

5-3 Adding and Subtracting Fractions with Like Denominators - Practice and Problem Solving

Add or subtract. Write in simplest form.

9. $\frac{5}{7} + \frac{6}{7}$

$$\begin{aligned}\frac{5}{7} + \frac{6}{7} &= \frac{5+6}{7} \\ &= \frac{11}{7} \\ &= 1\frac{4}{7}\end{aligned}$$

11. $\frac{1}{9} + \frac{5}{9}$

$$\begin{aligned}\frac{1}{9} + \frac{5}{9} &= \frac{1+5}{9} \\ &= \frac{6}{9} \quad \text{or} \quad \frac{2}{3}\end{aligned}$$

13. $\frac{15}{16} + \frac{7}{16}$

$$\begin{aligned}\frac{15}{16} + \frac{7}{16} &= \frac{15+7}{16} \\ &= \frac{22}{16} \\ &= 1\frac{6}{16} \text{ or } 1\frac{3}{8}\end{aligned}$$

15. $\frac{5}{8} - \frac{3}{8}$

$$\begin{aligned}\frac{5}{8} - \frac{3}{8} &= \frac{5-3}{8} \\ &= \frac{2}{8} \text{ or } \frac{1}{4}\end{aligned}$$

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

$$\begin{aligned}\frac{5}{9} - \frac{2}{9} &= \frac{5-2}{9} \\ &= \frac{3}{9} \text{ or } \frac{1}{3}\end{aligned}$$

19. $\frac{15}{18} - \frac{13}{18}$

$$\begin{aligned}\frac{15}{18} - \frac{13}{18} &= \frac{15-13}{18} \\ &= \frac{2}{18} \text{ or } \frac{1}{9}\end{aligned}$$

21. **COOKING** A recipe for Michigan blueberry pancakes calls for $\frac{3}{4}$ cup flour, $\frac{1}{4}$ milk, and $\frac{1}{4}$ cup blueberries. How much more flour is needed than milk?

$$\begin{aligned}\frac{3}{4} - \frac{1}{4} &= \frac{3-1}{4} \\ &= \frac{2}{4} \text{ or } \frac{1}{2}\end{aligned}$$

So, $\frac{1}{2}$ cup more of flour is needed than milk.

ANALYZE TABLES Use the table and the information below.

The table shows the Instant Messenger abbreviations that students use the most at Hillside Middle School.

Instant Messenger Abbreviations	
L8R (Later)	$\frac{48}{100}$
LOL (Laughing out loud)	$\frac{26}{100}$
BRB (Be right back)	$\frac{19}{100}$
CUL8R (See you later)	$\frac{7}{100}$

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23. What fraction of these students use L8R or BRB when using Instant Messenger?

$$\frac{48}{100} + \frac{19}{100} = \frac{48+19}{100}$$
$$= \frac{67}{100}$$

$\frac{67}{100}$ of the students use L8R or BRB when using Instant Messenger.

Use the order of operations to add or subtract. Write in simplest form.

25. $\frac{7}{8} + \frac{5}{8} - \frac{1}{8}$

$$\frac{7}{8} + \frac{5}{8} - \frac{1}{8} = \frac{7+5-1}{8}$$
$$= \frac{11}{8} \text{ or } 1\frac{3}{8}$$

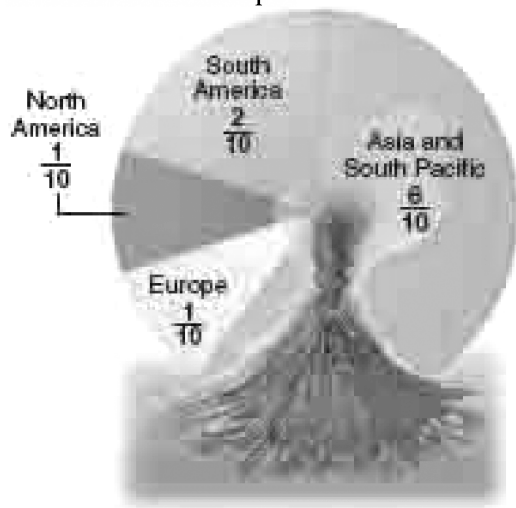
Write an addition or subtraction expression for each model. Then add or subtract.

