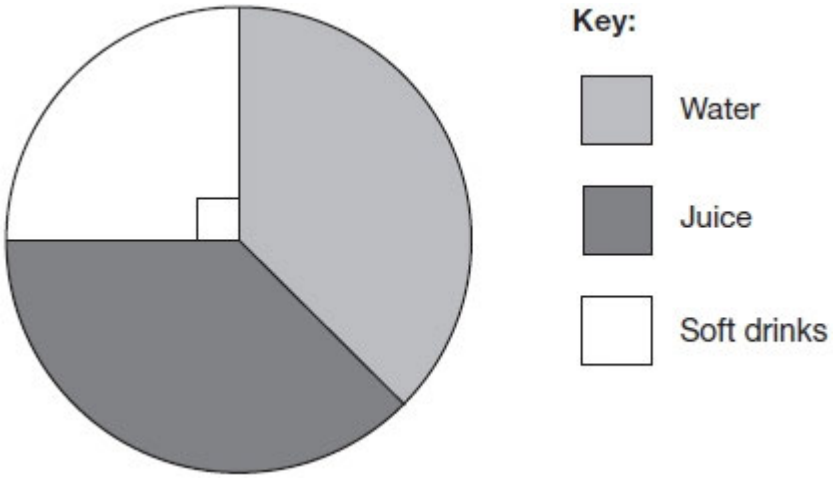
Explain how you know.

1 mark

13

A shop sells drinks.

The pie chart compares the money a shop took last year for water, juice and soft drinks.



The shop took £8,264 for soft drinks.

Sales of water and juice were **equal**.

How much money did the shop take for **juice** last year?

Show your method

£

2 marks

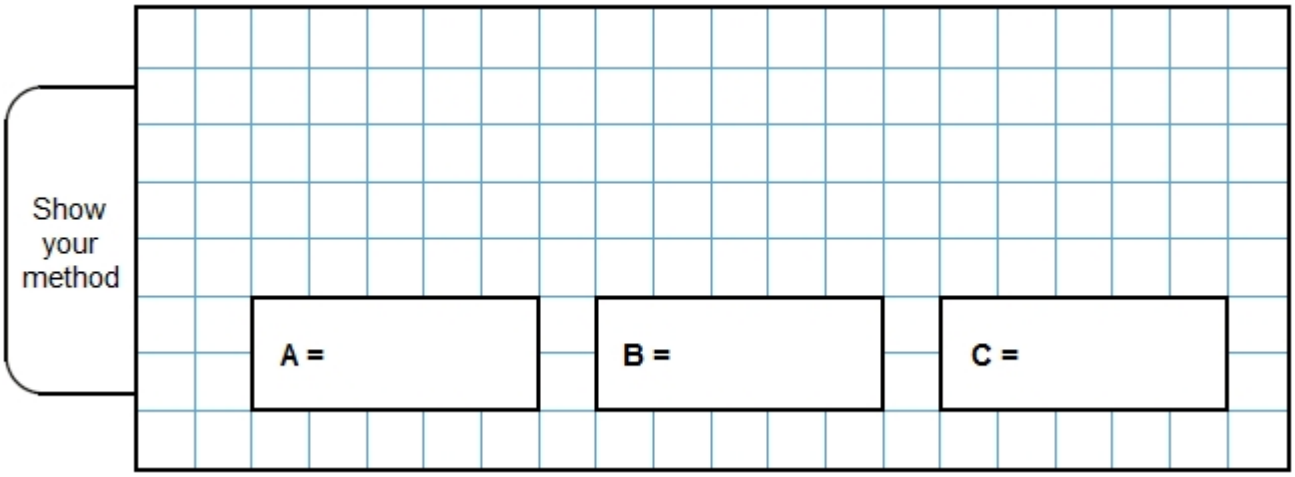
14 A, B and C stand for three different numbers.

