Test answers - Fractions

Year: Year 7 · Duration: 45 minutes · /20

Answer to Question 1 (4 marks)

a. The highest common factor of 36 and 48 is 12. Divide top and bottom by 12: $36 \div 12 = 3$ and $48 \div 12 = 4$, so the simplest form is $\frac{3}{4}$. (1 mark)

b. Divide the numerator by the denominator: 6 goes into 23 three times (18) with remainder 5. The whole number is 3 and the remainder stays over 6: $3\frac{5}{6}$. (1 mark)

c. Write all three fractions with the common denominator 10: $\frac{3}{5} = \frac{6}{10}$, $\frac{7}{10}$ stays the same and $\frac{1}{2} = \frac{5}{10}$ (1 mark). Now compare the numerators 5, 6, 7: $\frac{1}{2}$, $\frac{3}{5}$, $\frac{7}{10}$ (1 mark).

Check (b): $3 \times 6 + 5 = 23$, so the mixed number converts back correctly.

Answer to Question 2 (4 marks)

a. Change quarters into eighths: $\frac{1}{4} = \frac{2}{8}$. Add the numerators only: $\frac{3}{8} + \frac{2}{8} = \frac{5}{8}$. (1 mark)

b. Change fifths into tenths: $\frac{2}{5} = \frac{4}{10}$. Then $\frac{7}{10} - \frac{4}{10} = \frac{3}{10}$. (1 mark)

c. Convert the mixed numbers to improper fractions: $2\frac{1}{3} = \frac{7}{3}$ and $1\frac{1}{2} = \frac{3}{2}$. Use the common denominator 6: $\frac{14}{6} + \frac{9}{6}$ (1 mark). This gives $\frac{23}{6} = 3\frac{5}{6}$ (1 mark).

Another method for (c): add the wholes, $2 + 1 = 3$, then the parts, $\frac{2}{6} + \frac{3}{6} = \frac{5}{6}$. Never add denominators together.

Answer to Question 3 (4 marks)

a. To find $\frac{5}{6}$ of 72, divide by the denominator then multiply by the numerator: $72 \div 6 = 12$ and $12 \times 5 =$ **60**. (1 mark)

b. Multiply the numerators and the denominators: $\frac{4 \times 3}{9 \times 8} = \frac{12}{72}$. Divide top and

bottom by 12 to get $\frac{1}{6}$. (1 mark)

c. Dividing by a fraction is the same as multiplying by its reciprocal: $\frac{5}{6} \times \frac{12}{5} = \frac{60}{30} =$**2**. (1 mark)

d. Change to improper fractions first: $\frac{3}{2} \times \frac{8}{3} = \frac{24}{6} =$**4**. (1 mark)

Cancelling before multiplying saves work: in (d) the 3s cancel and $8 \div 2 = 4$. Check (c): $\frac{5}{12} \times 2 = \frac{5}{6}$.

Answer to Question 4 (4 marks)

a. One fifth of £180 is $180 \div 5 = 36$, so two fifths are $2 \times 36 =$**£72** for the charity. (1 mark)

b. The whole amount is 1. Use the common denominator 15: $\frac{2}{5} = \frac{6}{15}$ and $\frac{1}{3} = \frac{5}{15}$ (1 mark). The fraction saved is $\frac{15}{15} - \frac{6}{15} - \frac{5}{15} = \frac{4}{15}$ (1 mark).

c. One fifteenth of £180 is $180 \div 15 = 12$, so four fifteenths are $4 \times 12 =$**£48**. (1 mark)

Check: the sports kit gets $180 \div 3 = £60$. Then $72 + 60 + 48 = 180$, so the three shares make up the whole £180 and nothing is lost or counted twice.

Answer to Question 5 (4 marks)

a. Write $1\frac{1}{2}$ km as $\frac{6}{4}$ km so both distances are in quarters: $\frac{3}{4} + \frac{6}{4} = \frac{9}{4} = 2\frac{1}{4}$ km. (1 mark)

b. On Friday he swims $\frac{2}{3}$ of $\frac{9}{4}$ km: $\frac{2}{3} \times \frac{9}{4} = \frac{18}{12} = \frac{3}{2} = 1\frac{1}{2}$ km. (1 mark)

c. Total for the week: $\frac{9}{4} + \frac{6}{4} = \frac{15}{4} = 3\frac{3}{4}$ km (1 mark). This is less than the 4 km target, so **no**, Leo misses it by $4 - 3\frac{3}{4} = \frac{1}{4}$ km (1 mark).

Leo must change both distances to quarters before adding; $\frac{3}{4} + 1\frac{1}{2}$ is not $1\frac{4}{6}$. In decimals: $0.75 + 1.5 + 1.5 = 3.75$ km.