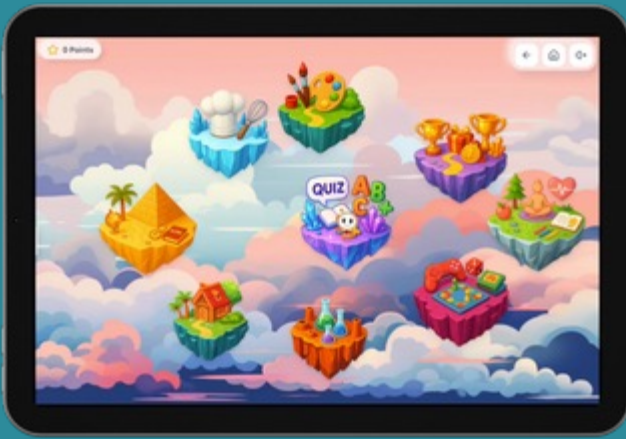


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Adding and Subtracting Fractions - Year 5

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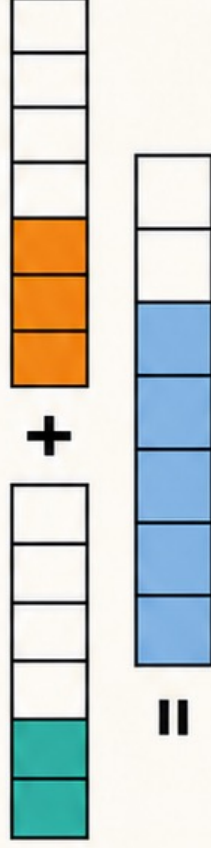
Adding

Fractions

LIKE DENOMINATORS

1. Keep the denominator.
2. Add the numerators.
3. Simplify if possible.

Example: $\frac{2}{7} + \frac{3}{7} = \frac{5}{7}$



UNLIKE DENOMINATORS

1. Find the lowest common multiple (LCM).
2. Write equivalent fractions with a common denominator.
3. Add the numerators.
4. Simplify or convert to a mixed number.

Example: $\frac{1}{4} + \frac{1}{6} = \frac{3}{12} + \frac{2}{12} = \frac{5}{12}$



Whatever you do to the denominator, do to the numerator.

÷ Subtracting Fractions ÷

LIKE DENOMINATORS

- 1 Keep the denominator.
- 2 Subtract the numerators.
- 3 Simplify if possible.

Example: $\frac{6}{8} - \frac{2}{8} = \frac{4}{8} = \frac{1}{2}$



Whatever you do to the denominator do to the numerator.



Check: common denominator - subtract numerators - simplify ÷

UNLIKE DENOMINATORS

- 1 Find the lowest common multiple (LCM).
- 2 Write equivalent fractions with a common denominator.
- 3 Subtract the numerators.
- 4 Simplify or convert to a mixed number.

Example: $\frac{5}{6} - \frac{1}{4} = \frac{10}{12} - \frac{3}{12} = \frac{7}{12}$



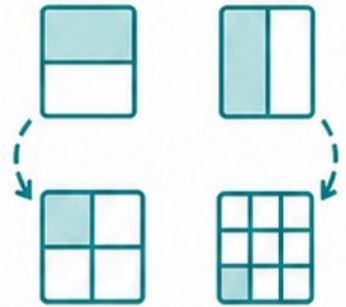
Check: common denominator - subtract numerators - simplify ÷

Fraction Operations Desk Mat

1. CHECK THE DENOMINATORS

Like denominators: keep the denominator.

Unlike denominators: find the LCM and write equivalent fractions.



2. OPERATE

Add or subtract the numerators.

Never add or subtract the denominators.



3. FINISH

Simplify the fraction.

Convert an improper fraction to a mixed number when needed.

$$\frac{5}{4} \rightarrow 1\frac{1}{4}$$

4. PROVE IT

Estimate. Model. Check that the answer is reasonable.



ADDING EXAMPLE

$$\frac{1}{3} + \frac{1}{4} = \frac{4}{12} + \frac{3}{12} = \frac{7}{12}$$

SUBTRACTING EXAMPLE

$$\frac{3}{4} - \frac{1}{6} = \frac{9}{12} - \frac{2}{12} = \frac{7}{12}$$

 **Key words:** numerator - denominator - equivalent - LCM - simplify

Common Denominator Match-Up

Page 1 - Operation Cards

Cut out the cards. Match each operation to its equivalent-fraction card and result card.

A $\frac{1}{3} + \frac{1}{4}$

B $\frac{5}{6} - \frac{1}{3}$

C $\frac{2}{5} + \frac{3}{10}$

D $\frac{7}{8} - \frac{1}{3}$

E $\frac{3}{4} + \frac{2}{3}$

F $\frac{9}{10} - \frac{2}{15}$

Common Denominator Match-Up

Page 2 - Working and Result Cards

W1

$$\frac{4}{12} + \frac{3}{12}$$

W2

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

W3

$$\frac{4}{10} + \frac{3}{10}$$

W4

$$\frac{21}{24} - \frac{8}{24}$$

W5

$$\frac{9}{12} + \frac{3}{12}$$

W6

$$\frac{27}{30} - \frac{4}{30}$$

R1

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

R2

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

R3

$$\frac{7}{10}$$

R4

$$\frac{13}{24}$$

R5

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

R6

$$\frac{23}{30}$$

Common Denominator Match-Up

Page 3 - Teacher Answer Key

Each operation matches one working card and one result card.

