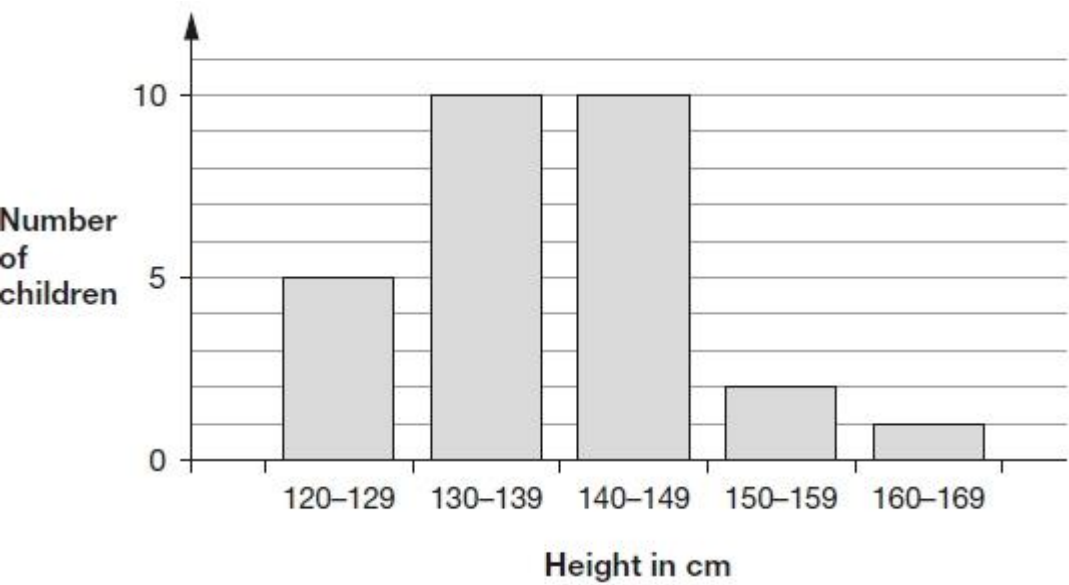


Q1.

The graph shows the heights of 28 children in Alfie's class, to the nearest centimetre.



Alfie is 153 cm tall.

He says,

***‘Only one person in my class is taller than I am.’***

Emma says,

***‘You can’t tell this from the graph.’***

Explain why Emma is correct.

A large, empty cloud-shaped box with a scalloped border, intended for the student to write their explanation.

1 mark

Q2.

In a survey of children's favourite fruit juices, these were the results.

| Juice                  | Apple | Orange | Grape | Mango |
|------------------------|-------|--------|-------|-------|
| Percentage of children | 25%   | 14%    | 30%   | 31%   |

(a) 20 more children chose grape than chose apple.

How many children took part in the survey?

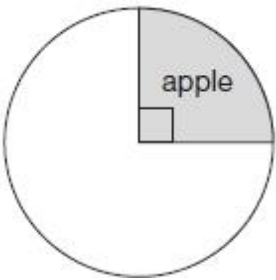
Show  
your  
method

children

2 marks

(b) Chen makes a pie chart to show the results.

What **angle** should he use for the children who chose **mango**?



1 mark

**Q3.**

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?

Show  
your  
method

g

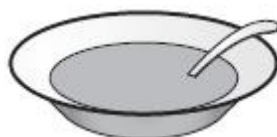
2 marks

**Q4.**

Alfie did a survey to find which soup was most popular.

The choices were:

- tomato
- chicken
- mushroom



A quarter of the children chose chicken soup.

Four times as many children chose tomato soup as chose mushroom soup.

Alfie makes a pie chart to show this information.

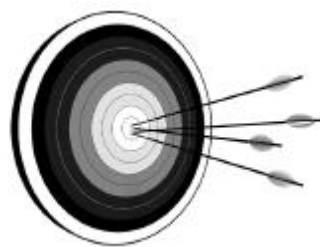
What **angle** should he use for the children who chose tomato soup?

Show  
your  
method

3 marks

**Q5.**

Archery is an Olympic sport.



In 2008, two archers called Park and Zhang were in the women's final.

Both archers shot **12 arrows**.

**Zhang won the final by 1 point.**

Complete the table for Zhang below.

You can use the space to show your calculations.