The mean of A and B is 40

The mean of B and C is 35

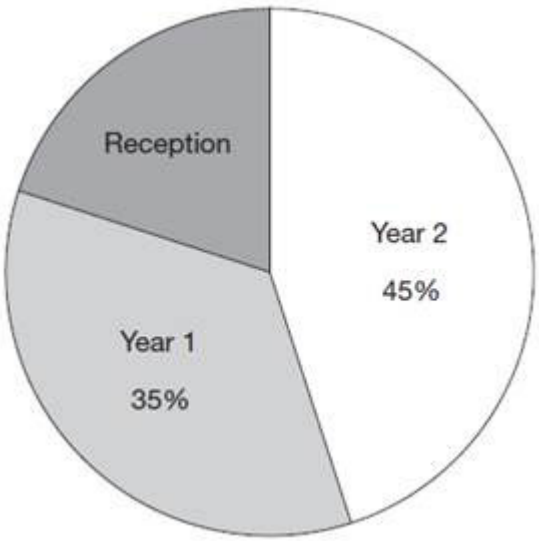
A + B + C = 100

Calculate the values of **A**, **B** and **C**.



2 marks

15 The pie chart shows the Year groups of children at Woodland Infant School.



There are **56** children in **Year 1**.

How many children are there in Reception?

Show your method

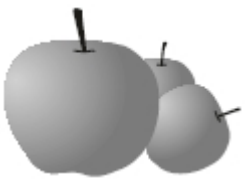
children

2 marks

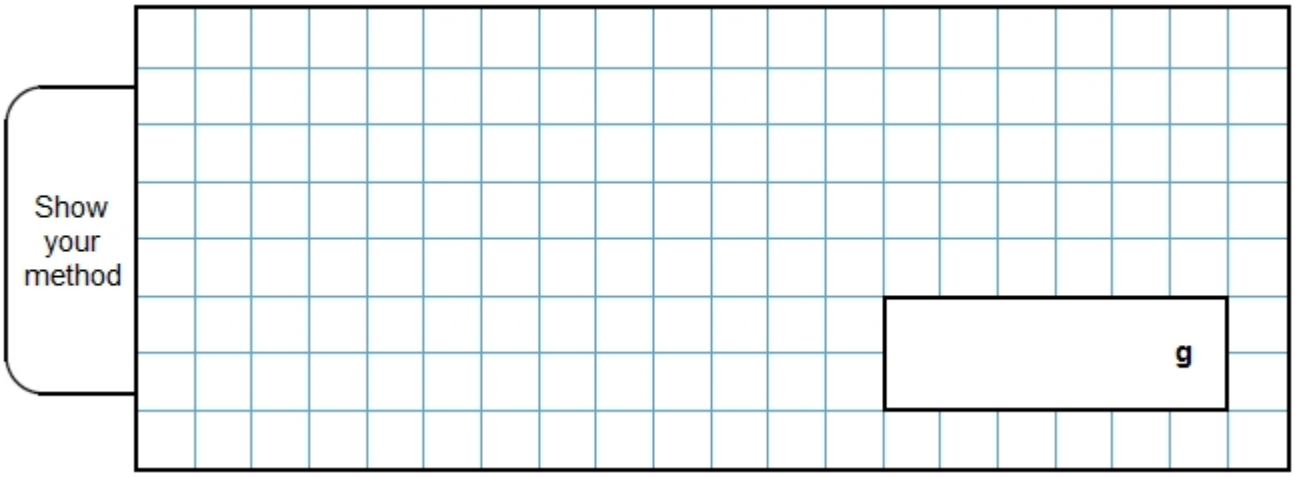
16 Three apples have a **mean** (average) mass of 100 grams.

The largest apple is removed.

The **mean** mass of the remaining two apples is 70 grams.



What is the mass of the largest apple?



2 marks

Mark schemes

1 (a) 3 (children)

1

(b) 8 (children)

1

[2]

2 (a) Quiz Show

Accept recognisable mis-spellings.

Accept 'quiz'.

Accept an answer indicated on the chart provided the intention is clear.

1

(b) Sport

Accept recognisable mis-spellings.

Accept an answer indicated on the chart provided the intention is clear.

1

(c) 12.10

Accept 12.10 ***OR*** *12:10* ***OR*** *1210* ***OR*** *00 10* ***OR*** *00.10* ***OR*** *00:10* ***OR*** *12.10am* ***OR*** *12.10pm.*

Accept equivalent expressions such as 'ten past noon' ***OR*** *'ten past midnight'.*

1

[3]

3 Award **TWO** marks for only two correct boxes ticked, as shown:

There are more cheetahs than jaguars.	✓
The total number of lions and tigers is 10	
One-quarter of the big cats are cheetahs.	✓
There are more than 5 jaguars.	