A → **W1** → **R1**
 $\frac{1}{3} + \frac{1}{4} = \frac{4}{12} + \frac{3}{12} = \frac{7}{12}$

B → **W2** → **R2**
 $\frac{5}{6} - \frac{1}{6} = \frac{5}{6} - \frac{2}{6} = \frac{1}{2}$

C → **W3** → **R3**
 $\frac{2}{5} + \frac{3}{10} = \frac{4}{10} + \frac{3}{10} = \frac{7}{10}$

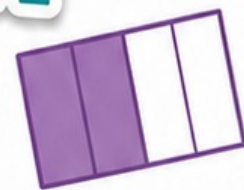
D → **W4** → **R4**
 $\frac{7}{8} - \frac{1}{3} = \frac{21}{24} - \frac{8}{24} = \frac{13}{24}$

E → **W5** → **R5**
 $\frac{3}{4} + \frac{2}{3} = \frac{9}{12} + \frac{8}{12} = \frac{17}{12} = 1 \frac{5}{12}$

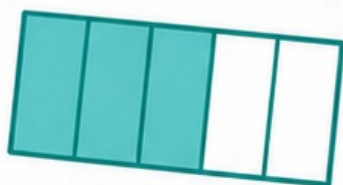
F → **W6** → **R6**
 $\frac{9}{10} - \frac{2}{15} = \frac{27}{30} - \frac{4}{30} = \frac{23}{30}$



Fraction Path Challenge



Roll, move and solve a challenge card.



Fraction Path Challenge

Challenge Cards

1

$$\frac{3}{8} + \frac{2}{8}$$

2

$$\frac{7}{10} - \frac{3}{10}$$

3

$$\frac{1}{3} + \frac{1}{6}$$

4

$$\frac{5}{6} - \frac{1}{4}$$

5

$$\frac{2}{5} + \frac{3}{10}$$

6

$$\frac{7}{8} - \frac{1}{3}$$

7

$$\frac{3}{4} + \frac{2}{3}$$

8

$$\frac{9}{10} - \frac{2}{15}$$

9

$$1\frac{1}{2} + \frac{2}{3}$$

10

$$2\frac{3}{4} - 1\frac{5}{8}$$

11

$$\frac{4}{9} + \frac{5}{12}$$

12

$$\frac{11}{12} - \frac{2}{9}$$



Fraction Path Challenge

Rules and Teacher Answer Key



2-4 players. Place counters on START. Take turns rolling a die and moving. Land on a challenge space: draw a card and solve it. Correct answer: stay. Incorrect answer: move back one space. First to FINISH wins.

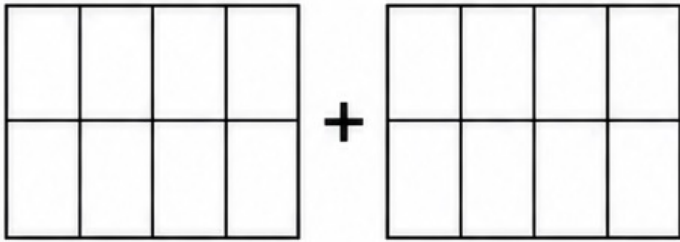
CARD	ANSWER
1	$\frac{5}{8}$
2	$\frac{2}{5}$
3	$\frac{1}{2}$
4	$\frac{7}{12}$
5	$\frac{7}{10}$
6	$\frac{13}{24}$
7	$1 \frac{5}{12}$
8	$\frac{23}{30}$
9	$2 \frac{1}{6}$
10	$1 \frac{1}{8}$
11	$\frac{31}{36}$
12	$\frac{25}{36}$

Name: _____

Visual Fraction Models

Shade or draw each model. Show working. Write each answer in simplest form.

1. A. $\frac{2}{8} + \frac{3}{8}$



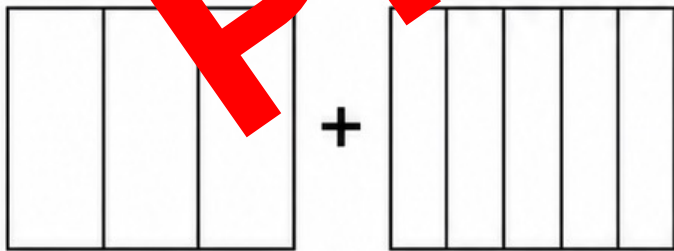
Answer: _____

2. B. $\frac{7}{10} - \frac{2}{10}$



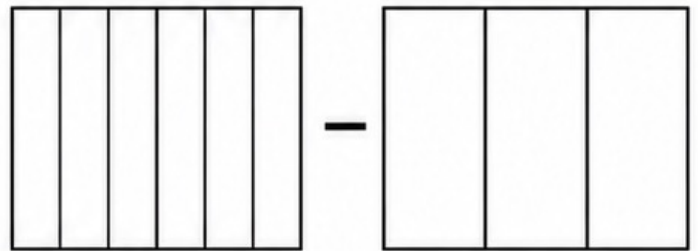
Answer: _____

3. C. $\frac{1}{3} + \frac{1}{6}$



Answer: _____

4. D. $\frac{5}{6} - \frac{1}{4}$



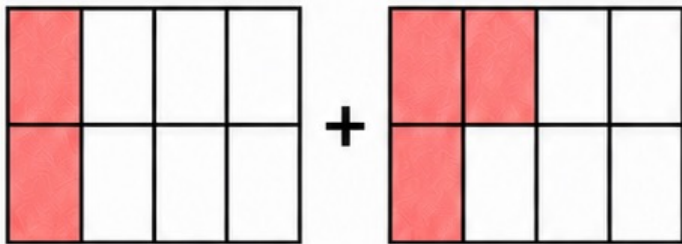
Answer: _____

Name: ANSWERS

Visual Fraction Models

Shade or draw each model. Show working. Write each answer in simplest form.

