

The following problems require you to add or subtract fractions. Remember, the **denominators** (bottom numbers) must be the same, and they don't change in the answers. You simply add or subtract the **numerators** (top numbers).

Examples:

$$1/3 + 1/3 = 2/3$$

$$18/20 - 3/20 = 15/20$$

Fractions that have the same numbers for denominators are called **like fractions**.

Also, it's important to know that one whole thing or set (the number one) can be represented by any fraction where the **numerator and denominator are the same**.

Examples:

$$4/4 = 1$$

$$2/2 = 1$$

$$10/10 = 1$$

That means, for example, that $1 - 2/5 = 3/5$
(One minus two fifths equals three fifths),
because $5/5 - 2/5 = 3/5$.

It is also equally important to know that mixed numerals can be represented containing like fractions.

Examples:

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

$$3 \frac{3}{4} + 3 \frac{1}{4} = 6 \frac{4}{4} = 7$$

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

$$8 - 4 \frac{7}{8} = 7 \frac{8}{8} - 4 \frac{7}{8} = 3 \frac{1}{8}$$

Try These:

1. $5 \frac{1}{4} + 3 \frac{1}{4} =$ _____

2. $7 \frac{1}{8} + 4 \frac{3}{8} =$ _____

3. $7 \frac{3}{4} - 2 \frac{1}{4} =$ _____

4. $8 - 6 \frac{1}{2} =$ _____

5. $10 \frac{2}{3} + 8 \frac{1}{3} =$ _____

6. $12 \frac{3}{4} - 9 \frac{1}{4} =$ _____

Using the **Think, Solve, Explain** method of problem solving.

Example 1:

Jon ate $\frac{2}{5}$ of a bag of M & M's, while Mary ate only $\frac{1}{5}$ of the bag. The remainder of the bag was left for Susan. What fraction of the bag did Susan eat?

Think: Remainder means subtraction.

Solve: $\frac{2}{5} + \frac{1}{5} = \frac{3}{5}$ of the bag eaten

$\frac{5}{5} - \frac{3}{5} = \frac{2}{5}$ of the bag left for Susan

Explain: $\frac{5}{5}$ represents the whole bag. Find the total amount eaten by Jon and Mary, then subtract from the whole bag to determine how much is left.

Using the **Think, Solve, Explain** method of problem solving.

Example 2:

Steven has $\frac{5}{16}$ of the material needed to complete a project. Mark has $\frac{3}{16}$ less than the amount Steven has. Cliff has $\frac{1}{16}$ more than Steven and Mark put together. What fraction of the total material needed do the three boys have altogether?

Think: Less than means subtraction.

Put together & total mean add.

Solve: $\frac{5}{16} - \frac{3}{16} = \frac{2}{16}$

$\frac{1}{16} + \frac{5}{16} + \frac{2}{16} = \frac{8}{16}$

$\frac{5}{16} + (\frac{2}{16} + \frac{8}{16}) = \frac{15}{16}$

Explain: Calculate the amount Mark has by subtracting $\frac{5}{16} - \frac{3}{16}$. Add $\frac{1}{16}$ to the total for Steven and Mark to get Cliff's portion. Then add the 3 boy's totals for the final answer.