Award **ONE** mark for:

- only one correct box ticked and no incorrect boxes ticked

OR

- two correct boxes ticked and one incorrect box ticked.

Accept alternative unambiguous positive indications, e.g. Y.

Up to 2 marks

[2]

4 Award **TWO** marks for the correct answer of 145

If the answer is incorrect, award **ONE** mark for evidence of an appropriate method, e.g:

- 144
  136
  142
  143
  152
  148
  + 150
  1015

1015 ÷ 7

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

Up to 2

[2]

5 (a) 16

1

(b) A whole number in the range 180 to 190 inclusive

1

[2]

6 (a) 400 *Accept any value between 380 and 420 inclusive.*

1

(b) 45 *Accept any value between 43 and 47 inclusive.*

1

[2]

7 (a) Award **TWO** marks for correct answer of 2.8 cm.
If answer is incorrect, award **ONE** mark for any appropriate calculation even if the answer is incorrect, eg:

- 28 ÷ 10 = wrong answer.

*A calculation **MUST** be performed for award of one mark.*

Up to 2

(b) Award **TWO** marks for WHOLE NUMBER ANSWER in the range 40 to 50 inclusive, eg:

- 42.8

If answer is outside range, award **ONE** mark for an appropriate calculation, eg:

- 120 ÷ 28 × 10 = wrong whole number answer.
- 120 ÷ 30 × 10 = wrong whole number answer.
- 30cm is 10 books.
  60cm is 20 books.
  120cm is ... wrong answer.

*If answer is outside range, a calculation **MUST** be performed for award of one mark. If calculation is based upon incorrect answer to 16a, award **TWO** marks for correct calculation using an appropriate strategy **AND** rounding of answer to whole number, even if outside range 40–50, eg:*

- *120 ÷ answer to 16a = rounded whole number.*
  OR
  ONE mark if there is either an error in calculation or failure to round to whole number.

Up to 2

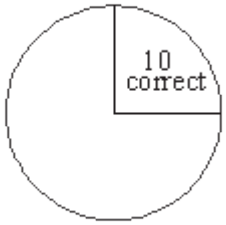
[4]

8 (a) 20%

***Do not** accept equivalent fractions or decimals.*

1

(b) An explanation which recognises that 25% chose Jack, eg:

- 'A quarter of the children guessed Jack and that is 10 out of 40'
- '10 out of 40 ($\frac{1}{4}$) were correct and the pie chart shows $\frac{1}{4}$ chose Jack'
- 'Half guessed Amir which is 20 and Jack is half of that which is 10'
- '10 guessed right and the pie chart shows three times as many chose the other runners'
- '25% chose Jack and 25% were correct'
- 

No mark is awarded for 'Jack' alone.

***Do not** accept vague or incomplete explanations, eg:*

- *'There were 40 children altogether'*
- *'Less than half chose Jack'*
- *'Because Jack is the fastest'.*

If the answer to 'Who won the race?' is incorrect, but a correct, unambiguous explanation is given, then award the mark.

U1

[2]

9

(a) Answer in the range $\frac{13}{100}$ to $\frac{1}{5}$ inclusive

Range includes $\frac{1}{6}$ and $\frac{1}{7}$
Accept decimals or percentages.
(0.13 to 0.2 inclusive)
(13% to 20 % inclusive)

1

(b) Answer in the range 500 to 800 inclusive

1

[2]

10 Indicates Nik and gives a correct explanation
eg

- 1 sandwich, 2 apples and 1 banana is missing from the graph and that is what Nik had in his lunch box
- The graph shows the correct number of fruit bars and Nik is the only one who does not have a fruit bar in his lunch box so his must be the missing one
- The totals from the table are 7, 6, 5, 6, and from the graph 6, 4, 4, 6, and the difference is Nik

Accept minimally acceptable explanation
eg
- *1 sandwich, 2 apples, 1 banana*
- *Because the number of fruit bars is correct*
- *1 banana missing*
- *7, 6, 5, 6 and 6, 4, 4, 6 seen*