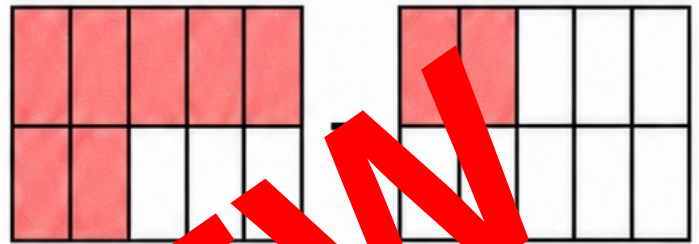
1. A. $\frac{2}{8} + \frac{3}{8}$



$$\frac{2}{8} + \frac{3}{8} = \frac{5}{8}$$

Answer: $\frac{5}{8}$

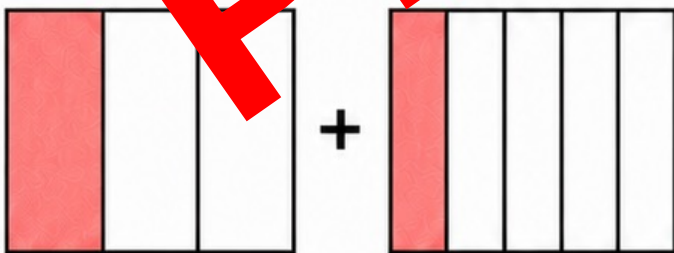
2. B. $\frac{7}{10} - \frac{2}{10}$



$$\frac{7}{10} - \frac{2}{10} = \frac{5}{10}$$
$$= \frac{1}{2}$$

Answer: $\frac{1}{2}$

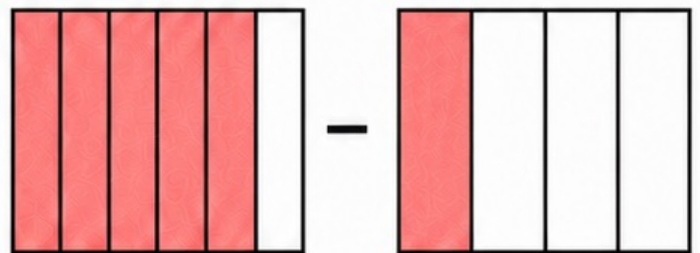
3. C. $\frac{1}{3} + \frac{1}{6}$



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

Answer: $\frac{1}{2}$

4. D. $\frac{5}{6} - \frac{1}{4}$



$$\frac{5}{6} - \frac{1}{4} = \frac{10}{12} - \frac{3}{12}$$
$$= \frac{7}{12}$$

Answer: $\frac{7}{12}$

Like Denominator Fluency

Name: _____

Calculate. Show working and write each answer in simplest form.

1. $\frac{3}{7} + \frac{2}{7}$

2. $\frac{8}{9} - \frac{5}{9}$

3. $\frac{5}{12} + \frac{4}{12}$

4. $\frac{11}{15} - \frac{2}{15}$

5. $\frac{7}{8} + \frac{5}{8}$

6. $\frac{11}{10} - \frac{4}{10}$

7. $\frac{2}{4} + \frac{1}{4}$

8. $\frac{9}{11} - \frac{3}{11}$

9. $\frac{3}{4} + \frac{3}{4}$

10. $\frac{14}{16} - \frac{6}{16}$

11. $\frac{5}{6} + \frac{2}{6}$

12. $\frac{17}{20} - \frac{9}{20}$

Like Denominator Fluency

Name: _____ **ANSWERS**

Calculate. Show working and write each answer in simplest form.

1. $\frac{3}{7} + \frac{2}{7}$

$$\frac{3 + 2 = 5}{7}$$

$$= \frac{5}{7}$$

2. $\frac{8}{9} - \frac{5}{9}$

$$\frac{8 - 5 = 3}{9}$$

$$= \frac{1}{3}$$

3. $\frac{5}{12} + \frac{4}{12}$

$$\frac{5 + 4 = 9}{12}$$

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

4. $\frac{11}{15} - \frac{2}{15}$

$$\frac{11 - 2 = 9}{15}$$

$$= \frac{3}{5}$$

5. $\frac{7}{8} + \frac{5}{8}$

$$\frac{7 + 5 = 12}{8}$$

$$= \frac{3}{2} = 1 \frac{1}{2}$$

6. $\frac{13}{10} - \frac{4}{10}$

$$\frac{13 - 4 = 9}{10}$$

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

7. $2 + \frac{4}{5}$

$$\frac{2 + \frac{4}{5} = \frac{14}{5}}{5}$$

$$= \frac{14}{5} = 2 \frac{4}{5}$$

8. $\frac{9}{11} - \frac{3}{11}$

$$\frac{9 - 3 = 6}{11}$$

$$= \frac{6}{11}$$

9. $\frac{3}{4} + \frac{3}{4}$

$$\frac{3 + 3 = 6}{4}$$

$$= \frac{6}{4} = 1 \frac{1}{2}$$

10. $\frac{14}{16} - \frac{6}{16}$

$$\frac{14 - 6 = 8}{16}$$

$$= \frac{8}{16} = \frac{1}{2}$$

11. $\frac{5}{6} + \frac{2}{6}$

$$\frac{5 + 2 = 7}{6}$$

$$= \frac{7}{6} = 1 \frac{1}{6}$$

12. $\frac{17}{20} - \frac{9}{20}$

$$\frac{17 - 9 = 8}{20}$$

$$= \frac{8}{20} = \frac{2}{5}$$

Building Common Denominators

Name: _____

Find the least common denominator. Rewrite each pair as equivalent fractions.

1. $\frac{1}{3}$ and $\frac{1}{4}$

and

2. $\frac{2}{5}$ and $\frac{3}{10}$

and

3. $\frac{3}{8}$ and $\frac{1}{6}$

and

4. $\frac{5}{6}$ and $\frac{1}{8}$

and

5. $\frac{2}{7}$ and $\frac{1}{4}$

and

6. $\frac{5}{9}$ and $\frac{1}{3}$

and

7. $\frac{3}{4}$ and $\frac{5}{6}$

and

8. $\frac{7}{10}$ and $\frac{2}{15}$

and

Building Common Denominators

Name: ANSWERS

Find the least common denominator. Rewrite each pair as equivalent fractions.

