Reasoning and Problem Solving
Step 10: Add Fractions

National Curriculum Objectives:

Mathematics Year 5: (5F2a) Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number [for example, 2/5 + 4/5 = 6/5 = 1 1/5]

Mathematics Year 5: (5F4) Add and subtract fractions with the same denominator and denominators that are multiples of the same number

Differentiation:

Questions 1, 4 and 7 (Reasoning)
Developing Explain whether a calculation of 3 fractions is true or false. Denominators are the same or halves or doubles of each other.
Expected Explain whether a calculation of 3 fractions is true or false. Denominators are multiples of the same number.
Greater Depth Explain whether a calculation of 3 fractions is true or false. Denominators are not multiples of the same number but have common factors.

Questions 2, 5 and 8 (Problem Solving)
Developing Find more than one combination of 3 fractions, from a choice of 4, whose sum is below a given limit (> 1). Denominators are the same or halves or doubles of each other.
Expected Find more than one combination of 3 fractions, from a choice of 4, whose sum is below a given limit (> 1). Denominators are multiples of the same number.
Greater Depth Find more than one combination of 3 fractions, from a choice of 4, with a sum falling within a given range (> 1). Denominators are not multiples of the same number but have common factors.

Questions 3, 6 and 9 (Problem Solving)
Developing Find 3 possible solutions to a fraction riddle by adding fractions whose denominators are the same or halves or doubles of each other.
Expected Find 3 possible solutions to a fraction riddle when adding fractions. Denominators are multiples of the same number.
Greater Depth Find 3 possible solutions to a fraction riddle when adding fractions. Denominators are not multiples of the same number but have common factors.

More Year 5 Fractions resources.

Did you like this resource? Don't forget to review it on our website.

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Add Fractions

1a. True or false? Explain your answer.

$$\frac{2}{3} + \frac{1}{3} + \frac{5}{6} = 1\frac{8}{12}$$

R

1b. True or false? Explain your answer.

$$\frac{3}{5} + \frac{4}{5} + \frac{9}{10} = 2\frac{5}{10}$$

R

2a. Select 3 fractions which add up to no more than $1\frac{5}{8}$.

| $\frac{3}{8}$ | $\frac{5}{8}$ | $\frac{1}{4}$ | $\frac{3}{4}$ |

Find more than one answer.

PS

2b. Select 3 fractions which add up to no more than $1\frac{4}{6}$.

| $\frac{1}{6}$ | $\frac{2}{3}$ | $\frac{5}{6}$ | $\frac{1}{3}$ |

Find more than one answer.

PS

3a. Find 3 possible solutions to the riddle.

I have 3 proper fractions, their sum is greater than $1\frac{1}{8}$.

Each denominator is the same even single digit below 5.

What could my fractions be?

PS

3b. Find 3 possible solutions to the riddle.

I have 3 proper fractions, their sum is between $1\frac{1}{3}$ and $2\frac{1}{3}$.

Each denominator is a multiple of 3, and less than 7. All numerators are the same single digit.

What could my fractions be?

PS

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Reasoning and Problem Solving – Add Fractions – Year 5 Developing

4a. True or false? Explain your answer.

$$\frac{3}{4} + \frac{11}{12} + \frac{7}{24} = 1\frac{21}{24}$$

E · R

4b. True or false? Explain your answer.

$$\frac{3}{9} + \frac{2}{3} + \frac{10}{15} = \frac{25}{15}$$

E · R

5a. Select 3 fractions which add up to no more than $1\frac{1}{2}$.

$$\frac{2}{6} \quad \frac{2}{3} \quad \frac{13}{24} \quad \frac{5}{12}$$

Find more than one answer.

E · PS

5b. Select 3 fractions which add up to no more than $1\frac{9}{10}$.

$$\frac{2}{5} \quad \frac{7}{10} \quad \frac{9}{20} \quad \frac{7}{15}$$

Find more than one answer.

E · PS

6a. Find 3 possible solutions to the riddle.

I have 3 proper fractions, their sum is $\frac{1}{4}$ greater than $1\frac{5}{8}$.

Each denominator is a different, single digit and a multiple of 2.

What could my fractions be?

E · PS

6b. Find 3 possible solutions to the riddle.

I have 3 proper fractions, their sum is between 1 and $1\frac{2}{3}$.

Each denominator is a different, single digit and a multiple of 3.

What could my fractions be?

E · PS

7a. True or false? Explain your answer.

$$\frac{2}{5} + \frac{2}{3} + \frac{5}{6} = 1\frac{3}{10}$$

R

7b. True or false? Explain your answer.

$$\frac{3}{12} + \frac{7}{9} + \frac{1}{4} = 1\frac{5}{18}$$

R

8a. Select 3 fractions to make a total between $1\frac{3}{4}$ and $1\frac{11}{12}$.

$$\frac{5}{8} \quad \frac{2}{3} \quad \frac{3}{6} \quad \frac{7}{12}$$

Find more than one answer.

PS

8b. Select 3 fractions to make a total between $1\frac{1}{2}$ and 2.

$$\frac{7}{10} \quad \frac{1}{5} \quad \frac{5}{8} \quad \frac{3}{4}$$

Find more than one answer.

