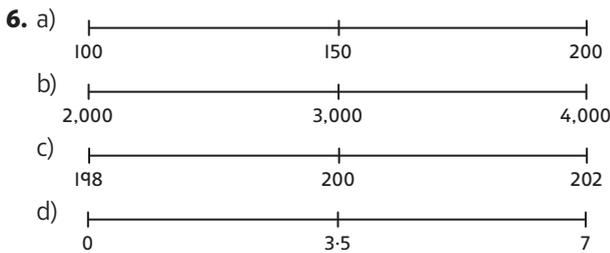# Unit I5: Statistics

Lesson I: The mean (I)

→ pages 90–92

1. a) Children should draw 3 bars each 5 squares high.
   b) Children should draw 4 rows of 5 counters.

2. The mean number of marbles = 4.

3. Children should match groups A and D, and B and C.

4. a) 25 cm   b) 250 ml   c) 251 kg

5. Circled: Group A.

6. a)

100	I50	200

b)

2,000	3,000	4,000

c)

I98	200	202

d)

0	3·5	7

Each time the mean is the same as the number half-way between the two given numbers.

Reflect

Answers will vary; for example: add together and divide by 3 or take one off the 6 and add it to the 4.

Lesson 2: The mean (2)

→ pages 93–95

1. a)

2	4	6	4

4	4	4	4

2 + 4 + 6 + 4 = 16
16 ÷ 4 = 4

b)

I	5	6	2

3·5	3·5	3·5	3·5

The mean = 3·5

c)

I	2	3	4	5	3

3	3	3	3	3	3

The mean = 3

2. The mean capacity = 1·25 l

3. The Brown family has the greater mean weekly spend.

4. The mean length = 1·6 m

5. First: Lexi   Second: Bella   Third: Amelia

Reflect

Answers will vary; for example: To find the mean of a set of numbers, you add the numbers then divide by the amount of numbers.

Lesson 3: The mean (3)

→ pages 96–98

1. Children should draw a tower of 7 cubes in the left-hand group and a tower of 4 cubes in the right-hand group.

2. Emma has 1 pet.

3. The fourth group collected £2·50.

4. a) 2
   b) Answer will vary but the sum of both missing numbers must be 4·5; for example: 0 and 4·5; 2 and 2·5.

5. Answer will vary but the total water added in Jugs B and E must be 550 ml; for example: B = 350 ml and E = 200 ml; B = 150 ml and E = 400 ml

6. 6 and 4; 2 and 8
Answers will vary but must have a total of 15; for example: 5, 5, 5; 3, 5, 7; 1, 5, 9; 1, 3, 11
Answers will vary but are limited to 0 and 10 or 1 and 11 as the greatest / least; for example: 0, 2, 4, 10; 0, 3, 3, 10; 1, 2, 2, 11; 1, 1, 3, 11
Answers will vary; for example: 2·5, 3·5, 4·5, 5·5.

Reflect

Many variations. Look for an easy method: two cards totalling 15, 4 cards totalling 30.
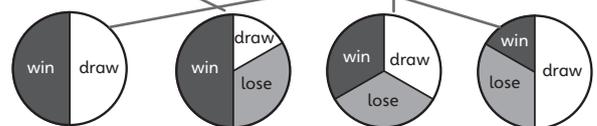
Lesson 4: Introducing pie charts

→ pages 99–101
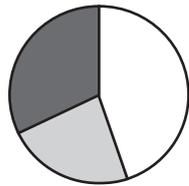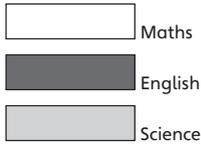
1. More than half the children in Club C play football.

2.

	True	False
Less than half want to be a pop star.	✔	
The least popular job is vet.		✔
More children want to be a sportsperson than a teacher.	✔	

3.

Team A		Team B		Team C		Team D	
Win	I5	Win	5	Win	I0	Win	I5
Lose	I0	Lose	I0	Lose	I0	Lose	0
Draw	5	Draw	I5	Draw	I0	Draw	I5

4. Key

Maths
English
Science

5. Answers will vary; for example:
Questions to be answered using a pie chart: questions relating to most/least; fractions or percentages etc.
Questions to be answered using a bar chart: questions relating to most/least popular, how many, how many more, totals etc.

Reflect

Answers will vary; for example: pie charts are better for an overall view of the data and for proportions of the whole (fraction/percentages); bar charts are better for showing specific amounts for the individual categories and for comparing numerically.

