

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

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

This answer key shows every step for the 20 fraction problems: the least common denominator, the renamed fractions, the calculation, and the simplified answer in bold. Use it to find the exact step where a mistake happened, such as forgetting to regroup.

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

Exercise 1 - Halves and fourths

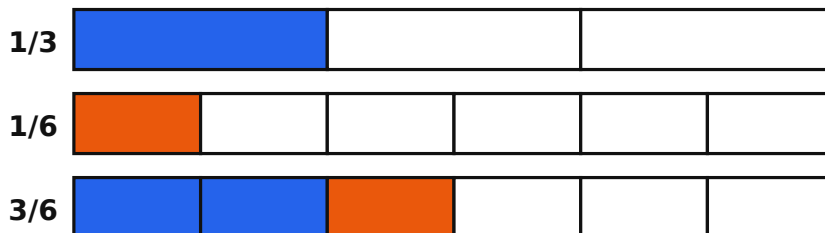
The least common denominator of 2 and 4 is 4.

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

Add: $\frac{2}{4} + \frac{1}{4} = \frac{3}{4}$.

$$\frac{3}{4}$$

Exercise 2 - Thirds and sixths



Thirds become sixths: $\frac{2}{6} + \frac{1}{6} = \frac{3}{6} = \frac{1}{2}$.

The least common denominator of 3 and 6 is 6.

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

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

Simplify: $\frac{3}{6} = \frac{1}{2}$.

$$\frac{1}{2}$$

Exercise 3 - Fifths and halves

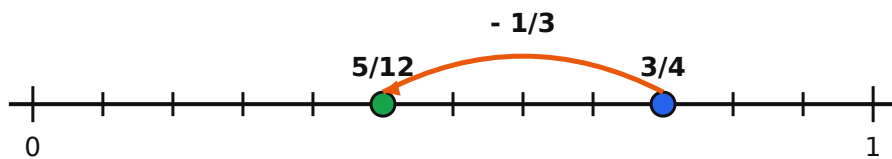
The least common denominator of 5 and 2 is 10.

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

Add: $\frac{4}{10} + \frac{5}{10} = \frac{9}{10}$.

$$\frac{9}{10}$$

Exercise 4 - Fourths minus thirds



Landing point: $\frac{5}{12}$.

The least common denominator of 4 and 3 is 12.

Rename the fractions: $\frac{3}{4} = \frac{9}{12}$ and $\frac{1}{3} = \frac{4}{12}$.

Subtract: $\frac{9}{12} - \frac{4}{12} = \frac{5}{12}$.

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

Exercise 5 - Sixths minus fourths

The least common denominator of 6 and 4 is 12.

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

Subtract: $\frac{10}{12} - \frac{3}{12} = \frac{7}{12}$.

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

Exercise 6 - Sum greater than 1

The least common denominator of 3 and 4 is 12.

Rename the fractions: $\frac{2}{3} = \frac{8}{12}$ and $\frac{3}{4} = \frac{9}{12}$.

Add: $\frac{8}{12} + \frac{9}{12} = \frac{17}{12}$.

Simplify: $\frac{17}{12} = 1\frac{5}{12}$.

$$1\frac{5}{12}$$

Exercise 7 - Eighths minus sixths

The least common denominator of 8 and 6 is 24.

Rename the fractions: $\frac{7}{8} = \frac{21}{24}$ and $\frac{1}{6} = \frac{4}{24}$.

Subtract: $\frac{21}{24} - \frac{4}{24} = \frac{17}{24}$.

$$\frac{17}{24}$$

Exercise 8 - Tenths and fifteenths

The least common denominator of 10 and 15 is 30.

Rename the fractions: $\frac{3}{10} = \frac{9}{30}$ and $\frac{4}{15} = \frac{8}{30}$.

Add: $\frac{9}{30} + \frac{8}{30} = \frac{17}{30}$.

$$\frac{17}{30}$$

Exercise 9 - Add mixed numbers

The least common denominator of 2 and 3 is 6.

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

Add: $1\frac{3}{6} + 2\frac{2}{6} = 3\frac{5}{6}$.

$$3\frac{5}{6}$$

Exercise 10 - Regroup the fraction sum

The least common denominator of 4 and 6 is 12.

Rename the fractions: $2\frac{3}{4} = 2\frac{9}{12}$ and $1\frac{5}{6} = 1\frac{10}{12}$.

Add: $2\frac{9}{12} + 1\frac{10}{12} = 3\frac{19}{12}$.

Simplify: $3\frac{19}{12} = 4\frac{7}{12}$.

$$4\frac{7}{12}$$

Exercise 11 - Subtract with regrouping

The least common denominator of 3 and 2 is 6.

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

The first fraction is smaller than the second, so regroup 1 whole as $\frac{6}{6}$: $4\frac{2}{6} = 3\frac{8}{6}$.

Subtract: $3\frac{8}{6} - 1\frac{3}{6} = 2\frac{5}{6}$.

$$2\frac{5}{6}$$

Exercise 12 - Harder regrouping

The least common denominator of 4 and 3 is 12.