***Do not accept** incorrect or incomplete explanation*
eg
- *1 sandwich, 2 apples*
- *There are 6 fruit bars*
- *2 apples are missing*

U1

[1]

11 Gives a correct interpretation of the graph, eg:

- It is a straight line
- It goes up steadily
- The angle of the line stays the same
- The gradient of the line is constant

Accept minimally acceptable explanation, eg:
- *It is straight*
- *It doesn't bend*
- *It is a diagonal*

Do not accept *incomplete or ambiguous explanations that do not sufficiently imply a constant speed and /*

or do not demonstrate the relationship holds for the

entire graph, eg:

- *The line goes straight up*
- *It is not wobbly*
- *It is level*
- *Every 5 mins he walks the same distance*
- *He walks 1km in the first 15 mins and 1km in the second 15 mins*

! Values read from graph

Accept, provided it is clear the relationship holds for the entire graph.

Values should be accurate within +/− 0.1km and /
or +/− 2 minutes, eg:

- *0.7km every 10 minutes*
- *Every 7.5 minutes he walks about half a km*

! Calculation of kilometres per hour

Accept values in the range 3.7 to 4.3km per hour inclusive.

1

(b) 08:10

! Accept values between 08:09 and 08:11 inclusive

! Time

1

[2]

12 Award **ONE** mark for an explanation which recognises that the two pie charts represent different numbers of children, e.g:

- '25 boys like milk chocolate best and more than 25 girls do'
- 'It's almost half of 100 girls and that's more than half of 50 boys'
- 'The pie chart shows that half of the boys chose milk chocolate and that's 25. About 45 girls chose milk chocolate because it's nearly half of the girls' pie chart'
- '25 boys chose milk chocolate, but (whole number in the range 40-49) girls chose milk chocolate'

- ‘There are twice as many girls as boys so a quarter of the girls’ pie chart is the same number as half of the boys’ pie chart, and it’s more than a quarter of the girls’

- $\frac{1}{2}$ of 50 boys chose milk = 25

  $\frac{1}{4}$ of 100 girls chose plain = 25

  and from the girls’ pie chart it is obvious that more chose milk than plain’

- ‘There are twice as many girls as boys and the sizes of the pie charts show this and the area for boys who like milk chocolate is smaller than the area for girls who like it’.

  Do not *accept vague or incomplete explanations, e.g:*

  - *‘100 is more than 50’*
  - *‘More girls took part than boys so more girls like milk chocolate’*
  - *‘The section for boys who like milk chocolate is smaller than the section for girls who like it’.*

Commentary: The pie charts are presented using the mathematical convention that their areas are proportional to the numbers they represent, i.e. in this example the chart for girls has twice the area of the chart for boys.

[1]

13 Award **TWO** marks for the correct answer of £12396.

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

■
$$\begin{array}{r} £8264 \\ \times \quad 4 \\ \hline £33056 \end{array}$$

OR

$$\begin{array}{r} £33056 \\ - \quad 8264 \\ \hline £24792 \end{array}$$

£24792 ÷ 2

OR

■ £8264 ÷ 2 = £4132
£8264 + £4132

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

Up to 2

[2]

14 Award **TWO** marks for the correct answer as shown:

A = **30** B = **50** C = **20**

All three numbers must be correct for the award of the mark.

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

A + B = 80

B + C = 70

A + 2B + C = 150

100 + B = 150

*Accept for **ONE** mark the correct three numbers but written in the incorrect boxes.*

Up to 2

[2]

15 32

2

or

160 seen *(the total children in the school)*

Do not accept 160° or 160%

OR

Shows or implies a complete, correct method, eg:

- 35 + 45 = 90 *(error)*
  100 − 90 = 10
  56 ÷ 35 = 1.6
  1.6 × 10 = 16

- 35% of children = 56
  total children = 56 × 100 ÷ 35 = 150 *(error)*
  Reception = 100 – (45 + 35)% = 20%
  Reception = 20% of 150
  0.2 × 150 = 40 *(error)*

- 35% is 56
  5% is 8
  20% is 4 × 8 = 24 *(error)*

1

[2]

16 160

! Measures

See guidance

2

or

Shows or implies a complete correct method, eg:

- 3 × 100 = 300

  2 × 70 = 140

  300 – 140

1

[2]