Lesson 5: Reading and interpreting pie charts

→ **pages 102–105**

1. a) Children should colour 5 sections for banana, 1 for kiwi and 4 for strawberry.
b) Children should colour 1 section for orange, 1 for lemon and 3 for chocolate.
c) Children should colour 1 section for rabbits and 3 for cats.

2. a) The best team has 4 more points than the worst team.
b) 5 possible answers: 5 wins and 1 draw; 4 wins and 4 draws; 3 wins and 7 draws; 2 wins and 10 draws; 1 win and 13 draws.

3. Children should shade the pie chart to show 2 sections each for 'once a week' and 'sometimes', 1·5 sections for 'every day' and 2·5 sections for 'never'.

**4.** Shading to show 6 sections for boys and 4 sections for girls.

Reflect

Answers will vary; Children should mention dividing the total by the number of sections.

Lesson 6: Fractions and pie charts (I)

→ **pages 105–107**

1. The horse spends $\frac{1}{6}$ of the day sleeping.
The cat spends $\frac{1}{2}$ of the day sleeping.
The boy spends $\frac{2}{3}$ of the day awake.
The cat sleeps most in a day and sleeps for 12 hours.

2. Jamilla = $\frac{5}{16}$, Isla = $\frac{6}{16} = \frac{3}{8}$, Aki = $\frac{4}{16} = \frac{1}{4}$, Bella = $\frac{1}{16}$

3. Amelia is correct. The Tigers have lost $\frac{1}{4}$ of 48 = 12; The Bears have lost $\frac{1}{2}$ of 20 = 10.

4.
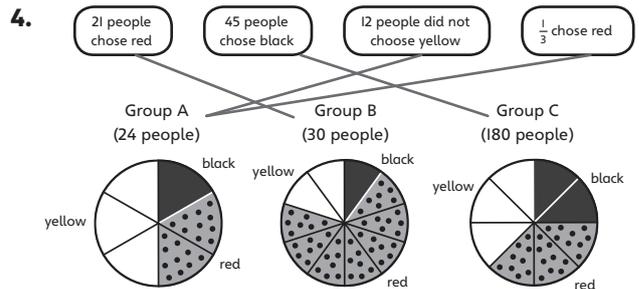
5. a) Answers will vary but should be close to the following and total 1: cat food = $\frac{3}{20}$, dog food = $\frac{2}{5}$ and bird seed = $\frac{9}{20}$.
b) Answers will depend on the children's fractions in part a) but should be approximately: cat food = £45, dog food = £120 and bird seed = £135.

Reflect

Answers will vary; look for children mentioning twelfths, quarters and two-thirds.

Lesson 7: Fractions and pie charts (2)

→ **pages 108–110**

1.

Type of tree	Number seen
birch	16
oak	12
pine	4
fir	8
Total	**40**

2. a) 60 birds were sighted altogether.
b) 15 blackbirds were sighted.

3. Bella threw more than 70 times.   False
Max threw fewer beanbags than Bella.   True
Bella scored 3 more bullseyes than Max.   False

4. $\frac{5}{12}$ like curry.
288 children like pizza and curry.

5. a) $\frac{1}{14}$ is mango.
b) 50 ml more pineapple is needed.

Reflect

Answers will vary.

Lesson 8: Percentages and pie charts

→ **pages 111–113**

1. 25%; 16%; 30%

2. Bella = 15 votes; Zac = 21 votes; Isla = 12 votes; Reena = 12 votes

3. 24 more people shop online than in second-hand shops.

4. Both teams were 60% successful.

5. There are 30 more birch trees in Lanhay Forest than in Hetiddy Woods.

Reflect

Children's pie charts should show $\frac{1}{4}$ (= 25%), 10% ($\frac{1}{10}$) and 15% ($\frac{3}{20}$) with the remainder $\frac{1}{2}$ or 50%.

Lesson 9: Interpreting line graphs

→ **pages 114–116**

1. a) 2:30 = 15 °C   5 pm = ⁻3 °C
   b) It decreases by 24·5 °C.
   c) 4:45–4:48 pm
   d) (Approximately) ⁻5·75 °C

2. 1995: answers from 65,000–74,000
   2005: answers from 200,150–200,250

3. a) 110 km
   b) The cyclist slowed to climb a steep hill between 30 minutes and 90 minutes.
   The cyclist rested for 10 minutes after 120 minutes of racing.
   After 102–105 minutes the cyclist had completed half the distance.
   The cyclist raced most quickly between 130 minutes and 160 minutes.