1. $\frac{1}{3}$ and $\frac{1}{4}$

LCD 12; $\frac{1}{3} = \frac{4}{12}$ and $\frac{1}{4} = \frac{3}{12}$

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

and

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

2. $\frac{2}{5}$ and $\frac{3}{10}$

LCD 10; $\frac{2}{5} = \frac{4}{10}$ and $\frac{3}{10} = \frac{3}{10}$

$$\frac{4}{10}$$

and

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

3. $\frac{3}{8}$ and $\frac{1}{6}$

LCD 24; $\frac{3}{8} = \frac{9}{24}$ and $\frac{1}{6} = \frac{4}{24}$

$$\frac{9}{24}$$

and

$$\frac{4}{24}$$

4. $\frac{5}{12}$ and $\frac{1}{8}$

LCD 24; $\frac{5}{12} = \frac{10}{24}$ and $\frac{1}{8} = \frac{3}{24}$

$$\frac{10}{24}$$

and

$$\frac{3}{24}$$

5. $\frac{2}{7}$ and $\frac{3}{14}$

LCD 14; $\frac{2}{7} = \frac{4}{14}$ and $\frac{3}{14} = \frac{3}{14}$

$$\frac{4}{14}$$

and

$$\frac{3}{14}$$

6. $\frac{5}{9}$ and $\frac{1}{3}$

LCD 9; $\frac{5}{9} = \frac{5}{9}$ and $\frac{1}{3} = \frac{3}{9}$

$$\frac{5}{9}$$

and

$$\frac{3}{9}$$

7. $\frac{3}{4}$ and $\frac{5}{6}$

LCD 12; $\frac{3}{4} = \frac{9}{12}$ and $\frac{5}{6} = \frac{10}{12}$

$$\frac{9}{12}$$

and

$$\frac{10}{12}$$

8. $\frac{7}{10}$ and $\frac{2}{15}$

LCD 30; $\frac{7}{10} = \frac{21}{30}$ and $\frac{2}{15} = \frac{4}{30}$

$$\frac{21}{30}$$

and

$$\frac{4}{30}$$

Adding Unlike Denominators

Name: _____

Find a common denominator. Add and simplify. Show all working.

1. $\frac{1}{4} + \frac{1}{6}$

2. $\frac{2}{3} + \frac{3}{8}$

3. $\frac{5}{12} + \frac{1}{3}$

4. $\frac{3}{5} + \frac{7}{10}$

5. $1\frac{1}{2} + \frac{5}{3}$

6. $2\frac{3}{4} + 1\frac{2}{5}$

7. $\frac{4}{9} + \frac{5}{12}$

8. $\frac{7}{8} + \frac{1}{6}$

Adding Unlike Denominators

Name: **ANSWERS**

Find a common denominator. Add and simplify. Show all working.

1. $\frac{1}{4} + \frac{1}{6}$

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

$$\frac{3}{12} + \frac{2}{12} = \frac{5}{12}$$

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

2. $\frac{2}{3} + \frac{3}{8}$

$$\frac{2}{3} = \frac{16}{24}, \quad \frac{3}{8} = \frac{9}{24}$$

$$\frac{16}{24} + \frac{9}{24} = \frac{25}{24}$$

$$1 \frac{1}{24}$$

3. $\frac{5}{12} + \frac{1}{3}$

$$\frac{5}{12} = \frac{5}{12}, \quad \frac{1}{3} = \frac{4}{12}$$

$$\frac{5}{12} + \frac{4}{12} = \frac{9}{12}$$

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

4. $\frac{3}{5} + \frac{7}{10}$

$$\frac{3}{5} = \frac{6}{10}, \quad \frac{7}{10} = \frac{7}{10}$$

$$\frac{6}{10} + \frac{7}{10} = \frac{13}{10}$$

$$1 \frac{3}{10}$$

5. $1 \frac{1}{2} + 1 \frac{2}{3}$

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

$$\frac{9}{6} + \frac{4}{6} = \frac{13}{6}$$

$$2 \frac{1}{6}$$

6. $2 \frac{3}{4} + 1 \frac{2}{5}$

$$2 \frac{3}{4} = \frac{11}{4} = \frac{55}{20}, \quad 1 \frac{2}{5} = \frac{7}{5} = \frac{28}{20}$$

$$\frac{55}{20} + \frac{28}{20} = \frac{83}{20}$$

$$4 \frac{3}{20}$$

7. $\frac{4}{9} + \frac{5}{12}$

$$\frac{4}{9} = \frac{16}{36}, \quad \frac{5}{12} = \frac{15}{36}$$

$$\frac{16}{36} + \frac{15}{36} = \frac{31}{36}$$

$$\frac{31}{36}$$

8. $\frac{7}{8} + \frac{1}{6}$

$$\frac{7}{8} = \frac{21}{24}, \quad \frac{1}{6} = \frac{4}{24}$$

$$\frac{21}{24} + \frac{4}{24} = \frac{25}{24}$$

$$1 \frac{1}{24}$$

Name: _____

Subtracting Unlike Denominators

Find a common denominator. Subtract and simplify. Show all working.

1. $\frac{5}{6} - \frac{1}{4}$

2. $\frac{7}{8} - \frac{1}{3}$

3. $\frac{11}{12} - \frac{2}{9}$

4. $1\frac{3}{4} - \frac{2}{4}$

5. $3\frac{1}{2} - 1\frac{2}{3}$

6. $2\frac{3}{4} - 1\frac{5}{8}$

7. $\frac{9}{10} - \frac{2}{15}$

8. $\frac{5}{7} - \frac{1}{2}$

Subtracting Unlike Denominators

Find a common denominator. Subtract and simplify. Show all working.

1. $\frac{5}{6} - \frac{1}{4}$

$$\frac{5}{6} = \frac{10}{12}, \quad \frac{1}{4} = \frac{3}{12}$$

$$\frac{10}{12} - \frac{3}{12} = \frac{7}{12}$$

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

2. $\frac{7}{8} - \frac{1}{3}$

$$\frac{7}{8} = \frac{21}{24}, \quad \frac{1}{3} = \frac{8}{24}$$

$$\frac{21}{24} - \frac{8}{24} = \frac{13}{24}$$

$$\frac{13}{24}$$

3. $\frac{11}{12} - \frac{2}{9}$

$$\frac{11}{12} = \frac{33}{36}, \quad \frac{2}{9} = \frac{8}{36}$$

$$\frac{33}{36} - \frac{8}{36} = \frac{25}{36}$$

$$\frac{25}{36}$$

4. $1\frac{3}{5} - \frac{5}{4}$

$$1\frac{3}{5} = \frac{8}{5} = \frac{32}{20}, \quad \frac{5}{4} = \frac{15}{20}$$

