Answers - Decimals and percentages

Year: Year 6

Answer to Question 1

a. The 6 is in the hundredths column, so its value is **0.06**.
b. Write them with three decimal places: 0.450, 0.500, 0.405, 0.054. The order is **0.054, 0.405, 0.45, 0.5**.
c. 3 tenths is 0.3 and 5 thousandths is 0.005, so the number is **0.305**. (There is a zero in the hundredths column.)
d. The digits after the point are 3 (tenths), 8 (hundredths) and 1 (thousandths), so the digit is **8**.

Answer to Question 2

a. The hundredths digit is 4, so round down: **7.8**.
b. The thousandths digit is 6, so round up: **7.85**.
c. The tenths digit is 8, so round up: **8**.
d. The thousandths digit is 5, so round up. The 9 carries: **12.10**.
e. The ten-thousandths digit is 6, so round up. The 9s carry: **1.000**.

Answer to Question 3

a. The digits move one place left: **34**.
b. Two places left: **56**.
c. One place right: **0.47**.
d. Three places left: **62**.
e. Two places right: **0.85**.
f. Three places right: **0.0072**.

Answer to Question 4

a. $24 \times 3 = 72$, with 1 decimal place: **7.2**.
b. $125 \times 6 = 750$, with 2 decimal places: **7.50 = 7.5**.
c. $46 \times 12 = 460 + 92 = 552$, with 1 decimal place: **55.2**. (Estimate $5 \times 10 = 50$.)
d. $35 \times 8 = 280$, with 2 decimal places: **2.8**.
e. $708 \times 5 = 3\,540$, with 2 decimal places: **35.4**.

Answer to Question 5

a. 84 ÷ 4 = 21, so **2.1**. Check: 2.1 × 4 = 8.4.
b. 12 into 15 goes 1 (remainder 3). 12 into 36 goes 3. 12 into 60 goes 5. So **1.3**.
c. 75 ÷ 5 = 15, so **1.5**.
d. 945 ÷ 3 = 315, so **3.15**.
e. 72 ÷ 8 = 9, so 0.72 ÷ 8 = **0.09**.

Answer to Question 6

a. $\frac{3}{4}$: **0.75** and **75%**.
b. $\frac{7}{20} = \frac{35}{100}$: **0.35** and **35%**.
c. 0.6 = $\frac{6}{10} = \frac{3}{5}$ and **60%**.
d. 45% = $\frac{45}{100} = \frac{9}{20}$ and **0.45**.
e. $5 \div 8 = 0.625$, so $\frac{5}{8}$ is **0.625** and **62.5%**.

Answer to Question 7

a. Cheese: 3 × 2.45 = £7.35. Bread: 2 × 1.15 = £2.30. Apples: 2 × 2.20 = £4.40. Milk: 4 × 0.95 = £3.80.
b. 7.35 + 2.30 + 4.40 + 3.80 = **£17.85**.
c. 20 − 17.85 = **£2.15**.
d. 10% of £17.85 = £1.785, which is **£1.79** to the nearest penny. She pays £17.85 − £1.79 = **£16.06**.

Answer to Question 8

a. 20% of £45 = £9, so the sale price is 45 − 9 = **£36**.
b. 25% of £36 = £9, so the sale price is **£27**.
c. Rucksack: 10% of £18 = £1.80, so £16.20. Swimming bag: 10% of £24 = £2.40, 30% = £7.20, 5% = £1.20, so 35% = £8.40 and the sale price is **£15.60**.
d. £36 + £27 = **£63**.
e. Savings: £9 + £9 + £1.80 + £8.40 = **£28.20**.

Answer to Question 9

a. Lily: 36/40 = 90/100 = 90%. Omar: 27/30 = 90/100 = 90%. Priya: 17/20 = 85/100 = 85%. Max: 21/25 = 84/100 = 84%.
b. Lily and Omar tie with **90%**. Max has the lowest, **84%**.
c. Words wrong: Lily 4, Omar 3, Priya 3, Max 4. Max got 4 words wrong, so he did **not** get the fewest wrong. His percentage is the lowest. Max is **not** right.

Answer to Question 10

a. Estimate: 40 × £1.50 = £60. Exact: 38 × 1.45 = 55.10, so **£55.10**.
b. 100 − 55.10 = **£44.90**.
c. New price £1.41. 38 × 1.41 = **£53.58**.
d. 12.5 × 38 = 475, so the car can travel **475 km**.

