Answers - Pie charts, line graphs and the mean

Year: Year 6

Answer to Question 1

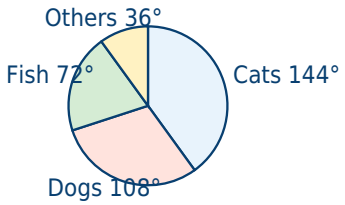
a. 360° ÷ 40 = 9° for each child. 10 × 9° = **90°** (a quarter of the circle).
b. 8 × 9° = **72°**.
c. 360 ÷ 24 = **15°** for each pupil.
d. 120 ÷ 360 = $\frac{1}{3}$, and $\frac{1}{3}$ of 60 = **20 pupils**.

Answer to Question 2

a. 90 + 120 + 150 = **360°**, so the angles are correct.
b. 72 ÷ 360 = 0.2 people for each degree. Apple: 90 × 0.2 = **18 people**.
c. Banana: 120 × 0.2 = **24 people**.
d. Orange: 150 × 0.2 = **30 people**. Check: 18 + 24 + 30 = 72.
e. **Orange** was chosen by the most people (30). 30 − 18 = **12 more** than apple.

Answer to Question 3

a. 360° ÷ 30 = **12°** for each pupil.
b. Cats: 12 × 12° = **144°**. Dogs: 9 × 12° = **108°**. Fish: 6 × 12° = **72°**. Others: 3 × 12° = **36°**.
c. 144 + 108 + 72 + 36 = **360°**.
d. $\frac{9}{30} = \frac{3}{10}$. (Also 108° out of 360° is $\frac{3}{10}$.)



Answer to Question 4

a. It was hottest at **2 pm**, at **13°C**.
b. 13 − 4 = **9 degrees**.
c. 13 − 9 = **4 degrees**.
d. At 11 am the line is halfway between 7°C (10 am) and 11°C (12 pm), so the

estimate is **9°C**. It is only an estimate because the temperature was not measured at 11 am.

Answer to Question 5

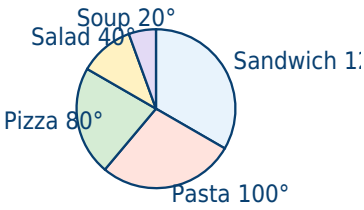
a. 4 + 7 + 9 + 12 = 32 and 32 ÷ 4 = **8**.
b. 15 + 18 + 21 + 22 + 24 = 100 and 100 ÷ 5 = **20**.
c. 3.5 + 4.5 + 5 + 7 = 20 and 20 ÷ 4 = **5**.
d. 12 + 15 + 9 + 14 = 50 and 50 ÷ 4 = **12.5**.

Answer to Question 6

a. Total = mean × number of values = 8 × 5 = **40**.
b. Total = 4 × 7 = 28. The three known numbers add up to 19. The missing number is 28 − 19 = **9**.
c. Total = 3 × 18 = 54. The first two games add up to 35. The third game was 54 − 35 = **19**.
d. 6 × 140 = **840**.

Answer to Question 7

a. 30 + 25 + 20 + 10 + 5 = **90**.
b. 360 ÷ 90 = **4°** for each pupil.
c. Sandwich 120°, pasta 100°, pizza 80°, salad 40°, soup 20°.
d. 120 + 100 + 80 + 40 + 20 = **360°**.
e. 30 ÷ 90 = 1/3 = 33.3...%, so about **33%**.



Answer to Question 8

a. Most: **January** (62 mm). Least: **June** (26 mm).
b. 62 + 48 + 55 + 41 + 38 + 26 = **270 mm**.
c. 270 ÷ 6 = **45 mm**.
d. The months above 45 mm are January (62), February (48) and March (55): **3 months**.
e. Total for seven months = 7 × 42 = 294. July = 294 − 270 = **24 mm**.

Answer to Question 9

a. Total = 2 + 0 + 3 + 1 + 4 = 10 goals, and 10 ÷ 5 = **2 goals** per match.
b. Total after six matches = 6 × 2.5 = 15. The sixth match = 15 − 10 = **5 goals**.
c. 8 × 3 = **24 goals**.
d. 24 − 15 = **9 goals** in the last two matches.

Answer to Question 10

a. 4 + 6 + 5 + 8 + 3 = 26, and 26 ÷ 5 = **£5.20**.
b. Dev gets £8, which is more than £5.20, by **£2.80**. He is right.
c. New total = 26 + 10 = 36 and 36 ÷ 6 = **£6**.
d. For a mean of £6 with six friends the total must be 6 × 6 = 36. Frankie needs 36 − 26 = **£10**. (That is what he gets, so the mean is already £6.)

Answer to Question 11

a. Week 1: 2 cm, week 2: 5 cm, week 3: 9 cm, week 4: 12 cm.
b. Growth: 3 cm, 4 cm, 3 cm. The most growth was between **week 2 and week 3**: **4 cm**.
c. (2 + 5 + 9 + 12) ÷ 4 = 28 ÷ 4 = **7 cm**.
d. Halfway between 5 cm and 9 cm is **7 cm** (an estimate).