$$\frac{32}{20} - \frac{15}{20} = \frac{17}{20}$$

$$\frac{17}{20}$$

5. $3\frac{1}{2} - 1\frac{2}{3}$

$$3\frac{1}{2} = \frac{7}{2} = \frac{21}{6}, \quad 1\frac{2}{3} = \frac{5}{3} = \frac{10}{6}$$

$$\frac{21}{6} - \frac{10}{6} = \frac{11}{6}$$

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

6. $2\frac{3}{4} - 1\frac{5}{8}$

$$2\frac{3}{4} = \frac{11}{4} = \frac{22}{8}, \quad 1\frac{5}{8} = \frac{13}{8}$$

$$\frac{22}{8} - \frac{13}{8} = \frac{9}{8}$$

$$1\frac{1}{8}$$

7. $\frac{9}{10} - \frac{2}{15}$

$$\frac{9}{10} = \frac{27}{30}, \quad \frac{2}{15} = \frac{4}{30}$$

$$\frac{27}{30} - \frac{4}{30} = \frac{23}{30}$$

$$\frac{23}{30}$$

8. $\frac{5}{7} - \frac{1}{2}$

$$\frac{5}{7} = \frac{10}{14}, \quad \frac{1}{2} = \frac{7}{14}$$

$$\frac{10}{14} - \frac{7}{14} = \frac{3}{14}$$

$$\frac{3}{14}$$

Mixed Numbers and Fraction Problems

Name: _____

Choose an operation. Show all working. Give each answer in simplest form with the correct unit.

- 1** A water tank was $\frac{3}{8}$ emptied in the morning and $\frac{1}{4}$ emptied in the afternoon. What fraction of the tank was emptied altogether?

- 2** A ribbon was $2\frac{1}{3}$ metres long. Priya used $\frac{5}{6}$ metre. How much ribbon remained?

- 3** One section of a trail is $1\frac{3}{4}$ kilometres long and another is $2\frac{2}{5}$ kilometres long. What is the total distance?

- 4** A container held $2\frac{1}{2}$ cups of flour. A baker used $\frac{3}{4}$ cup. How much flour remained?

Mixed Numbers and Fraction Problems

Name: **ANSWERS**

Choose an operation. Show all working. Give each answer in simplest form with the correct unit.

- 1** A water tank was $\frac{3}{8}$ emptied in the morning and $\frac{1}{4}$ emptied in the afternoon. What fraction of the tank was emptied altogether?

$$\frac{3}{8} + \frac{1}{4} =$$

$$\frac{3}{8} + \frac{2}{8} =$$

$$\frac{5}{8} \text{ of the tank}$$

- 2** A ribbon was $2\frac{1}{3}$ metres long. Priya used $\frac{5}{6}$ metre. How much ribbon remained?

$$2\frac{1}{3} - \frac{5}{6} =$$

$$\frac{4}{6} - \frac{5}{6} =$$

$$\frac{9}{6} = 1\frac{1}{2} \text{ metres}$$

- 3** One section of trail is $1\frac{3}{4}$ kilometres long and another is $2\frac{2}{5}$ kilometres long. What is the total distance?

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

$$\frac{7}{4} + \frac{12}{5} =$$

$$\frac{35}{20} + \frac{48}{20} =$$

$$\frac{83}{20} = 4\frac{3}{20} \text{ kilometres}$$

- 4** A container held $2\frac{1}{2}$ cups of flour. A baker used $\frac{3}{4}$ cup. How much flour remained?

$$2\frac{1}{2} - \frac{3}{4} =$$

$$\frac{10}{4} - \frac{3}{4} =$$

$$\frac{7}{4} = 1\frac{3}{4} \text{ cups}$$

Fraction Problem-Solving Check

Page 1

Name: _____

Page score: ____ / 12

1 Calculate and simplify - 2 marks each

1a. $\frac{2}{7} + \frac{3}{7}$

1b. $\frac{5}{6} - \frac{1}{6}$

1c. $\frac{1}{4} + \frac{5}{8}$

1d. $\frac{1}{10} - \frac{1}{5}$

2 Error Analysis - 4 marks

A student wrote $\frac{2}{3} + \frac{1}{4} = \frac{3}{7}$. Explain the error and show the correct answer.

Fraction Problem-Solving Check

Page 1

Name: ANSWERS

Page score: ____ / 12

1 Calculate and simplify - 2 marks each

1a. $\frac{2}{7} + \frac{3}{7}$

$$\frac{2}{7} + \frac{3}{7} = \frac{5}{7}$$

1b. $\frac{5}{6} - \frac{1}{6}$

$$\frac{5}{6} - \frac{1}{6} = \frac{4}{6} = \frac{2}{3}$$

1c. $\frac{1}{4} + \frac{5}{8}$

$$\frac{1}{4} + \frac{5}{8} = \frac{2}{8} + \frac{5}{8} = \frac{7}{8}$$

1d. $\frac{7}{10} - \frac{1}{6}$

$$\frac{7}{10} - \frac{1}{6} = \frac{21}{30} - \frac{5}{30} = \frac{16}{30} = \frac{8}{15}$$

2 Error analysis - 4 marks

A student wrote $\frac{2}{3} + \frac{1}{4} = \frac{3}{7}$. Explain the error and show the correct answer.

The denominators name different-sized parts,

so they cannot be added. Use twelfths:

$$\frac{2}{3} = \frac{8}{12} \text{ and } \frac{1}{4} = \frac{3}{12}. \text{ Therefore}$$

$$\frac{8}{12} + \frac{3}{12} = \frac{11}{12}.$$

Fraction Problem-Solving Check

Page 2

Name: _____

Page score: ____ / 8

3. Model and solve - 2 marks

$$\frac{3}{5} + \frac{1}{10}$$

4. Mixed numbers - 2 marks each

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

4b. $3\frac{1}{3} - 1\frac{3}{4}$

5. Problem solving - 2 marks

A garden bed is $\frac{5}{6}$ planted. Carrots use $\frac{1}{4}$ of the whole bed.

What fraction of the whole bed is planted with other crops? Show your working.

