

Reasoning and Problem Solving

Step 7: Subtract 2 Fractions

National Curriculum Objectives:

Mathematics Year 4: (4F4) [Add and subtract fractions with the same denominator](#)

Differentiation:

Questions 1, 4 and 7 (Reasoning)

Developing Explain a mistake in a word problem involving subtracting 2 fractions with the same denominator, no mixed numbers or improper fractions.

Expected Explain a mistake in a word problem involving subtracting 2 fractions with the same denominator, with mixed numbers or improper fractions.

Greater Depth Explain a mistake in a word problem involving subtracting 2 fractions where some of the denominators are double or half the starting fraction. Using mixed numbers and improper fractions.

Questions 2, 5 and 8 (Problem Solving)

Developing Choose from 3 digit cards to solve a subtraction problem with 2 fractions with the same denominator, no mixed numbers or improper fractions.

Expected Choose from 4 digit cards to solve a subtraction problem with 2 fractions with the same denominator, with mixed numbers or improper fractions.

Greater Depth Choose from 5 digit cards to solve a subtraction problem with 2 fractions where some of the denominators are double or half the starting fraction. Using mixed numbers and improper fractions.

Questions 3, 6 and 9 (Reasoning)

Developing Explain a mistake in a calculation involving subtracting 2 fractions with the same denominator, no mixed numbers or improper fractions. Images provided for support.

Expected Explain a mistake in a calculation involving subtracting 2 fractions with the same denominator, with mixed numbers and improper fractions. Images provided for support.

Greater Depth Explain a mistake in a calculation involving subtracting 2 fractions where some of the denominators are double or half the starting fraction. Using mixed numbers and improper fractions. No images provided.

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Subtract 2 Fractions

Subtract 2 Fractions

1a. Solve the problem below.

James runs $\frac{4}{6}$ of a mile in a race.

Sofia runs $\frac{3}{6}$ of a mile less than James.

Zain thinks that Sofia has run $\frac{2}{6}$ of a mile.

Is he correct? Explain your answer.



R

1b. Solve the problem below.

Fozia measures $\frac{8}{9}$ of a metre of string.

Kevin measures $\frac{5}{9}$ of a metre less than Fozia.

Ellie thinks that Kev has measured $\frac{4}{9}$ of a metre.

Is she correct? Explain your answer.



R

2a. Use the digit cards to complete this calculation.

2	3	5
□	-	□
7	7	7



PS

2b. Use the digit cards to complete this calculation.

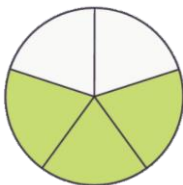
3	4	7
□	-	□
8	8	8



PS

3a. Has Amelia worked this calculation out correctly?

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



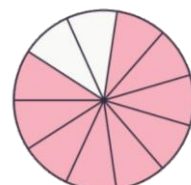
Explain how you know.



R

3b. Has Karlos worked this calculation out correctly?

$$\frac{9}{11} - \frac{2}{11} = \frac{7}{0}$$



Explain how you know.



R

Subtract 2 Fractions

Subtract 2 Fractions

4a. Solve the problem below.

Rene walks $1 \frac{1}{5}$ miles to school.

Rabina walks $\frac{3}{5}$ less than Rene.

Emily thinks that Rabina walks $\frac{2}{5}$ of a mile.

Is she correct? Explain your answer.



R

4b. Solve the problem below.

Freddie drinks $\frac{10}{10}$ of a litre of water.

Anna drinks $\frac{7}{10}$ of a litre less than Freddie.

Adam thinks that Anna has drunk $\frac{4}{10}$ of a litre.

Is he correct? Explain your answer.



R

5a. Use the digit cards to complete this calculation. You can use each card more than once if you wish.

5 7 12 3

$$\begin{array}{r} 15 \\ \hline \square \\ \hline \end{array} - \begin{array}{r} \square \\ \hline \square \\ \hline \end{array} = \begin{array}{r} \square \\ \hline \square \\ \hline \end{array}$$



PS

5b. Use the digit cards to complete this calculation. You can use each card more than once if you wish.