4. a) $\frac{1}{3}$
   b) Answers approximately 30% +/− 3%
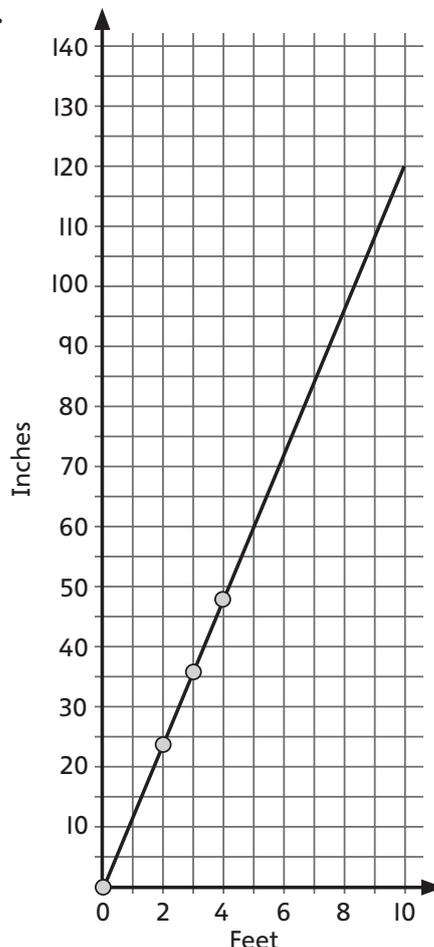   c) Answers approximately 60% +/− 3%

Reflect

Answers will vary. Children should mention the scales on the axes and how to read in between the marked intervals.
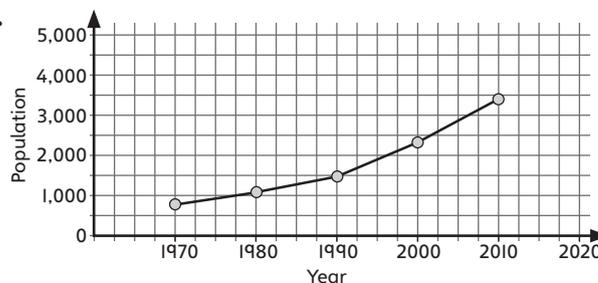
Lesson 10: Constructing line graphs

→ **pages 117–119**

1.

1 foot = 12 inches

10 feet = 120 inches

$3\frac{1}{2}$ feet = 42 inches

$5\frac{1}{4}$ feet = 63 inches

30 inches = $2\frac{1}{2}$ feet

100 inches = $8\frac{1}{3}$ feet

2.

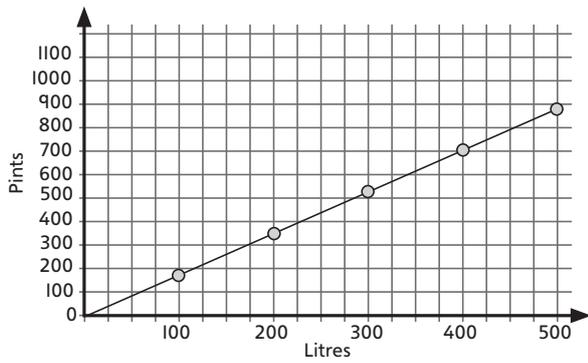Predictions for the population in 2020 should be accurately read off the children's graph. Approximately 4,000–5,000.

3.

Predictions for when the firework will land should be accurately read off the children's graph. Approximately 11–12 seconds.

4.

Answers close to:

Pints	100	85	25	5·5
Litres	176	150	44	10

Reflect

Answers will vary. Children should mention deciding the scales on the axes and the fact that it would be a straight line.

End of unit check

My journal

1. There is room for 1–1 on the scale but some children may labels in 2s. $19 at this rate = approximately £12·50, exactly £12·67.

2. Answers will vary; for example:

Pie chart: to compare quickly each part to the whole, using fraction or percentages, to tell quickly the most/least popular, etc.

Tally chart: to work out exact figures. They are usually then used to draw other graphs.

Line graph: to show a trend in time or temperature, to convert between units, to show a relationship between two things, etc.

Bar chart: to compare amounts and find total and differences easily.

Power play

Children should play the game and then adapt it. Answers will vary.