

Grade 5 · Adding and Subtracting Fractions with Unlike Denominators · Test Answer Key

Common Core 5.NF.A.1, 5.NF.A.2 · mathovore.fr

Use this key to score the fractions test out of 20 points. Each solution shows the worked steps and a scoring guide that explains how points are earned. Accept any valid common denominator and give credit for correct reasoning when a small arithmetic slip changes the final answer.

Grade 5 Common Core: 5.NF.A.1 · 5.NF.A.2

Question 1: Rename and add (2 points)

- a. $\frac{3}{4} = \frac{9}{12}$ and $\frac{5}{6} = \frac{10}{12}$.
 b. $\frac{3}{4} + \frac{5}{6} = \frac{9}{12} + \frac{10}{12} = \frac{19}{12} = 1\frac{7}{12}$

Scoring: 1 point for two correct equivalent fractions with the same denominator (any common denominator is accepted); 1 point for the sum as a mixed number.

Question 2: Fraction bars (2 points)

- a. $\frac{1}{2} = \frac{5}{10}$ and $\frac{1}{5} = \frac{2}{10}$.
 b. $\frac{5}{10} + \frac{2}{10} = \frac{7}{10}$



$$\frac{5}{10} + \frac{2}{10} = \frac{7}{10}.$$

Scoring: 1 point for both tenths equivalents, 1 point for the sum.

Question 3: Subtract fractions (2 points)

- a. $\frac{7}{8} - \frac{1}{3} = \frac{21}{24} - \frac{8}{24} = \frac{13}{24}$. $\frac{13}{24}$
 b. $\frac{5}{6} - \frac{3}{10} = \frac{25}{30} - \frac{9}{30} = \frac{16}{30} = \frac{8}{15}$. $\frac{8}{15}$

Scoring: 1 point for each difference in simplest form. If the answer is correct but not simplified,

award the point and note it.

Question 4: Add mixed numbers (2 points)

- a. $3\frac{2}{3} + 1\frac{1}{4} = \frac{11}{3} + \frac{5}{4} = \frac{44}{12} + \frac{15}{12} = \frac{59}{12} = 4\frac{11}{12}$. $4\frac{11}{12}$
b. $2\frac{5}{6} + 3\frac{3}{4} = \frac{17}{6} + \frac{15}{4} = \frac{34}{12} + \frac{45}{12} = \frac{79}{12} = 6\frac{7}{12}$. $6\frac{7}{12}$

Scoring: 1 point for each sum written as a mixed number in simplest form.

Question 5: Subtract mixed numbers (2 points)

- a. $6\frac{1}{3} - 2\frac{5}{6} = \frac{19}{3} - \frac{17}{6} = \frac{38}{6} - \frac{17}{6} = \frac{21}{6} = \frac{7}{2} = 3\frac{1}{2}$. $3\frac{1}{2}$
b. $8 - 4\frac{3}{8} = 8 - \frac{35}{8} = \frac{64}{8} - \frac{35}{8} = \frac{29}{8} = 3\frac{5}{8}$. $3\frac{5}{8}$

Scoring: 1 point for each difference in simplest form.

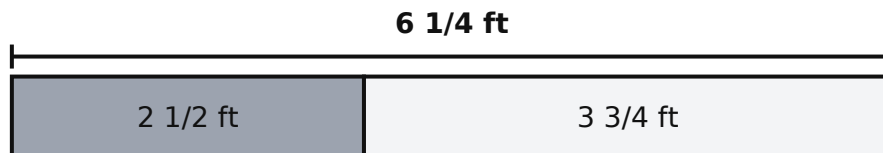
Question 6: Benchmark estimation (2 points)

- a. $\frac{3}{7}$ is close to $\frac{1}{2}$ and $\frac{7}{8}$ is close to 1, so the sum is about $\frac{1}{2} + 1 = 1\frac{1}{2}$.
b. $\frac{10}{15} = \frac{2}{3}$ is less than $\frac{7}{8}$, but a sum must be greater than each addend. Zoe added the numerators and the denominators. The exact sum is $\frac{24}{56} + \frac{49}{56} = \frac{73}{56} = 1\frac{17}{56}$.

Scoring: 1 point for the estimate $1\frac{1}{2}$ (accept $1\frac{1}{2}$ or about 1.5); 1 point for an explanation that compares the claimed sum with an addend or with the estimate.

Question 7: Cutting a board (2 points)

- a. $6\frac{1}{4} - 2\frac{1}{2} = ?$
b. $6\frac{1}{4} - 2\frac{1}{2} = \frac{25}{4} - \frac{5}{2} = \frac{25}{4} - \frac{10}{4} = \frac{15}{4} = 3\frac{3}{4}$. $3\frac{3}{4}$ feet



The part left is $3\frac{3}{4}$ feet.

Scoring: 1 point for an equation that subtracts $2\frac{1}{2}$ from $6\frac{1}{4}$; 1 point for $3\frac{3}{4}$ feet with a unit.

Question 8: Smoothie recipe (3 points)

- a. $\frac{2}{3} + \frac{1}{2} = \frac{4}{6} + \frac{3}{6} = \frac{7}{6} = 1\frac{1}{6}$. $1\frac{1}{6}$ cups
b. $\frac{2}{3} + \frac{1}{2} + \frac{1}{4} = \frac{8}{12} + \frac{6}{12} + \frac{3}{12} = \frac{17}{12} = 1\frac{5}{12}$. $1\frac{5}{12}$ cups
c. $2 - 1\frac{5}{12} = 1\frac{12}{12} - 1\frac{5}{12} = \frac{7}{12}$. $\frac{7}{12}$ cup

Scoring: 1 point for each part; part (c) may use an incorrect total from part (b).

Question 9: Hiking trip (3 points)

a. $2\frac{3}{4} + 1\frac{5}{6} = \frac{11}{4} + \frac{11}{6} = \frac{33}{12} + \frac{22}{12} = \frac{55}{12} = 4\frac{7}{12}$. $4\frac{7}{12}$ miles

b. $6 - 4\frac{7}{12} = 6 - \frac{55}{12} = \frac{72}{12} - \frac{55}{12} = \frac{17}{12} = 1\frac{5}{12}$. $1\frac{5}{12}$ miles

c. $2\frac{3}{4}$ is close to 3 and $1\frac{5}{6}$ is close to 2, so the total is about 5 miles. $4\frac{7}{12}$ is a little less than 5, so it is reasonable.

Scoring: 1 point for each part; part (b) may use an incorrect total from part (a); part (c) needs both benchmark roundings.

Total
20 points