Fraction Problem-Solving Check

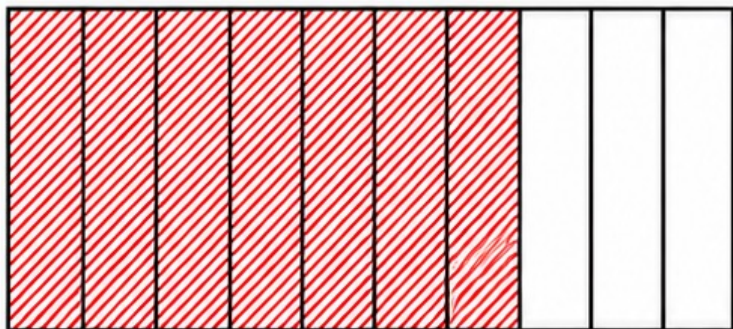
Page 2

Name: ANSWERS

Page score: / 8

3. Model and solve - 2 marks

$$\frac{3}{5} + \frac{1}{10}$$



$$\frac{3}{5} = \frac{6}{10}$$

$$\frac{3}{5} + \frac{1}{10} = \frac{6}{10} + \frac{1}{10}$$

$$= \frac{7}{10}$$

4. Mixed numbers - 2 marks each

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

$$1\frac{3}{4} + 2\frac{2}{3} = \frac{7}{4} + \frac{8}{3}$$
$$= \frac{21}{12} + \frac{32}{12}$$
$$= \frac{53}{12}$$
$$= 4\frac{5}{12}$$

4b. $3\frac{1}{5} - 1\frac{3}{4}$

$$3\frac{1}{5} - 1\frac{3}{4} = \frac{16}{5} - \frac{7}{4}$$
$$= \frac{64}{20} - \frac{35}{20}$$
$$= \frac{29}{20}$$
$$= 1\frac{9}{20}$$

5. Problem solving - 2 marks

A garden bed is $\frac{5}{6}$ planted. Carrots use $\frac{1}{4}$ of the whole bed.

What fraction of the whole bed is planted with other crops? Show your working.

$$\frac{5}{6} - \frac{1}{4} = \frac{10}{12} - \frac{3}{12} = \frac{7}{12} \text{ of the whole bed}$$

Adding and Subtracting Fractions Rubric

Criteria	Beginning	Developing	Achieving	Confident	Exceeding
1. Identifies denominator relationships	Needs substantial support to identify common denominators or relationships between denominators.	With support, identifies common denominators or relationships.	Usually identifies common denominators or relationships correctly.	Consistently identifies common denominators or relationships accurately.	Independently identifies and explains denominator relationships clearly and precisely.
2. Builds equivalent fractions	Needs substantial support to create equivalent fractions or makes errors.	With support, creates equivalent fractions using simple multiples.	Creates equivalent fractions correctly in most cases.	Creates equivalent fractions accurately and efficiently.	Independently creates equivalent fractions and explains the process clearly.
3. Adds fractions accurately	Needs substantial support to add fractions; answers are often incorrect.	With support, adds fractions with some errors.	Adds fractions accurately in most cases.	Adds fractions accurately and consistently.	Adds fractions accurately and explains each step clearly.
4. Subtracts fractions accurately	Needs substantial support to subtract fractions; answers are often incorrect.	With support, subtracts fractions with some errors.	Subtracts fractions accurately in most cases.	Subtracts fractions accurately and consistently.	Subtracts fractions accurately and explains each step clearly.
5. Simplifies and converts answers	Needs substantial support to simplify or convert answers.	With support, simplifies or converts with some errors.	Simplifies or converts answers correctly in most cases.	Accurately simplifies and converts answers consistently.	Independently simplifies and converts answers and explains choices clearly.
6. Uses models and explains reasoning	Needs substantial support to use models or explain reasoning.	With support, uses models or gives a basic explanation.	Uses models and explains reasoning with some detail.	Uses models effectively and explains reasoning clearly.	Uses models flexibly and explains reasoning in detail and clearly.
7. Solves word problems and communicates working	Needs substantial support to solve word problems or show working.	With support, solves simple problems with incomplete working.	Solves word problems with most steps shown clearly.	Solves word problems accurately with clear and complete working.	Solves word problems accurately and clearly communicates well-organized working.

Teacher comment:

Adding and Subtracting Fractions

Learning Goals

By the end of this lesson, you will be able to:

- recognise like and unlike denominators
- build equivalent fractions using common denominators
- add and subtract fractions and mixed numbers
- simplify answers and explain your method



Fractions in Real Life

Fractions help us combine and compare parts of a whole.

We use them when measuring ingredients, sharing lengths, tracking distance, and describing how much remains.



Review: Fraction Language

Numerator: the number of selected parts

Denominator: the number of equal parts in one whole

Like denominators mean equal-sized parts.

Unlike denominators mean different-sized parts.

PREVIEW



Equivalent Fractions

Equivalent fractions have the same value.

Multiply or divide the numerator and denominator by the same number.

Example: $\frac{1}{3} = \frac{2}{6} = \frac{4}{12}$

A common denominator lets us combine equal-sized parts.



Improper Fractions and Mixed Numbers

An improper fraction has a numerator greater than or equal to its denominator.

$\frac{7}{4} = 1 \frac{3}{4}$ because 7 quarters make 1 whole and 3 quarters.

Convert it when it makes an answer clearer.



Adding Like Denominators

1. Keep the denominator.
2. Add the numerators.
3. Simplify the answer.

Equivalent fractions can be combined straight away.



Worked Example: Like Denominators

$$\frac{3}{8} + \frac{2}{8}$$

$$= \frac{(3 + 2)}{8}$$

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

The denominator stays the same because the parts are still eighths.



Your Turn: Add

Calculate and simplify.

$$\frac{7}{12} + \frac{5}{12}$$

Explain how the denominator does not change.



Check Your Thinking

$$7/12 + 5/12$$

$$= 12/12$$

$$= 1$$

The denominator stays the same because both fractions already use twelfths.



Adding Unlike Denominators

1. Find a common denominator.
2. Rewrite both fractions as equivalent fractions.
3. Add the numerators.
4. Simplify and convert if needed.