Answer to Question 12

a. 180 + 90 + 60 + 30 = **360°**.
b. 120 ÷ 360 = $\frac{1}{3}$ **of a pupil** for each degree.
c. Bus: 180 ÷ 3 = **60**. Car: 90 ÷ 3 = **30**. Bike: 60 ÷ 3 = **20**. Walk: 30 ÷ 3 = **10**. Check: 60 + 30 + 20 + 10 = 120.
d. Car: 90/360 = $\frac{1}{4}$, which is **25%**.

Answer to Question 13

a. 20 × 14 = **280**.
b. 30 × 12 = **360**.
c. Total = 280 + 360 = 640. Mean = 640 ÷ 50 = **12.8**.
d. There are more pupils in Class 6B, so its mean counts for more. The mean of all 50 pupils is closer to 12 than to 14.

Answer to Question 14

a. 32.4 + 31.8 + 33.0 + 32.1 + 31.7 = 161.0 and 161.0 ÷ 5 = **32.2 seconds**.
b. 33.0 − 31.7 = **1.3 seconds**.
c. Total for 6 swims = 6 × 32 = 192. Time needed = 192 − 161 = **31 seconds**.
d. 32.2 to the nearest second is **32 seconds**.

Answer to Question 15

a. Hottest: **Thursday** (27°C). Coolest: **Monday** (18°C). The difference is 27 − 18 = **9 degrees**.
b. 18 + 21 + 24 + 27 + 25 + 22 + 19 = 156, and 156 ÷ 7 = 22.28..., so about **22.3°C**.
c. The days above 22.3°C are Wednesday, Thursday and Friday: **3 days**. (Saturday is 22, which is below 22.3.)
d. Rises: +3, +3, +3, −2, −3, −3. The greatest rise was **3°C** (Mon to Tue, Tue to Wed and Wed to Thu).
e. The graph only shows the temperature that was measured at the times given. We can read values in between, but nobody measured them, so any reading between points is an estimate.
f. New total = 156 + 20 = 176 and 176 ÷ 8 = **22.0°C**.

Answer to Question 16

a. One degree stands for 1 drink, because 360 ÷ 360 = 1. Tea **100**, coffee **150**, hot chocolate **60**, juice **50**.
b. 48 + 55 + 51 + 62 + 44 = **260 drinks**.
c. 360 − 260 = **100 drinks**.
d. 260 ÷ 5 = **52 drinks** a day.
e. 100 ÷ 2 = **50 drinks** on Saturday.

Answer to Question 17

a. Class A: 120/360 = 1/3, and 1/3 of 30 = **10 pupils**. Class B: 1/3 of 60 = **20 pupils**.
b. The pie chart shows the *fraction* of each class, not the number. The same angle is the same fraction, but a bigger class means more pupils.
c. 60/360 = 1/6, and 1/6 of 60 = **10 pupils**.
d. Class A: 360 ÷ 30 = 12° for each pupil, so 6 pupils give 6 × 12° = **72°**.
e. Class A: 6/30 = 1/5 = 20%. Class B: 1/6 = 16.7%. **Class A** has the larger fraction.

Answer to Question 18

a. Total of six = 6 × 14 = 84. Total of five = 5 × 13 = 65. The number removed is 84 − 65 = **19**.
b. Total of three = 30. Total of four = 4 × 12 = 48. The fourth number is 48 − 30 = **18**.
c. Total = 5 × 11 = 55. The four ages add up to 44. The fifth child is 55 − 44 = **11 years old**.
d. Total of eight = 8 × 25 = 200. Total of five = 5 × 20 = 100. The other three total 100, and 100 ÷ 3 = 33.3..., so the mean is about **33.3**.

Answer to Question 19

a. **15 km** from home.
b. The distance stayed at 15 km, so he **stopped** (had a rest). The line is flat, which means no change in distance.
c. 24 − 15 = **9 km**.
d. He cycled 24 km in 2 hours, so the mean speed is 24 ÷ 2 = **12 km/h**.
e. Between 10:30 and 11:00 he cycled 9 km in half an hour, which is 18 km/h. Between 9:00 and 9:30 he also cycled 9 km in half an hour, which is 18 km/h. Between 9:30 and 10:00 he cycled 6 km in half an hour, which is 12 km/h. He was equally fast in the first and in the last half hour, so Jamal is **not right** to say "only".

Answer to Question 20

a. Total of five = 5 × 12 = 60. Total of four = 4 × 11 = 44. The number removed is 60 − 44 = **16**.
b. The four numbers add up to 44 and the removed number is 16. For example **16, 5, 9, 12, 18**: the total is 60 and 60 ÷ 5 = 12, and 5 + 9 + 12 + 18 = 44. Many other sets work.
c. Total of five new numbers = 5 × 13 = 65. The sixth number is 65 − 44 = **21**.