Working with Like

Fractions



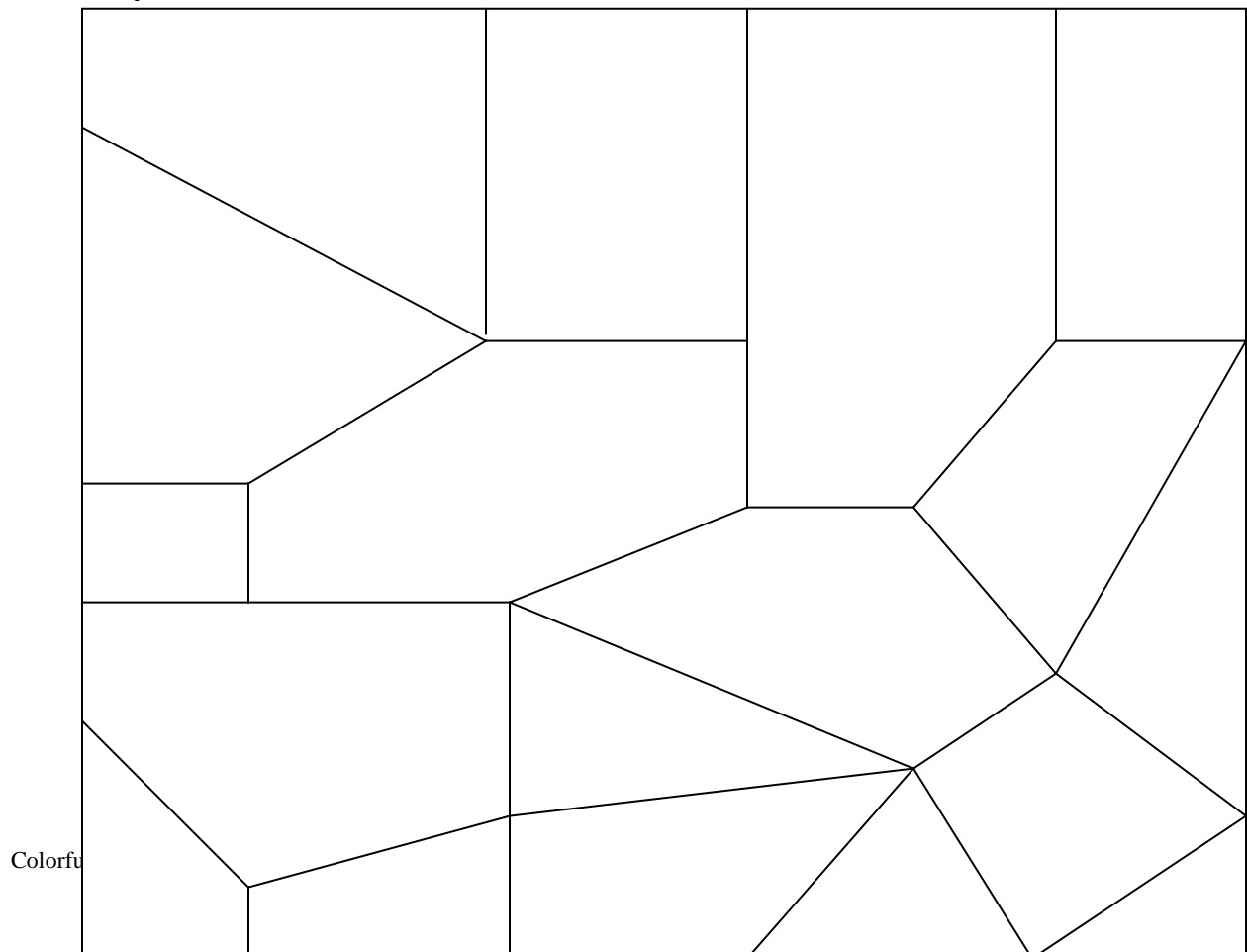
Coloring Activity

Name: _____

Date: _____

Color the number of sections as indicated below. Read very carefully.
Total number of sections is 18.

1. Color the sum of $\frac{1}{18}$ and $\frac{3}{18}$ red.
2. Color the difference between $\frac{11}{18}$ and $\frac{9}{18}$ blue.
3. $\frac{5}{18}$ plus $\frac{12}{18}$ less $\frac{14}{18}$ should be colored yellow.
4. Let's don't forget purple! $\frac{1}{18} + \frac{3}{18} + \frac{1}{18} =$ the number to be colored purple.
5. For the last sections to be colored, let's use green. $\frac{15}{18}$ less than $\frac{19}{18}$ is exactly what I mean.



Using Like Fractions

Name: _____

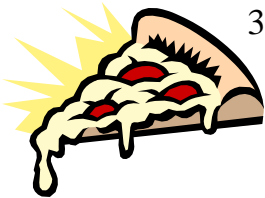
Date: _____

The objective to this lesson is to practice where like fractions are actually used in real-life situations. All work must be shown in Think, Solve, Explain format! Remember to leave all fractions in simplest form.

1. Morgan lives $\frac{7}{10}$ of a mile from school. He is walking to school from home and still has $\frac{4}{10}$ of a mile to go. How far has he already walked?



2. Morgan will walk home from school this afternoon. How far is the round trip (home to school and back home)?



3. Kathy, Karen, and Kevin ordered a pizza to share. The pizza was cut into twelve equal slices. By the time Kevin came to the table, Kathy had eaten $\frac{7}{12}$ of the pizza and Karen had eaten $\frac{5}{12}$ of it. How much pizza was left for Kevin?