9 6 4 13

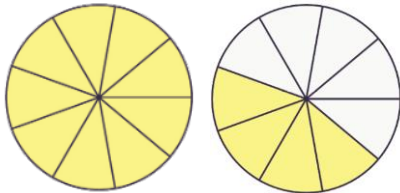
$$\begin{array}{r} 19 \\ \hline \square \\ \hline \end{array} - \begin{array}{r} \square \\ \hline \square \\ \hline \end{array} = \begin{array}{r} \square \\ \hline \square \\ \hline \end{array}$$



PS

6a. Has Suresh worked this calculation out correctly?

$$\frac{13}{9} - \frac{5}{9} = \frac{7}{9}$$



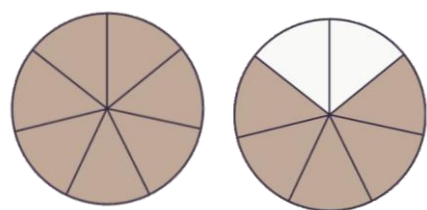
Explain how you know.



R

6b. Has Mikaela worked this calculation out correctly?

$$\frac{12}{7} - \frac{3}{7} = \frac{15}{7}$$



Explain how you know.



R

Subtract 2 Fractions

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7a. Solve the problem below.

Evie cycles $1 \frac{4}{10}$ miles around a park.

Jakub cycles $\frac{2}{5}$ less than Evie.

Sobia thinks that Jakub has cycled $\frac{2}{5}$ of a mile.

Is she correct? Explain your answer.



R

7b. Solve the problem below.

Sam's pen weighs $\frac{8}{6}$ of a kilogram.

Lida's pen weighs $\frac{10}{12}$ less than Sam's.

Ali thinks that Lida's pen weighs $\frac{5}{12}$ of a kilogram.

Is he correct? Explain your answer.



R

8a. Use the digit cards to complete this calculation. You can use each card more than once if you wish.

4 2 6 0 8

$$\begin{array}{r} \square \\ \hline 4 \end{array} - \begin{array}{r} \square \\ \hline 8 \end{array} = \begin{array}{r} \square \\ \hline \square \end{array}$$



PS

8b. Use the digit cards to complete this calculation. You can use each card more than once if you wish.

0 6 4 12 8

$$\begin{array}{r} \square \\ \hline 6 \end{array} - \begin{array}{r} \square \\ \hline 12 \end{array} = \begin{array}{r} \square \\ \hline \square \end{array}$$



PS

9a. Has Paulina worked this calculation out correctly?

$$\frac{16}{20} - \frac{6}{10} = \frac{6}{20}$$

Explain how you know.



R

9b. Has Alfie worked this calculation out correctly?

$$\frac{6}{7} - \frac{10}{14} = \frac{4}{7}$$

Explain how you know.



R

Reasoning and Problem Solving

Subtract 2 Fractions

Developing

1a. No; $\frac{4}{6} - \frac{3}{6} = \frac{1}{6}$

2a. $\frac{5}{7} - \frac{2}{7} = \frac{3}{7}$ or $\frac{5}{7} - \frac{3}{7} = \frac{2}{7}$

3a. No, she has used addition instead of subtraction.

Expected

4a. No, $\frac{6}{5} - \frac{3}{5} = \frac{3}{5}$.

5a. Various answers, for example:

$$\frac{15}{7} - \frac{12}{7} = \frac{3}{7}$$

6a. No, because $\frac{13}{9} - \frac{5}{9} = \frac{8}{9}$.

Greater Depth

7a. No; $\frac{14}{10} - \frac{4}{10} = \frac{10}{10}$ (also accept simplified answers).

8a. Various answers, for example:

$$\frac{6}{4} - \frac{8}{8} = \frac{4}{8}$$

9a. No, because $\frac{16}{20} - \frac{12}{20} = \frac{4}{20}$ or $\frac{2}{10}$.

Reasoning and Problem Solving

Subtract 2 Fractions

Developing

1b. No; $\frac{8}{9} - \frac{5}{9} = \frac{3}{9}$

2b. $\frac{7}{8} - \frac{4}{8} = \frac{3}{8}$ or $\frac{7}{8} - \frac{3}{8} = \frac{4}{8}$

3b. No, he has subtracted the denominators, as well as the numerators.

Expected

4b. No, $\frac{10}{10} - \frac{7}{10} = \frac{3}{10}$.

5b. Various answers, for example:

$$\frac{19}{4} - \frac{13}{4} = \frac{6}{4}$$

6b. No, because $\frac{12}{7} - \frac{3}{7} = \frac{9}{7}$.

Greater Depth

7b. No; $\frac{16}{12} - \frac{10}{12} = \frac{6}{12}$ (also accept simplified answers).

8b. Various answers, for example:

$$\frac{6}{6} - \frac{4}{12} = \frac{4}{6}$$

9b. No, because $\frac{12}{14} - \frac{10}{14} = \frac{2}{14}$ or $\frac{1}{7}$.