Answers - Adding, subtracting and multiplying fractions

Year: Year 5

Answer to Question 1

a. $3 + 2 = 5$, so $\frac{3}{8} + \frac{2}{8} = \frac{5}{8} = \frac{5}{8}$.
b. $7 - 3 = 4$, so $\frac{7}{10} - \frac{3}{10} = \frac{4}{10} = \frac{2}{5}$.
c. $5 + 4 = 9$, so $\frac{5}{6} + \frac{4}{6} = \frac{9}{6} = 1\frac{1}{2}$.
d. $11 - 5 = 6$, so $\frac{11}{12} - \frac{5}{12} = \frac{6}{12} = \frac{1}{2}$.

Answer to Question 2

a. Common denominator 4: $\frac{1}{2} + \frac{1}{4} = \frac{2}{4} + \frac{1}{4} = \frac{3}{4}$.
b. Common denominator 8: $\frac{3}{4} + \frac{1}{8} = \frac{6}{8} + \frac{1}{8} = \frac{7}{8}$.
c. Common denominator 6: $\frac{2}{3} + \frac{1}{6} = \frac{4}{6} + \frac{1}{6} = \frac{5}{6}$.
d. Common denominator 6: $\frac{5}{6} - \frac{1}{3} = \frac{5}{6} - \frac{2}{6} = \frac{1}{2}$.
e. Common denominator 10: $\frac{7}{10} - \frac{2}{5} = \frac{7}{10} - \frac{4}{10} = \frac{3}{10}$.

Answer to Question 3

a. Whole numbers: 1 + 2 = 3. Fractions: $\frac{1}{4} + \frac{1}{4} = \frac{1}{2}$. Answer: $3\frac{1}{2}$.
b. Whole numbers: 2 + 1 = 3. Fractions: $\frac{3}{5} + \frac{4}{5} = 1\frac{2}{5}$. Answer: $4\frac{2}{5}$.
c. Whole numbers: 3 + 2 = 5. Fractions: $\frac{1}{2} + \frac{1}{4} = \frac{3}{4}$. Answer: $5\frac{3}{4}$.

Answer to Question 4

a. $4\frac{3}{4} - 1\frac{1}{4} = 3\frac{1}{2}$. Check: $3\frac{1}{2} + 1\frac{1}{4} = 4\frac{3}{4}$.
b. $5\frac{1}{2} - 2\frac{3}{4} = 2\frac{3}{4}$. Check: $2\frac{3}{4} + 2\frac{3}{4} = 5\frac{1}{2}$.
c. $3 - 1\frac{2}{5} = 1\frac{3}{5}$. Check: $1\frac{3}{5} + 1\frac{2}{5} = 3$.

Answer to Question 5

a. $3 \times 2 = 6$, so the answer is $\frac{6}{5} = 1\frac{1}{5}$.
b. $4 \times 3 = 12$, so the answer is $\frac{12}{8} = 1\frac{1}{2}$.
c. $6 \times 1 = 6$, so the answer is $\frac{6}{4} = 1\frac{1}{2}$.

d. $5 \times 2 = 10$, so the answer is $\frac{10}{3} = 3\frac{1}{3}$.

Answer to Question 6

a. $3 \times 1 = 3$ and $3 \times \frac{1}{2} = 1\frac{1}{2}$. Add: $4\frac{1}{2}$.
b. $4 \times 2 = 8$ and $4 \times \frac{1}{4} = 1$. Add: **9**.
c. $2 \times 3 = 6$ and $2 \times \frac{2}{5} = \frac{4}{5}$. Add: $6\frac{4}{5}$.

Answer to Question 7

a. $\frac{3}{8} + \frac{5}{8} = \frac{8}{8} =$ **1 whole pizza**.
b. $\frac{1}{4} = \frac{2}{8}$.
c. $1 - \frac{2}{8} = \frac{8}{8} - \frac{2}{8} = \frac{6}{8} = \frac{3}{4}$ of a pizza.
d. $\frac{6}{8} - \frac{2}{8} = \frac{4}{8} = \frac{1}{2}$ of a pizza.