Show  
your  
method

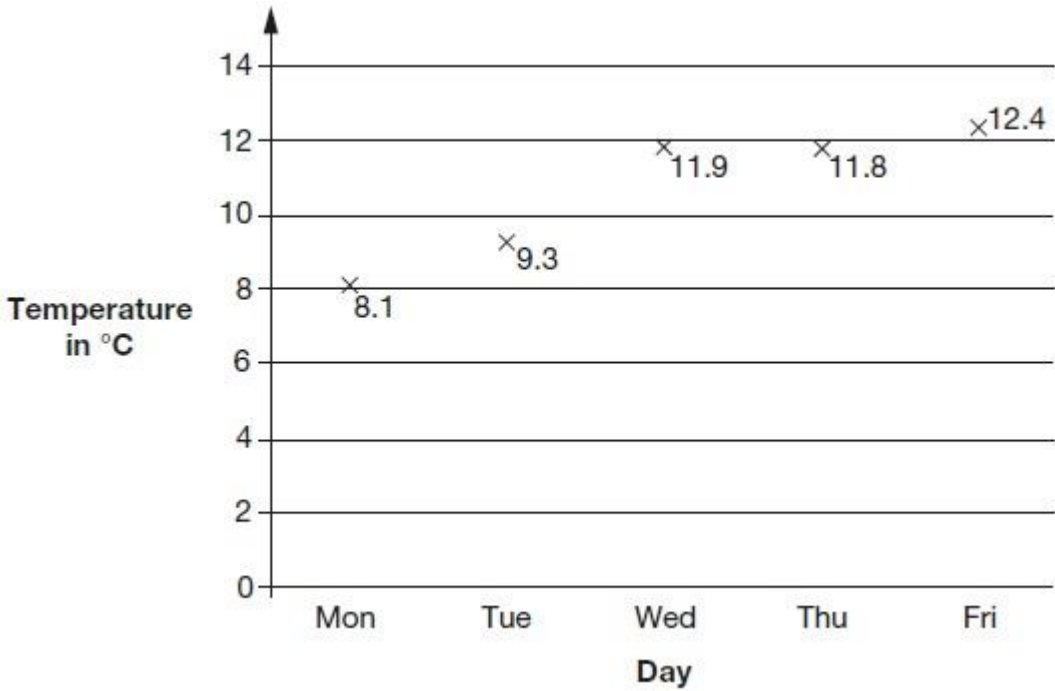
| Name of archer: <b>Park</b>               |           |
|-------------------------------------------|-----------|
| What she scored with her <b>12 arrows</b> |           |
| Number of points                          | Frequency |
| 7                                         | 0         |
| 8                                         | 4         |
| 9                                         | 3         |
| 10                                        | 5         |

| Name of archer: <b>Zhang</b>              |           |
|-------------------------------------------|-----------|
| What she scored with her <b>12 arrows</b> |           |
| Number of points                          | Frequency |
| 7                                         | 1         |
| 8                                         | 0         |
| 9                                         |           |
| 10                                        |           |

2 marks

Q6.

This graph shows the maximum temperature for five days.



For what fraction of the five days was the maximum temperature below 10°C?

1 mark

What was the **mean** maximum temperature, to one decimal place?

Show your method

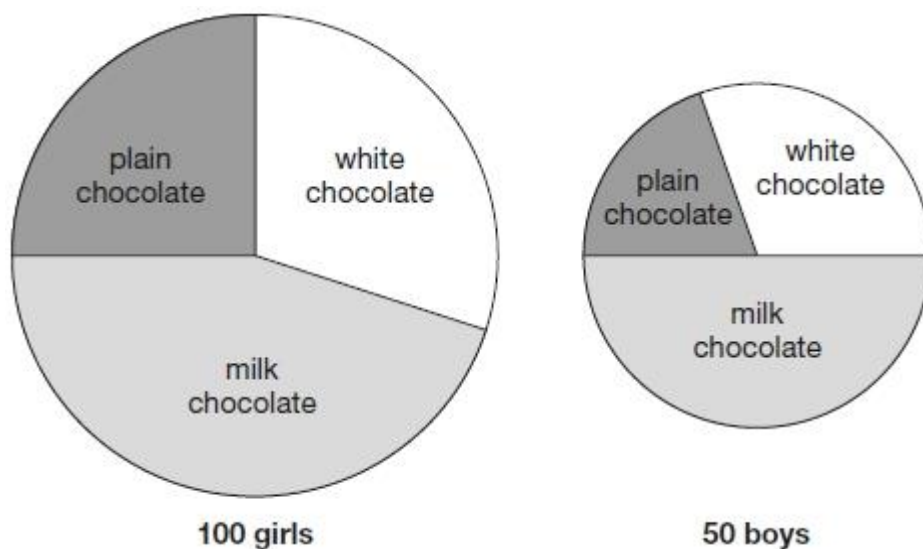
°C

2 marks

**Q7.**

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

These two pie charts show the results.



Dev says:

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

Dev is correct.

Explain how you know.

