

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

Common Core 5.NF.A.1, 5.NF.A.2 · maths-pdf.fr/en/

This answer key gives worked solutions and a scoring guide for each of the 9 test questions, worth 20 points in all. Use the scoring notes to give partial credit when a student sets up the problem correctly but makes an arithmetic slip.

Grade 5 · Common Core State Standards: **5.NF.A.1, 5.NF.A.2**

Question 1 - Add unlike fractions [2 pts]

(a)

The least common denominator of 3 and 4 is 12.

Rename the fractions: $\frac{1}{3} = \frac{4}{12}$ and $\frac{1}{4} = \frac{3}{12}$.

Add: $\frac{4}{12} + \frac{3}{12} = \frac{7}{12}$.

$$\frac{7}{12}$$

(b)

The least common denominator of 6 and 8 is 24.

Rename the fractions: $\frac{5}{6} = \frac{20}{24}$ and $\frac{1}{8} = \frac{3}{24}$.

Add: $\frac{20}{24} + \frac{3}{24} = \frac{23}{24}$.

$$\frac{23}{24}$$

Scoring: 1 point for each correct sum in simplest form (renaming correctly with a common denominator).

Question 2 - Subtract unlike fractions [2 pts]

(a)

The least common denominator of 8 and 2 is 8.

Rename the fractions: $\frac{7}{8} = \frac{7}{8}$ and $\frac{1}{2} = \frac{4}{8}$.

Subtract: $\frac{7}{8} - \frac{4}{8} = \frac{3}{8}$.

$\frac{3}{8}$

(b)

The least common denominator of 3 and 5 is 15.

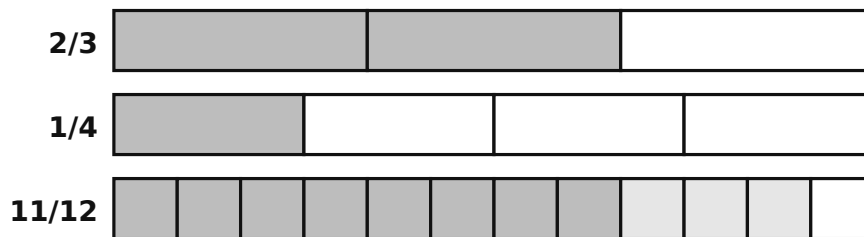
Rename the fractions: $\frac{2}{3} = \frac{10}{15}$ and $\frac{1}{5} = \frac{3}{15}$.

Subtract: $\frac{10}{15} - \frac{3}{15} = \frac{7}{15}$.

$\frac{7}{15}$

Scoring: 1 point for each correct difference.

Question 3 - Add from a model [2 pts]



Twelfths: $8/12 + 3/12 = 11/12$.

(a) $\frac{2}{3} + \frac{1}{4}$.

(b) $\frac{8}{12} + \frac{3}{12} = \frac{11}{12}$; $\frac{11}{12}$.

Scoring: 1 point for the correct sentence (either order); 1 point for the sum.

Question 4 - Mixed numbers [3 pts]

(a)

The least common denominator of 5 and 10 is 10.

Rename the fractions: $3\frac{2}{5} = 3\frac{4}{10}$ and $2\frac{7}{10} = 2\frac{7}{10}$.

Add: $3\frac{4}{10} + 2\frac{7}{10} = 5\frac{11}{10}$.

Simplify: $5\frac{11}{10} = 6\frac{1}{10}$.

$$6\frac{1}{10}$$

(b)

The least common denominator of 4 and 6 is 12.

Rename the fractions: $6\frac{1}{4} = 6\frac{3}{12}$ and $2\frac{5}{6} = 2\frac{10}{12}$.

The first fraction is smaller than the second, so regroup 1 whole as $\frac{12}{12}$: $6\frac{3}{12} = 5\frac{15}{12}$.

Subtract: $5\frac{15}{12} - 2\frac{10}{12} = 3\frac{5}{12}$.

$$3\frac{5}{12}$$

Scoring: (a) 1 point for the correct sum in simplest form. (b) 1 point for regrouping correctly, 1 point for the correct difference.

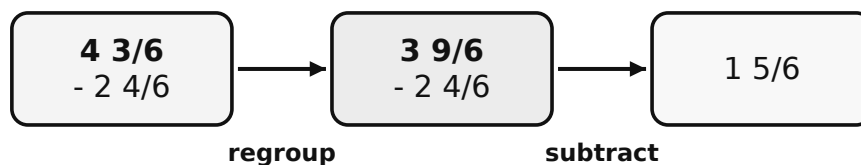
Question 5 - Is it reasonable? [2 pts]

(a) $\frac{3}{8}$ is a little less than $\frac{1}{2}$ and $\frac{5}{9}$ is a little more than $\frac{1}{2}$, so the sum is close to 1. But $\frac{8}{17}$ is less than $\frac{1}{2}$, so it is too small. (Adding the denominators is the error.)

(b) $\frac{27}{72} + \frac{40}{72} = \frac{67}{72}$.

Scoring: 1 point for a valid benchmark explanation; 1 point for the correct sum.

Question 6 - Two ropes [2 pts]



Regroup, then subtract.

The least common denominator of 2 and 3 is 6.

Rename the fractions: $4\frac{1}{2} = 4\frac{3}{6}$ and $2\frac{2}{3} = 2\frac{4}{6}$.

The first fraction is smaller than the second, so regroup 1 whole as $\frac{6}{6}$: $4\frac{3}{6} = 3\frac{9}{6}$.

Subtract: $3\frac{9}{6} - 2\frac{4}{6} = 1\frac{5}{6}$.

$$1\frac{5}{6}$$

The first rope is $1\frac{5}{6}$ feet longer.

Scoring: 1 point for a correct setup with a common denominator; 1 point for the correct difference with units.

Question 7 - Trail mix [3 pts]

(a) The LCD of 4, 3, and 2 is 12: $\frac{9}{12} + \frac{8}{12} + \frac{6}{12} = \frac{23}{12} = 1\frac{11}{12}$: $1\frac{11}{12}$ **cups.**

(b) $2 - 1\frac{11}{12} = \frac{1}{12}$: **Yes, it fits, with $\frac{1}{12}$ cup of room left.**

Scoring: (a) 1 point for renaming all three fractions with a common denominator, 1 point for the total. (b) 1 point for a correct answer to both parts.

Question 8 - Practice goal [2 pts]

(a) $1\frac{3}{12} + 2\frac{6}{12} + 1\frac{8}{12} = 4\frac{17}{12} = 5\frac{5}{12}$: $5\frac{5}{12}$ **hours.**

(b) $6 - 5\frac{5}{12} = \frac{7}{12}$: $\frac{7}{12}$ **hour.**

Scoring: 1 point for each correct answer.

Question 9 - Missing numbers [2 pts]

(a) $? = \frac{5}{6} - \frac{1}{4} = \frac{10}{12} - \frac{3}{12} = \frac{7}{12}$: $\frac{7}{12}$.

(b) $? = 5\frac{3}{6} - 3\frac{2}{6} = 2\frac{1}{6}$: $2\frac{1}{6}$.

Scoring: 1 point for each correct missing number.

Total

20 points