Answer to Question 11

a. 4 × 0.75 = **3 kg**.
b. 3 ÷ 1.5 = **2 bags**.
c. 2.4 ÷ 8 = **0.3 kg** (300 g).
d. 8 × 0.85 = **£6.80**.

Answer to Question 12

a. Write with two decimal places: 31.62, 31.26, 32.05, 31.60. The order from fastest (smallest time) is **Ben 31.26, Dev 31.6, Aisha 31.62, Cara 32.05**.
b. 32.05 − 31.26 = **0.79 seconds**.
c. 31.62 + 31.26 + 32.05 + 31.6 = **126.53 seconds**.
d. Aisha **32**, Ben **31**, Cara **32**, Dev **32**.

Answer to Question 13

a. 1% of £250 = £2.50, so 2% = **£5**.
b. 250 + 5 = **£255**.
c. 280 − 255 = **£25** more.
d. 10% of £280 = £28, which is more than £25, so **yes**, it is enough.

Answer to Question 14

a. 35 + 25 + 15 + 10 = 85, so "Other" is 100 − 85 = **15%**.
b. 10% of 80 = 8, so 35% = 8 × 3 + 4 = **28 pupils**.
c. Swimming: 25% of 80 = **20 pupils**. Netball: 15% of 80 = 8 + 4 = **12 pupils**.
d. Tennis: 10% of 80 = 8. So 28 − 8 = **20 more** pupils.

Answer to Question 15

a. 120 × 2.50 = **£300**.
b. 8 × 6.75 = **£54**.

c. 85 + 60 + 54 + 14.50 = **£213.50**.
d. 20% of £85 = £17 (10% is £8.50, so 20% is £17). The deposit is **£17**.
e. Profit = 300 − 213.50 = **£86.50**. As a percentage: 86.50 ÷ 300 = 0.2883..., so about **28.8%**.
f. 86.50 ÷ 5 = **£17.30** for each club.

Answer to Question 16

a. 10% = £48 and 5% = £24, so 15% = **£72**.
b. 480 − 72 = **£408**.
c. 408 ÷ 12 = **£34** each month.
d. 12.50 + 9.99 = **£22.49**.
e. 50 − 22.49 = **£27.51**.
f. Total = 408 + 22.49 = £430.49. Phone share = 408 ÷ 430.49 = 0.9477..., so **95%** to the nearest whole number.

Answer to Question 17

a. 12 × 3.50 = **£42**.
b. 5 × 7.20 = **£36**.
c. 42 + 36 = **£78**.
d. 10% = £7.80 and 5% = £3.90, so 15% = **£11.70**.
e. 78 − 11.70 = **£66.30**.
f. 100 − 66.30 = **£33.70**, which is **33.7%** of £100.

Answer to Question 18

a. No. Compare the tenths: 0.5 has 5 tenths and 0.45 has 4 tenths, so **0.5 is bigger**. Amir has treated the digits after the point as a whole number.
b. No. 0.7 = 70/100 = **70%**, not 7%. 7% would be 0.07.
c. Yes. 25% = $\frac{1}{4}$, and finding $\frac{1}{4}$ means dividing by 4. 80 ÷ 4 = 20, and 25% of 80 = 20. Carl is **right**.
d. $\frac{3}{4} = 0.75 = 75\%$. This is bigger than 70% and smaller than 80% (0.8). Dina is **right**.
e. Write them as decimals: 0.7, 0.65, 0.75, 0.07. The order is **0.07, 65%, 0.7,** $\frac{3}{4}$.

Answer to Question 19

a. 25% of £84 = £21, so the price is 84 − 21 = **£63**.
b. $\frac{1}{3}$ of £84 = £28, so the price is 84 − 28 = **£56**.
c. After £8 off: £76. 10% of 76 = £7.60, so 20% = £15.20. The price is 76 − 15.20 = **£60.80**.

d. **Shop B** is cheapest (£56). Shop A is the dearest (£63), so you save 63 − 56 = **£7**.
e. The total saving in Shop C is 84 − 60.80 = £23.20. As a percentage of £84: 23.20 ÷ 84 = 0.276..., which is about 27.6%, so the claim of 28% off is **not quite** true.

Answer to Question 20

a. 30% = 21, so 10% = 7 and 100% = **70**. Then 80% of 70 = 7 × 8 = **56**.
b. The sale price is 80% of the original. 80% = 60, so 10% = 7.50 and 100% = **£75**.
c. Increase: 10% of 200 = 20, so £220. Decrease: 10% of 220 = 22, so £198. The final price is **£198**, not £200, because the second 10% is of a bigger amount.