A large, empty, cloud-shaped box with a scalloped border, intended for the student to write their explanation.

1 mark

**Q8.**

There are 90 children in Year 6 at Woodland Junior School.

They are split into three classes.

| Class | Number in class |
|-------|-----------------|
| 6M    | 27              |
| 6P    | 33              |
| 6T    | 30              |

Each child chose football **or** netball **or** hockey.

In **6M**, 13 children chose hockey.  
The rest of the class were split equally between football and netball.

In **6P**, 9 children chose netball.  
Twice as many children chose football as chose hockey.

In **6T**, the ratio of children who chose  
football to netball to hockey was 1:2:3

Complete this table.

| Class | Number in class | Football | Netball | Hockey |
|-------|-----------------|----------|---------|--------|
| 6M    | 27              |          |         | 13     |
| 6P    | 33              |          | 9       |        |
| 6T    | 30              |          |         |        |

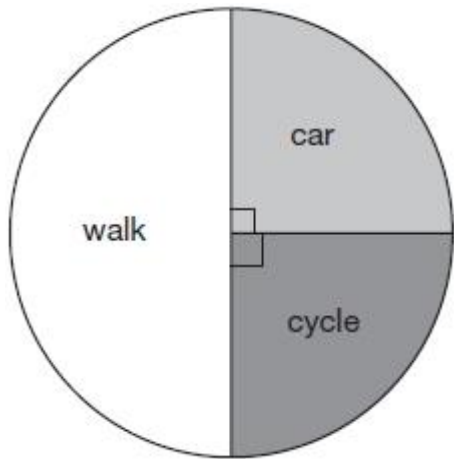
2 marks

Q9.

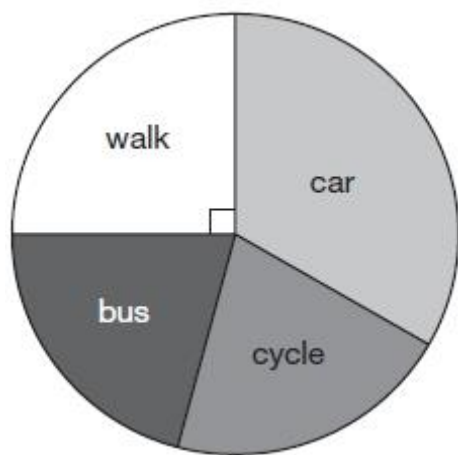
Megan asked children from two different schools,

***‘How do you travel to school?’***

Here are her results.



Foxwood school  
**80** children



Midtown school  
**240** children

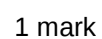
Megan says,

***‘The number of children walking to Foxwood school is more than the number walking to Midtown school.’***

Is she correct?  
Circle **Yes** or **No**.

Yes / No

Explain how you know.



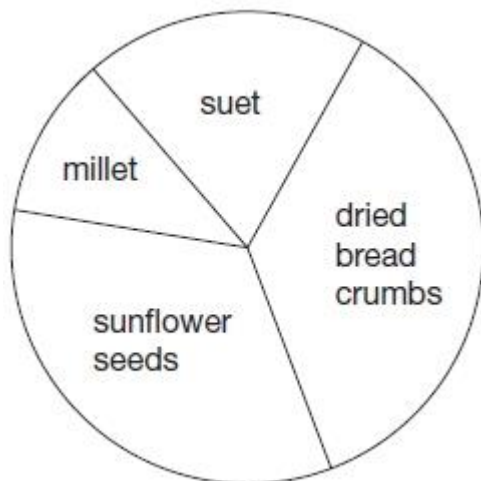
The number of children who cycle is the same as the number who go on the bus.

How many children **cycle** to Midtown school?

2 marks

**Q10.**

This pie chart shows the ingredients to make a food mixture for wild birds.



Estimate the **percentage** of mixture that is suet.

%

1 mark

Mina uses 100 grams of millet in the mixture.

Estimate how many grams of sunflower seeds she should use.

g

1 mark

## Mark schemes

### Q1.

Gives a correct explanation which demonstrates how the graph shows two children could be taller than Alfie, eg:

- One person from the class is 160-169cm. But someone as well as this person could be taller than Alfie. 2 people range from 150-159 cm, the other person could be 154, 155, etc

*Minimally acceptable explanation, eg:*

- *It could be 1.64, 1.56, Alfie*
- *It depends on how tall the other person in his height group is*
- *There could be someone between 150-159 cm who is taller than Alfie*

*! Condone incorrect use of boundary values, eg:*

- *One child is in the range 160 cm–169 cm. Don't know how tall the other child between 150 cm and 159 cm is*