Answer to Question 8

a. $1\frac{3}{4} = 1\frac{6}{8}$; $2\frac{1}{2} = 2\frac{4}{8}$; $\frac{5}{8}$ stays the same.
b. Whole numbers: 1 + 2 = 3. Eighths: 6 + 4 + 5 = 15, which is $\frac{15}{8} = 1\frac{7}{8}$. Total: $3 + 1\frac{7}{8} = 4\frac{7}{8}$ **m**.
c. $6\frac{1}{4} = 6\frac{2}{8}$. $6\frac{2}{8} - 4\frac{7}{8} = 1\frac{3}{8}$ **m**.
d. $8 \times \frac{5}{8} = \frac{40}{8} =$ **5 m**.

Answer to Question 9

a. Oats: $4 \times \frac{3}{4} = \frac{12}{4} =$ **3**. Syrup: $4 \times \frac{2}{3} = \frac{8}{3} = 2\frac{2}{3}$. Raisins: $4 \times 1\frac{1}{2} = 4 + 2 =$ **6**.
b. $3 + 2\frac{2}{3} = 5\frac{2}{3}$ **cups**.
c. He needs 6 cups and has 5, so **no**: he is 1 cup short.

Answer to Question 10

a. Whole numbers: 2 + 1 + 3 = 6. Fractions: $\frac{2}{4} + \frac{3}{4} + \frac{1}{4} = \frac{6}{4} = 1\frac{1}{2}$. Total: $6 + 1\frac{1}{2} = 7\frac{1}{2}$ **km**.
b. $7\frac{1}{2} - 2 = 5\frac{1}{2}$ **km**.
c. Total so far: $7\frac{1}{2} + 5\frac{1}{2} = 13$ km. That is already more than 10 km, so she has **already beaten the goal by 3 km**.
d. $3 \times \frac{2}{5} = \frac{6}{5} = 1\frac{1}{5}$ **km**.

Answer to Question 11

a. $1\frac{3}{4} + 2\frac{1}{4} = 3 + \frac{4}{4} =$ **4 litres**.
b. $4\frac{1}{2} - 4 = \frac{1}{2}$ **litre**.
c. $\frac{1}{2}$ litre is less than $1\frac{1}{2}$ litres, so **no**, he is 1 litre short.
d. $3 \times \frac{3}{4} = \frac{9}{4} = 2\frac{1}{4}$ **litres**.

Answer to Question 12

a. $7 \times \frac{2}{3} = \frac{14}{3} = 4\frac{2}{3}$ **litres**.
b. $7 \times \frac{1}{3} = 2\frac{1}{3}$ **litres**.
c. $4\frac{2}{3} + 2\frac{1}{3} = 6 + \frac{3}{3} =$ **7 litres**. (Also each child drinks $\frac{2}{3} + \frac{1}{3} = 1$ litre, and $7 \times 1 = 7$.)
d. $10 - 7 =$ **3 litres** are left.

Answer to Question 13

a. $3\frac{1}{2} - 1\frac{3}{4} = 3\frac{2}{4} - 1\frac{3}{4} = 2\frac{6}{4} - 1\frac{3}{4} = 1\frac{3}{4}$ **m**.
b. $1\frac{3}{4} + 2\frac{1}{4} =$ **4 m**.
c. $4 \times 1\frac{3}{4} = 4 + 3 =$ **7 m**.
d. She has $3\frac{1}{2}$ m red and $2\frac{1}{4}$ m blue $= 5\frac{3}{4}$ m. That is less than 7 m, so **no**.

Answer to Question 14

a. $\frac{1}{4} = \frac{2}{8}$.
b. $\frac{2}{8} + \frac{3}{8} = \frac{5}{8}$ of the tank.
c. $\frac{7}{8} - \frac{5}{8} = \frac{2}{8} = \frac{1}{4}$ of the tank.
d. $800 \div 8 = 100$ litres is $\frac{1}{8}$ of 800. So $\frac{2}{8} =$ **200 litres** are left.