27. 

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

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29. **ANALYZE GRAPHS** The graph shows the location of volcanic eruptions in 2006. What fraction represents the volcanic eruptions for both North and South America? How much larger is the section for Asia and South Pacific than for Europe?



$$\frac{1}{10} + \frac{2}{10} = \frac{1+2}{10}$$

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

$\frac{3}{10}$ represents the volcanic eruptions for both North and South America.

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

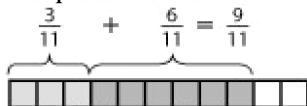
$$= \frac{5}{10} \text{ or } \frac{1}{2}$$

The section for Asia and South Pacific is $\frac{1}{2}$ larger than the part for Europe.

Draw a model for each expression. Then add or subtract.

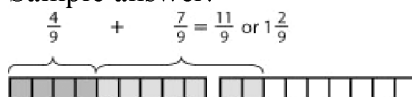
31. $\frac{3}{11} + \frac{6}{11}$

Sample answer:



33. $\frac{4}{9} + \frac{7}{9}$

Sample answer:



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35. **CHALLENGE** Simplify the following expression.

$$\frac{14}{15} + \frac{13}{15} - \frac{12}{15} + \frac{11}{15} - \frac{10}{15} + \cdots - \frac{4}{15} + \frac{3}{15} - \frac{2}{15} + \frac{1}{15}$$

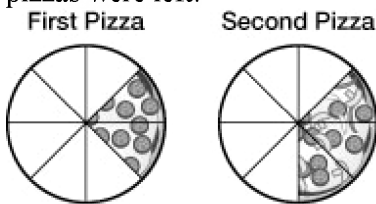
Notice the pattern:

$$\frac{14}{15} + \frac{13}{15} - \frac{12}{15} + \frac{11}{15} - \frac{10}{15}$$

$$\frac{14+13-12+11-10+9-8+7-6+5-4+3-2+1}{15} = \frac{21}{15}$$

$$\frac{21}{15} = 1\frac{2}{5}$$

37. A group of friends bought two large pizzas and ate only part of each pizza. The pictures show how much of the pizzas were left.



How many pizzas did they eat?

- A $\frac{3}{8}$
B $\frac{5}{8}$
C $1\frac{1}{4}$
D $1\frac{3}{8}$

They ate 6 pieces of 8 from the first pizza and 5 pieces of 8 from the second pizza.

$$\frac{6}{8} + \frac{5}{8} = \frac{6+5}{8}$$
$$= \frac{11}{8} \text{ or } 1\frac{3}{8}$$

The answer is D.

39. **SCHOOL** Three students need to give their presentation in science class. How many different ways can the teacher arrange the presentations?

The three students can present in the following orders:

- 1, 2, 3
1, 3, 2
2, 3, 1
2, 1, 3
3, 1, 2
3, 2, 1

The teacher can arrange the presentations in 6 different ways.

Round each number to the nearest half

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41. $\frac{1}{12}$

Since 1 is a lot smaller than 12, we round down to the previous whole number. 0

43. **GAMES** Find the area of a rectangular game board that is 25 inches long and 11 inches wide.

The area of the rectangular board is the product of its length and its width.

$$\begin{aligned} A &= 25 \cdot 11 \\ &= 275 \text{ in.}^2 \end{aligned}$$

PREREQUISITE SKILL Find the LCD for each pair of fractions.

45. $\frac{2}{3}$ and $\frac{1}{2}$

The LCM of 3 and 2 is 6. So, the LCD of $\frac{2}{3}$ and $\frac{1}{2}$ is 6.

47. $\frac{4}{5}$ and $\frac{2}{9}$

The LCM of 5 and 9 is 45. So, the LCD of $\frac{4}{5}$ and $\frac{2}{9}$ is 45.