**Do not accept** incomplete or incorrect explanation, eg:

- *There is 1 child in the range 150 cm-159 cm taller than Alfie*
- *There could be two children taller than Alfie*

[1]

### Q2.

(a) 400

2

**or**

Shows or implies a complete correct method, eg:

- $30\% - 25\% = 5\%$

$$5\% = 20$$

$$100\% = 20 \times 20$$

1

(b) 111.6 or 112

**Do not accept 111**

1

[3]

### Q3.

160

*! Measures*

*See guidance*

2

**or**

Shows or implies a complete correct method, eg:

- $3 \times 100 = 300$

$$2 \times 70 = 140$$

$$300 - 140$$

1

[2]

**Q4.**

216

3

**or**

54 seen (*angle for mushroom soup*)

**OR**

Shows or implies a correct method for tomato soup with not more than one computational error, eg:

- $360 - 90 = 240$  (*error*)  
 $240 \div 5 = 48$   
 $48 \times 4 = 192$

- $0.6 \times 360$

- $25\% = \text{chicken}$   
 $75\% \div 5 = 15\%$   
 $15\% \text{ of } 360^\circ = 54^\circ$   
 $54^\circ \times 4$

2

**or**

Shows the angle representing tomato soup and mushroom soup is 270

**OR**

60% **or**  $\frac{3}{5}$  seen (*as evidence of a correct method for tomato soup*)

**OR**

Shows or implies a correct method for finding the angle required to represent mushroom soup, eg:

- $360^\circ - 90^\circ = 260^\circ$  (*error*)  
 $260^\circ \div 5 = 40^\circ$  (*error*)

**OR**

Shows or implies a correct method for tomato soup with more than

one computational error, eg:

- $360^\circ - 90^\circ = 240^\circ$  (error)  
 $240^\circ \times 4 \div 5 = 200^\circ$  (error)

**Do not accept** tomato soup is  $270^\circ$

**Do not accept** methods involving drawings of pie charts, without any values given

Accept equivalent fractions or decimals, eg:

- $\frac{6}{10}$

- 0.6

**Do not accept** 60 or  $60^\circ$  for 60%

1

[3]

**Q5.**

Completes the table for Zhang correctly with frequencies of 7 (for 9 points) and 4 (for 10 points), ie

|   |
|---|
| 7 |
| 4 |

2  
U1

**or**

Shows one of the values 109, 110, 102 or 103

**OR**

Shows a correct method for Zhang that scores one more than the total for Park.

*! For 1 m, a total that uses less than 12 arrows for Zhang  
 Condone*

*! For 1 m, accept a follow through for their incorrect total for  
 Park*

1

[2]

**Q6.**

- (a)  $\frac{2}{5}$

Accept equivalent fractions and decimals e.g.  $\frac{4}{10}$  and 0.4

1

- (b) Award **TWO** marks for the correct answer of 10.7

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

appropriate method, e.g.

- $8.1 + 9.3 + 11.9 + 11.8 + 12.4 = 53.5$   
 $53.5 \div 5$

*Answer need not be obtained for the award of **ONE** mark.  
Any correct rounding or truncating does not negate an appropriate method.  
Any value which does not result from correct rounding or truncating implies an additional step not shown.*

Up to 2m

[3]

### Q7.

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]

### Q8.

Completes all 7 entries in the table correctly, ie:

|    | No. | Football | Netball | Hockey |
|----|-----|----------|---------|--------|
| 6M | 27  | 7        | 7       | 13     |
| 6P | 33  | 16       | 9       | 8      |
| 6T | 30  | 5        | 10      | 15     |

2

**or**

Completes the first two rows (6M & 6P) correctly

**OR**

Completes the third row (6T) correctly

1

[2]

**Q9.**

(a) An explanation that shows that one quarter of 240 is more than one half of 80, eg:

- 'Because only 40 are walking to Foxwood and 60 are walking to Midtown'
- 'Half of the people who walk is 40 and a quarter of the people who walk is 60'

*No mark is awarded for circling 'No' alone.*

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

- 'Because at Foxwood it's a half and at Midtown it's a quarter'
- 'Because there are 80 children at Foxwood and 240 children at Midtown'

*If 'Yes' is circled but a correct unambiguous explanation is given then award the mark.*

1  
U1

(b) Award **TWO** marks for the correct answer of 50

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

$$240 \div 3 = 80$$

$$240 - 80 - 60 = 100$$

$$100 \div 2$$

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

Up to 2

[3]

**Q10.**

- (a) Answer in the range 15% inclusive to 25% exclusive

***Do not*** accept 25%

1

- (b) Answer in the range 200 g to 400 g exclusive

***Do not*** accept 200 g **OR** 400 g.

1

[2]