Answers - Fractions: unit and non-unit

Year: Year 3

Answer to Question 1

a. $\frac{1}{6}$ is a **unit** fraction: the numerator is 1.
b. $\frac{3}{5}$ is a **non-unit** fraction: the numerator is 3.
c. $\frac{1}{10}$ is a **unit** fraction: the numerator is 1.
d. $\frac{7}{8}$ is a **non-unit** fraction: the numerator is 7.
e. $\frac{2}{3}$ is a **non-unit** fraction: the numerator is 2.

Answer to Question 2

a. 1 of 4 equal parts is shaded: $\frac{1}{4}$. The numerator is 1, so it is a **unit fraction**.
b. 5 of 6 equal parts are shaded: $\frac{5}{6}$. The numerator is more than 1, so it is a **non-unit fraction**.
c. 3 of 10 equal parts are shaded: $\frac{3}{10}$, a **non-unit fraction** because the numerator is 3.
d. 1 of 8 equal parts is shaded: $\frac{1}{8}$, a **unit fraction**.

Answer to Question 3

a. Counting in tenths adds one tenth each time: $\frac{1}{10}$, $\frac{2}{10}$, then $\frac{3}{10}$, then $\frac{4}{10}$.
b. After $\frac{7}{10}$ come $\frac{8}{10}$ and $\frac{9}{10}$.
c. Ten tenths fill the whole line, so $\frac{10}{10}$ = **1** whole.
d. 5 tenths is half of the 10 tenths, so $\frac{5}{10} = \frac{1}{2}$. The missing number is **1**.

Answer to Question 4

a. Divide 18 by 2: 18 ÷ 2 = 9. So $\frac{1}{2}$ of 18 is **9**. Check: 9 × 2 = 18.
b. Divide 21 by 3: 21 ÷ 3 = 7. So $\frac{1}{3}$ of 21 is **7**. Check: 7 × 3 = 21.
c. Divide 32 by 4: 32 ÷ 4 = 8. So $\frac{1}{4}$ of 32 is **8**. Check: 8 × 4 = 32.
d. Divide 45 by 5: 45 ÷ 5 = 9. So $\frac{1}{5}$ of 45 is **9**. Check: 9 × 5 = 45.
e. Divide 60 by 10: 60 ÷ 10 = 6. So $\frac{1}{10}$ of 60 is **6**. Check: 6 × 10 = 60.

Answer to Question 5

a. Divide 12 by 3: 12 ÷ 3 = 4. Multiply by 2: 4 × 2 = **8**.
b. Divide 20 by 4: 20 ÷ 4 = 5. Multiply by 3: 5 × 3 = **15**.
c. Divide 30 by 5: 30 ÷ 5 = 6. Multiply by 4: 6 × 4 = **24**.
d. Divide 50 by 10: 50 ÷ 10 = 5. Multiply by 3: 5 × 3 = **15**.
e. Divide 24 by 8: 24 ÷ 8 = 3. Multiply by 5: 3 × 5 = **15**.

Answer to Question 6

a. Same denominator, so add the numerators: 3 + 4 = 7. $\frac{3}{10} + \frac{4}{10} = \frac{7}{10}$.
b. 5 + 2 = 7, so $\frac{5}{8} + \frac{2}{8} = \frac{7}{8}$. The denominator stays 8 because the size of each part does not change.
c. Subtract the numerators: 9 − 4 = 5. $\frac{9}{10} - \frac{4}{10} = \frac{5}{10}$, which is also a half.
d. 6 − 5 = 1, so $\frac{6}{7} - \frac{5}{7} = \frac{1}{7}$.
e. 1 + 2 = 3, so $\frac{1}{5} + \frac{2}{5} = \frac{3}{5}$.

Answer to Question 7

a. Ella eats 2 of the 8 slices: $\frac{2}{8}$. The numerator is 2, so it is a **non-unit fraction** (it equals $\frac{1}{4}$).
b. Her dad eats 1 slice: $\frac{1}{8}$, a **unit fraction**.
c. Add the slices: 2 + 3 + 1 = 6. $\frac{2}{8} + \frac{3}{8} + \frac{1}{8} = \frac{6}{8}$.
d. The whole pizza is $\frac{8}{8}$: $\frac{8}{8} - \frac{6}{8} = \frac{2}{8}$. That is **2 slices** for her mum.

Answer to Question 8

a. $\frac{1}{4}$ of 24 means 24 ÷ 4. Half of 24 is 12, half of 12 is 6, so the winning team gets **6** sweets.
b. $\frac{1}{3}$ of 24 means 24 ÷ 3 = **8** sweets, because 3 × 8 = 24.
c. Add the two teams: 6 + 8 = **14** sweets given out.
d. Mr Hill keeps the rest: 24 − 14 = **10** sweets.