Answer to Question 15

a. Carrots: $3 \times 1\frac{1}{2} = 3 + \frac{3}{2} = 4\frac{1}{2}$ **kg**. Potatoes: $3 \times \frac{3}{4} = \frac{9}{4} = 2\frac{1}{4}$ **kg**. Stock: $3 \times 2\frac{1}{4} = 6 + \frac{3}{4} = 6\frac{3}{4}$ **litres**. Lentils: $3 \times \frac{5}{8} = \frac{15}{8} = 1\frac{7}{8}$ **kg**.
b. $4\frac{1}{2} + 2\frac{1}{4} = 6 + \frac{3}{4} = 6\frac{3}{4}$ **kg**.
c. He already has $5\frac{1}{2}$ kg. He needs $2\frac{1}{4}$ kg. So he has enough: **he needs no more**, and has $3\frac{1}{4}$ kg extra.
d. Half of $2\frac{1}{4}$ litres: $2\frac{1}{4} = \frac{9}{4}$, half of that is $\frac{9}{8} = 1\frac{1}{8}$ **litres**.
e. $1\frac{7}{8}$ is less than 2, because $2 = 1\frac{8}{8}$. **Less**, by $\frac{1}{8}$ kg.

Answer to Question 16

a. $\frac{2}{8} + \frac{3}{8} + \frac{1}{8} = \frac{6}{8} = \frac{3}{4}$.
b. $1 - \frac{6}{8} = \frac{2}{8} =$ $\frac{1}{4}$.
c. $\frac{1}{4}$ of 240 = 240 ÷ 4 = **60 pages**.
d. $\frac{3}{8}$ of 240: 240 ÷ 8 = 30, 30 × 3 = **90 pages**.
e. The rest is exactly $\frac{1}{4}$ of the book, so **yes**, she is right.

Answer to Question 17

a. 7 − 3 = **4**, so $\frac{4}{8}$.
b. Write $\frac{1}{2}$ as $\frac{2}{4}$. 3 − 2 = **1**, so $\frac{1}{4}$.
c. $\frac{1}{2} = \frac{6}{12}$, and 11 − 6 = **5**, so $\frac{5}{12}$.
d. Write $\frac{9}{2}$ as $\frac{18}{4}$. The numerator 18 divided by 3 is 6, so 6 × $\frac{3}{4} = \frac{18}{4}$. The missing number is **6**.
e. Subtract: $5\frac{1}{4} - 3\frac{1}{2} = 5\frac{1}{4} - 3\frac{2}{4} = 1\frac{3}{4}$.

Answer to Question 18

a. $3 \times 2\frac{3}{4} = 6 + \frac{9}{4} = 6 + 2\frac{1}{4} = 8\frac{1}{4}$ **m**.
b. $2 \times \frac{5}{8} = \frac{10}{8} = 1\frac{1}{4}$ **m**.
c. $8\frac{1}{4} + 1\frac{1}{4} = 9\frac{1}{2}$ **m**.
d. $10 - 9\frac{1}{2} = \frac{1}{2}$ **m**.
e. $\frac{1}{2}$ m is less than $2\frac{3}{4}$ m, so **no**, he is $2\frac{1}{4}$ m short.

Answer to Question 19

a. $3 \times 3\frac{1}{2} = 9 + \frac{3}{2} = 9 + 1\frac{1}{2} = 10\frac{1}{2}$ **km**.
b. $2 \times 3\frac{1}{2} = 7$ km, and $7 + \frac{3}{4} = 7\frac{3}{4}$ **km**.
c. $10\frac{1}{2} - 7\frac{3}{4} = 10\frac{2}{4} - 7\frac{3}{4} = 9\frac{6}{4} - 7\frac{3}{4} = 2\frac{3}{4}$. **Maya runs $2\frac{3}{4}$ km further.**
d. Total: $10\frac{1}{2} + 7\frac{3}{4} = 18\frac{1}{4}$ km. $20 - 18\frac{1}{4} = 1\frac{3}{4}$ **km**.
e. $6 \times 3\frac{1}{2} =$ **21 km** each. Together they run 42 km, which is more than 40 km: **yes**.

Answer to Question 20

a. $\frac{1}{2} = \frac{3}{6}$ and $\frac{1}{3} = \frac{2}{6}$. $\frac{3}{6} + \frac{2}{6} = \frac{5}{6}$.
b. $\frac{7}{8} = \frac{4}{8} + \frac{2}{8} + \frac{1}{8} = \frac{1}{2}$ **+** $\frac{1}{4}$ **+** $\frac{1}{8}$.
c. $\frac{2}{3} = \frac{4}{6} = \frac{3}{6} + \frac{1}{6}$. So $\frac{1}{2}$ **+** $\frac{1}{6}$.

d. $1 = \frac{6}{6} = \frac{3}{6} + \frac{2}{6} + \frac{1}{6} = \frac{1}{2} + \frac{1}{3} + \frac{1}{6}$.