PREVIEW



Worked Example: Unlike Denominators

$$\frac{1}{3} + \frac{1}{4}$$

$$= \frac{4}{12} + \frac{3}{12}$$

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

The least common denominator of 3 and 4 is 12.



Your Turn: Add

Calculate and simplify.

$$\frac{2}{3} + \frac{3}{8}$$

Show the work that you use.



Check Your Thinking

$$\frac{2}{3} + \frac{3}{8}$$

$$= \frac{16}{24} + \frac{9}{24}$$

$$= \frac{25}{24}$$

$$= 1 \frac{1}{24}$$

PREVIEW



Subtracting Like Denominators

1. Keep the denominator.
2. Subtract the numerators.
3. Simplify the answer.

Equivalent fractions can be compared directly.



Worked Example: Like Denominators

$$8/10 - 3/10$$

$$= (8 - 3)/10$$

$$= 5/10$$

$$= 1/2$$

PREVIEW



Your Turn: Subtract

Calculate and simplify.

$$11/15 - 2/15$$

Check whether the final answer can be reduced.



Check Your Thinking

$$11/15 - 2/15$$

$$= 9/15$$

$$= 3/5$$

Divide the numerator and denominator by 3.

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Subtracting Unlike Denominator

1. Find a common denominator.
2. Rewrite both fractions.
3. Subtract the numerators.
4. Simplify and convert if needed.

PREVIEW



Worked Example: Unlike Denominators

$$\frac{5}{6} - \frac{1}{4}$$

$$= \frac{10}{12} - \frac{3}{12}$$

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

The least common denominator of 6 and 4 is 12.



Your Turn: Subtract

Calculate and simplify.

$$\frac{7}{8} - \frac{1}{3}$$

Show how you would equate the fractions.

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Check Your Thinking

$$\begin{aligned} &7/8 - 1/3 \\ &= 21/24 - 8/24 \\ &= 13/24 \end{aligned}$$

PREVIEW

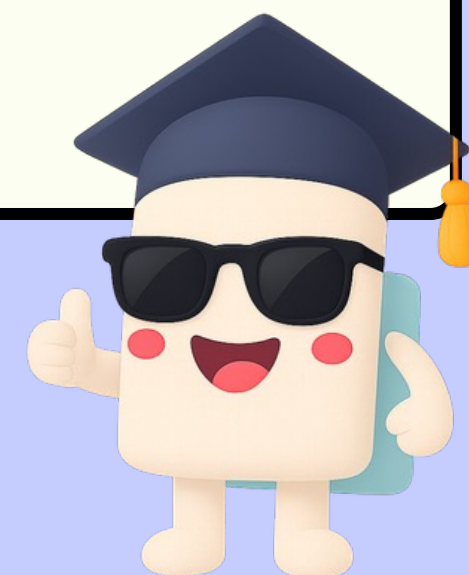
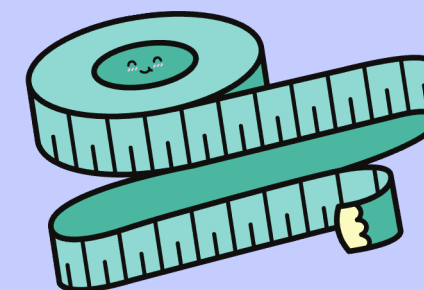
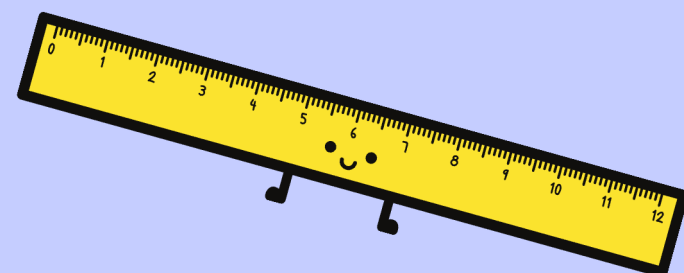
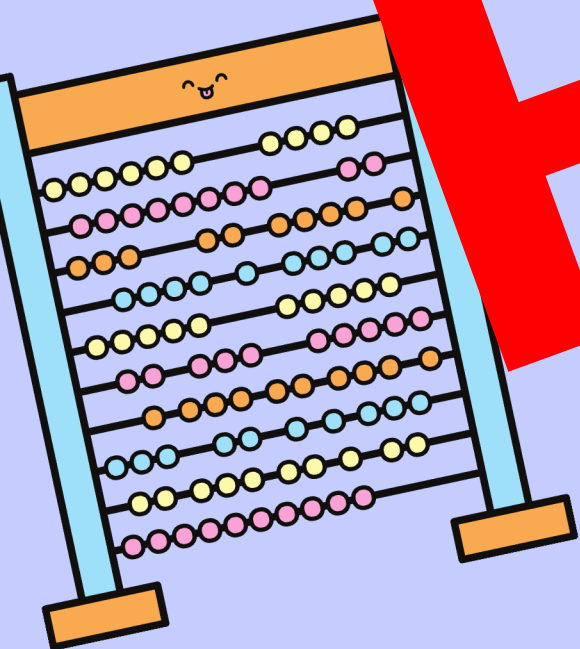
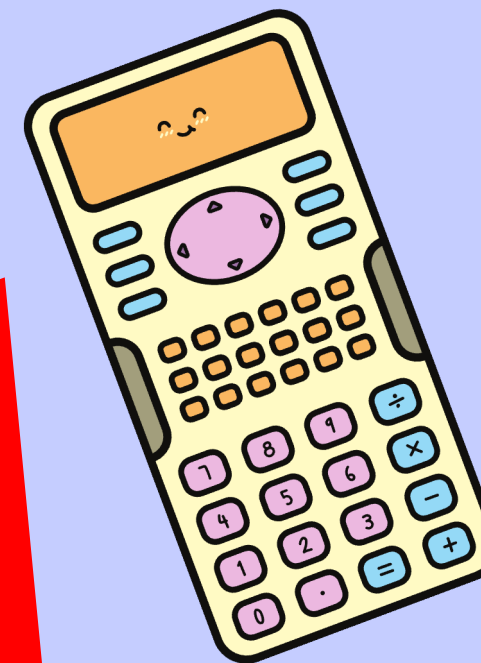
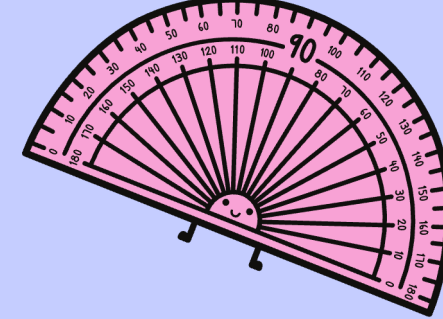
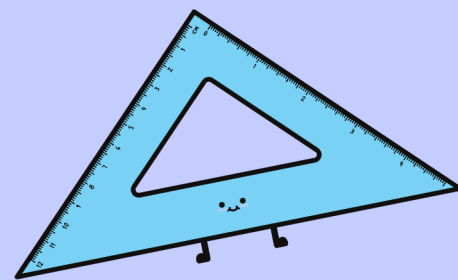
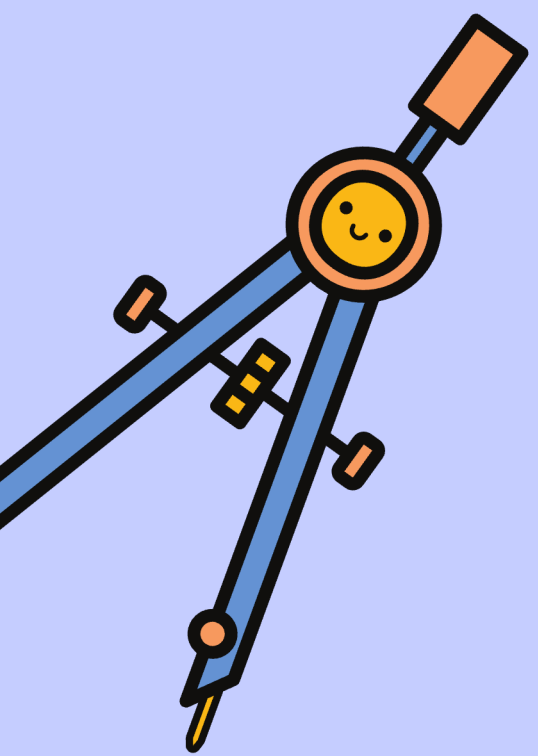