PS

9a. Find 3 possible solutions to the riddle.

I have 3 proper fractions, their sum is $\frac{1}{28}$ greater than $1\frac{3}{7}$.

Each denominator is a different factor of 28.

What could my fractions be?

PS

9b. Find 3 possible solutions to the riddle.

I have 3 proper fractions, their sum is between $1\frac{2}{5}$ and $1\frac{9}{10}$.

Each denominator is a different factor of 20.

What could my fractions be?

PS

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Reasoning and Problem Solving – Add Fractions – Year 5 Greater Depth

Reasoning and Problem Solving
Add Fractions

Developing

1a. False; the numerators and denominators have been added without finding common denominator.

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

2a. Various possible answers, for example:

$$\frac{3}{8} + \frac{5}{8} + \frac{1}{4} \quad \text{or} \quad \frac{3}{8} + \frac{1}{4} + \frac{3}{4}$$

3a. Various possible answers, for example:

$$\frac{1}{2} + \frac{1}{2} + \frac{1}{2} \quad \text{or} \quad \frac{1}{4} + \frac{1}{4} + \frac{3}{4} \quad \text{or} \quad \frac{1}{4} + \frac{2}{4} + \frac{3}{4}$$

Expected

4a. False; the numerators have been added without finding a common denominator.

$$\frac{3}{4} + \frac{11}{12} + \frac{7}{24} = 1\frac{23}{24}$$

5a. 2 possible answers:

$$\frac{2}{6} + \frac{2}{3} + \frac{5}{12} \quad \text{or} \quad \frac{2}{6} + \frac{13}{24} + \frac{5}{12}$$

6a. Various possible answers, for example:

$$\frac{1}{2} + \frac{3}{4} + \frac{5}{8} \quad \text{or} \quad \frac{3}{6} + \frac{3}{4} + \frac{5}{8} \quad \text{or} \quad \frac{1}{2} + \frac{2}{4} + \frac{7}{8}$$

Greater Depth

7a. False; the solution has been incorrectly simplified.

$$\frac{2}{5} + \frac{2}{3} + \frac{5}{6} = 1\frac{9}{10}$$

8a. Various possible answers, for example:

$$\frac{5}{8} + \frac{2}{3} + \frac{3}{6} \quad \text{or} \quad \frac{5}{8} + \frac{2}{3} + \frac{7}{12}$$

9a. Various possible answers, for example:

$$\frac{1}{2} + \frac{3}{4} + \frac{3}{14} \quad \text{or} \quad \frac{1}{2} + \frac{1}{4} + \frac{10}{14} \quad \text{or} \quad \frac{1}{2} + \frac{1}{4} + \frac{5}{7}$$

Reasoning and Problem Solving
Add Fractions

Developing

1b. False; they the tenths have also been doubled rather than just the fifths.

$$\frac{3}{5} + \frac{4}{5} + \frac{9}{10} = 2\frac{3}{10}$$

2b. Various possible answers, for example:

$$\frac{1}{6} + \frac{2}{3} + \frac{1}{3} \quad \text{or} \quad \frac{5}{6} + \frac{1}{6} + \frac{1}{3}$$

3b. Various possible answers, for example:

$$\frac{2}{3} + \frac{2}{3} + \frac{2}{3} \quad \text{or} \quad \frac{2}{3} + \frac{2}{3} + \frac{2}{6} \quad \text{or} \quad \frac{3}{6} + \frac{3}{6} + \frac{3}{6}$$

Expected

4b. True; the calculation is correct and presented as an improper fraction. It could also be written as a mixed number and simplified.

$$\frac{3}{9} + \frac{2}{3} + \frac{10}{15} = \frac{25}{15} = 1\frac{2}{3}$$

5b. Various possible answers, for example:

$$\frac{2}{5} + \frac{7}{10} + \frac{9}{20} \quad \text{or} \quad \frac{2}{5} + \frac{7}{10} + \frac{7}{15}$$

6b. Various possible answers, for example:

$$\frac{1}{3} + \frac{4}{6} + \frac{3}{9} \quad \text{or} \quad \frac{1}{3} + \frac{2}{6} + \frac{6}{9} \quad \text{or} \quad \frac{2}{3} + \frac{2}{6} + \frac{3}{9}$$

Greater Depth

7b. True; the calculation is correct and presented in its simplest form.

$$\frac{3}{12} + \frac{7}{9} + \frac{1}{4} = \frac{46}{36} = 1\frac{10}{36} = 1\frac{5}{18}$$

8b. 2 possible answers:

$$\frac{7}{10} + \frac{1}{5} + \frac{3}{4} \quad \text{or} \quad \frac{1}{5} + \frac{5}{8} + \frac{3}{4}$$

9b. Various possible answers, for example:

$$\frac{1}{2} + \frac{2}{4} + \frac{3}{5} \quad \text{or} \quad \frac{1}{2} + \frac{1}{5} + \frac{9}{10} \quad \text{or} \quad \frac{2}{4} + \frac{2}{5} + \frac{7}{10}$$

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