Rename the fractions: $5\frac{1}{4} = 5\frac{3}{12}$ and $2\frac{2}{3} = 2\frac{8}{12}$.

The first fraction is smaller than the second, so regroup 1 whole as $\frac{12}{12}$: $5\frac{3}{12} = 4\frac{15}{12}$.

Subtract: $4\frac{15}{12} - 2\frac{8}{12} = 2\frac{7}{12}$.

$$2\frac{7}{12}$$

Exercise 13 - Estimate, then add

Estimate: $\frac{5}{6}$ is close to 1 and $\frac{3}{5}$ is close to $\frac{1}{2}$, so the sum is about $1\frac{1}{2}$.

The least common denominator of 6 and 5 is 30.

Rename the fractions: $\frac{5}{6} = \frac{25}{30}$ and $\frac{3}{5} = \frac{18}{30}$.

Add: $\frac{25}{30} + \frac{18}{30} = \frac{43}{30}$.

Simplify: $\frac{43}{30} = 1\frac{13}{30}$.

$$1\frac{13}{30}$$

The exact sum is close to the estimate.

Exercise 14 - Missing number

Subtract to find the missing part: $\frac{7}{10} - \frac{2}{5}$.

The least common denominator of 10 and 5 is 10.

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

Subtract: $\frac{7}{10} - \frac{4}{10} = \frac{3}{10}$.

$$\frac{3}{10}$$

Exercise 15 - Pizza for two meals



Together: $\frac{2}{8} + \frac{3}{8} = \frac{5}{8}$ of the pizza.

The least common denominator of 4 and 8 is 8.

Rename the fractions: $\frac{1}{4} = \frac{2}{8}$ and $\frac{3}{8} = \frac{3}{8}$.

Add: $\frac{2}{8} + \frac{3}{8} = \frac{5}{8}$.

$$\frac{5}{8}$$

Maya ate $\frac{5}{8}$ of the pizza.

Exercise 16 - Weekend hike

The least common denominator of 2 and 4 is 4.

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

Add: $2\frac{2}{4} + 1\frac{3}{4} = 3\frac{5}{4}$.

Simplify: $3\frac{5}{4} = 4\frac{1}{4}$.

$$4\frac{1}{4}$$

Jamal hiked $4\frac{1}{4}$ miles.

Exercise 17 - Ribbon left over

The least common denominator of 3 and 4 is 12.

Rename the fractions: $3\frac{2}{3} = 3\frac{8}{12}$ and $1\frac{3}{4} = 1\frac{9}{12}$.

The first fraction is smaller than the second, so regroup 1 whole as $\frac{12}{12}$: $3\frac{8}{12} = 2\frac{20}{12}$.

Subtract: $2\frac{20}{12} - 1\frac{9}{12} = 1\frac{11}{12}$.

$$1\frac{11}{12}$$

Sofia has $1\frac{11}{12}$ yards left.

Exercise 18 - Will it fit?

Total in the bowl:

The least common denominator of 3 and 4 is 12.

Rename the fractions: $\frac{2}{3} = \frac{8}{12}$ and $\frac{3}{4} = \frac{9}{12}$.

Add: $\frac{8}{12} + \frac{9}{12} = \frac{17}{12}$.

Simplify: $\frac{17}{12} = 1\frac{5}{12}$.

$$1\frac{5}{12}$$

Room left: $2 - 1\frac{5}{12}$.

Rename 2 as $1\frac{12}{12}$: $1\frac{12}{12} - 1\frac{5}{12} = \frac{7}{12}$.

Yes, it fits. There is $\frac{7}{12}$ cup of room left.

Exercise 19 - Practice time

The LCD of 2, 4, and 3 is 12.

$$1\frac{1}{2} = 1\frac{6}{12}, \frac{3}{4} = \frac{9}{12}, 2\frac{1}{3} = 2\frac{4}{12}.$$

Add the wholes: $1+2=3$. Add the fractions: $\frac{6}{12}+\frac{9}{12}+\frac{4}{12}=\frac{19}{12}=1\frac{7}{12}$.

Total: $3+1\frac{7}{12}=4\frac{7}{12}$ hours.

More than 4 hours: $4\frac{7}{12}-4=\frac{7}{12}$ hour.

The total is $4\frac{7}{12}$ hours, which is $\frac{7}{12}$ hour more than 4 hours.

Exercise 20 - Apple pie and sauce

First find the apples used:

The least common denominator of 4 and 6 is 12.

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

Add: $2\frac{3}{12}+1\frac{10}{12}=3\frac{13}{12}$.

Simplify: $3\frac{13}{12}=4\frac{1}{12}$.

$4\frac{1}{12}$

Now subtract from the amount Diego has:

The least common denominator of 2 and 12 is 12.

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

Subtract: $5\frac{6}{12}-4\frac{1}{12}=1\frac{5}{12}$.

$1\frac{5}{12}$

Diego has $1\frac{5}{12}$ pounds of apples left.