Review and Reflect

Before you finish, ask:

- Are the denominators alike?
- Did I build equivalent fractions correctly?
- Did I choose addition or subtraction?
- Is my answer simplified?
- Does the answer make sense?





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Well Done!

Adding and Subtracting Fractions Quiz

Question 1

True or False:

$$2/8 + 2/8 = 4/16$$

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Answer 1

False

Keep the denominator when the parts are already alike:

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



Question 2

Choose the correct answer

$\frac{1}{3}$ $\frac{1}{4}$

A. $\frac{1}{9}$ B. $\frac{1}{2}$ C. $\frac{2}{9}$ D. $\frac{2}{3}$



Answer 2

B. $\frac{1}{2}$

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

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Question 3

Short answer

Calculate and simplify.

$$7/10 - 3/10$$

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Answer 3

$\frac{2}{5}$

$$\frac{7}{10} - \frac{3}{10} - \frac{4}{10} = \frac{2}{10} = \frac{1}{5}$$

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Question 4

Choose the correct answer.

$$\frac{5}{6} \div \frac{1}{4}$$

- A. $\frac{4}{10}$ B. $\frac{7}{12}$ C. $\frac{2}{5}$ D. $\frac{1}{2}$



Answer 4

B. $7/12$

$5/6 = 10/12$ and $1/4 = 3/12$ so the difference is $7/12$.

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Question 5

True or False:

$$2 + 1 + 2/3 = 5/12$$

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Answer 5

True.

$$\frac{3}{4} + \frac{2}{3} = \frac{9}{12} + \frac{8}{12} = \frac{17}{12} = 1 \frac{5}{12}.$$

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Question 6

Short answer

Calculate and simplify.

$$2\frac{1}{4} - 1\frac{5}{8}$$

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Answer 6

$1 \frac{1}{8}$

$$1 \frac{3}{4} = \frac{22}{8} \text{ and } \frac{5}{8} = \frac{5}{8}.$$

$$\frac{22}{8} - \frac{13}{8} = \frac{9}{8} = 1 \frac{1}{8}.$$

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Question 7

Which fraction is equivalent to $\frac{4}{9}$ and has a denominator of 36?

A. $\frac{8}{5}$ B. $\frac{12}{36}$ C. $\frac{5}{36}$ D. $\frac{20}{36}$

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Answer 7

C. 16/3

Multiply the numerator and denominator of $\frac{4}{9}$ by 4.

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Question 8

Short answer

A tank was $\frac{2}{3}$ emptied in the morning and $\frac{1}{4}$ in the afternoon.

What fraction was emptied altogether?



Answer 8

$\frac{5}{8}$

$$\frac{3}{8} + \frac{1}{4} = \frac{3}{8} + \frac{2}{8} = \frac{5}{8}$$

PREVIEW



Question 9

Choose the correct answer.

$\frac{11}{12} \times \frac{2}{9}$

A. $\frac{25}{36}$ B. $\frac{1}{3}$ C. $\frac{7}{18}$ D. $\frac{29}{36}$



Answer 9

A. $\frac{25}{36}$

$$\frac{1}{12} = \frac{33}{36} \text{ and } \frac{2}{9} = \frac{8}{36}.$$

$$\frac{33}{36} - \frac{8}{36} = \frac{25}{36}.$$



Question 10

Short answer

A student says $\frac{2}{5} + \frac{1}{10} = \frac{3}{15}$. What should they do, and what is the correct answer?



Answer 10

Use a common denominator of 10.

$$\frac{2}{5} = \frac{4}{10} \text{ so } \frac{4}{10} - \frac{1}{2} = \frac{4}{10} - \frac{5}{10} = -\frac{1}{10} = -\frac{1}{10}.$$

PREVIEW





PREVIEW

Well Done!