Answer to Question 9

a. £20 ÷ 5 = £4, then 2 × £4 = **£8**.
b. £20 ÷ 5 = **£4**.
c. £20 ÷ 10 = **£2**.
d. Total used: 8 + 4 + 2 = £14. £20 − £14 = **£6**.

Answer to Question 10

a. $30 \div 5 = 6$, $3 \times 6 = \mathbf{18}$.
b. $30 \div 10 = \mathbf{3}$.
c. $30 - 18 - 3 = \mathbf{9}$.
d. $\frac{9}{30} = \frac{3}{10}$.

Answer to Question 11

a. $1000 \div 10 = 100$ ml, then $3 \times 100 = \mathbf{300\ ml}$.
b. $4 \times 100 = \mathbf{400\ ml}$.
c. $\frac{10}{10} - \frac{3}{10} - \frac{4}{10} = \frac{3}{10}$.
d. $1000 - 300 - 400 = \mathbf{300\ ml}$. This matches $\frac{3}{10}$ of 1000.

Answer to Question 12

a. $\frac{1}{2}$ of 40 is $40 \div 2 = \mathbf{20}$ bulbs in the flower bed.
b. $\frac{1}{4}$ of 40 is $40 \div 4 = \mathbf{10}$ bulbs in pots (half of 20).
c. Take both amounts away from 40: $40 - 20 - 10 = \mathbf{10}$ bulbs by the gate.
d. 10 out of 40 is $\frac{10}{40}$. Divide the numerator and the denominator by 10 to get $\frac{1}{4}$. Also $1 - \frac{1}{2} - \frac{1}{4} = \frac{1}{4}$.

Answer to Question 13

a. $36 \div 3 = 12$, then $2 \times 12 = \mathbf{24}$.
b. $36 \div 6 = \mathbf{6}$.
c. $36 - 24 - 6 = \mathbf{6}$.
d. $\frac{6}{36} = \frac{1}{6}$.

Answer to Question 14

a. $60 \div 2 = \mathbf{30}$ minutes.
b. $60 \div 4 = \mathbf{15}$ minutes.
c. $3 \times 15 = \mathbf{45}$ minutes.
d. $60 \div 10 = 6$ and $60 \div 5 = 12$. $6 + 12 = \mathbf{18}$ minutes.

Answer to Question 15

a. $24 \div 2 = \mathbf{12}$ slices of pizza.

b. $24 \div 3 = \mathbf{8}$ slices of cake.
c. $1 - \frac{1}{2} - \frac{1}{3} = \frac{6}{6} - \frac{3}{6} - \frac{2}{6} = \frac{1}{6}$.
d. $24 \div 6 = \mathbf{4}$. Check: $12 + 8 + 4 = 24$.

Answer to Question 16

a. $60 \div 5 = 12$, then $2 \times 12 = \mathbf{24}$.
b. $60 \div 10 = 6$, then $3 \times 6 = \mathbf{18}$.
c. $60 - 24 - 18 = \mathbf{18}$.
d. $\frac{18}{60} = \frac{3}{10}$. Both groups are 18 books, so the fractions are equal.

Answer to Question 17

a. $100 \div 10 = 10$, so $3 \times 10 = \mathbf{30}$.
b. $4 \times 10 = \mathbf{40}$.
c. $\frac{3}{10} + \frac{4}{10} = \frac{7}{10}$.
d. $\frac{7}{10} = 70$ pieces, which is more than 50. **Yes**. Left: $100 - 70 = \mathbf{30}$ pieces.

Answer to Question 18

a. Tom multiplied by 4. You must divide: $20 \div 4 = \mathbf{5}$. **Wrong**.
b. $20 \div 5 = 4$, $3 \times 4 = 12$. **Right**.
c. The denominator stays the same: $\frac{5}{7}$. **Wrong**.
d. $7 - 2 = 5$ and the denominator stays 9. **Right**.

Answer to Question 19

a. $400 \div 4 = 100$, $3 \times 100 = \mathbf{300\ m}$.
b. $400 \div 10 = 40$, $7 \times 40 = \mathbf{280\ m}$.
c. $300 - 280 = \mathbf{20\ m}$. **Amy** is further.
d. Half of 400 = 200 m run. $400 - 200 = \mathbf{200\ m}$ to go.

Answer to Question 20

a. $36 \div 4 = \mathbf{9}$.
b. $36 - 9 = \mathbf{27}$.
c. $27 \div 3 = \mathbf{9}$.
d. $27 - 9 = 18$ left. $\frac{18}{36} = \frac{1}{2}$ of the counters.