4. Tony asked Sharon to get her a tack that she needed to repair their small bench. "It can't be any longer than $\frac{3}{8}$ of an inch," he said. Sharon returned with a tack that was $\frac{1}{2}$ inch ($\frac{1}{2}$ inch = $\frac{4}{8}$ inch) long. Tony was upset because the tack was _____ of an inch too long.



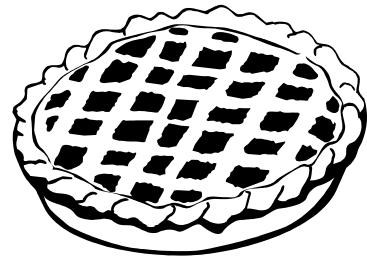
5. Mr. Champion bought a box of chocolate chip cookies. He immediately ate 10 of the cookies with a cup of coffee. If the box contained two dozen cookies, what fraction of the box was left uneaten?

Using Like Fractions 2

Name: _____ Date: _____

Solve each of the following. Show all work in Think, Solve, Explain format! Use separate paper, if necessary.

1. Ryan and his mother baked a large blueberry pie. Ryan ate one third of the pie, his mother also ate one third of the pie. What fraction of the pie did they both eat?



2. What fraction of the pie was left?

3. An alien from a far off planet landed her spacecraft on Earth. She had left her planet with a full tank of super interplanetary fuel. She knew that she'd need at least $\frac{3}{8}$ of that fuel to return home from Earth. She used half ($\frac{1}{2} = \frac{4}{8}$) a tank of fuel to get here. How much of the original supply of fuel would she still have when she arrived home?

4. Miss Joan had her students draw pictures of their favorite pet. Five twenty-thirds of the students used colored pencils, $\frac{4}{23}$ used crayons, and the rest of the class used paint. What fraction of the class did not use paint to draw the pictures?



5. What fraction of the class used paint to draw the pictures?

Using Like Fractions

Name: **-Answer Key-**

Date: _____

The objective to this lesson is to practice where like fractions are actually used in real-life situations. All work must be shown!
Remember to leave all fractions in simplest terms.

1. Thomas lives $\frac{7}{10}$ of a mile from school. He is walking to school from home and still has $\frac{4}{10}$ of a mile to go. How far has he already walked?



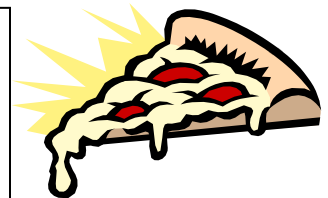
Think: subtraction
Solve: $\frac{7}{10} - \frac{4}{10} = \frac{3}{10}$ of a mile walked
Explain: The distance already walked must be the difference in the total distance and the distance left.

2. Morgan will walk home from school this afternoon. How far is the round trip (home to school and back home)?

Think: addition
Solve: $\frac{4}{10} + \frac{4}{10} = \frac{8}{10} = \frac{4}{5}$ of a mile
Explain: A round trip would be the total distance to and from school.

3. Kathy, Karen, and Kevin ordered a pizza to share. By the time Kevin came to the table, Kathy had eaten $\frac{7}{12}$ of the pizza and Karen had eaten $\frac{5}{12}$ of it. How much pizza was left for Kevin?

Think: whole = $\frac{12}{12}$
subtraction (key word – left)
Solve: $\frac{12}{12} - (\frac{7}{12} + \frac{5}{12}) = \frac{12}{12} - \frac{12}{12} = 0$ left.
They had eaten it all!
Explain: Find the total fraction eaten and subtract it from the whole.



4. Tony asked Sharon to get him a tack that he needed to repair their small bench. "It can't be any longer than $\frac{3}{8}$ of an inch," he said. Sharon returned with a tack that was $\frac{5}{8}$ inch long. Tony was upset because the tack was _____ of an inch too long.



Think: subtraction
Solve: $\frac{5}{8} - \frac{3}{8} = \frac{2}{8} = \frac{1}{4}$ inch too long
Explain: Longer than would mean a comparison, so I must use subtraction to calculate the difference.

5. Mr. Champion bought a box of chocolate chip cookies. He immediately ate 10 of the cookies with a cup of coffee. If the box contained two dozen cookies, what fraction of the box was left uneaten?

Think: multiply & subtraction
Solve: Two dozen = $2(12) = 24$ Since $\frac{24}{24}$ represents the whole box, then $\frac{24}{24} - \frac{10}{24} = \frac{14}{24} = \frac{7}{12}$ of the box was left.
Explain: Recognizing 1 dozen = 12 cookies, multiply 12 times 2 to get the total number of cookies. Represent the total number as a fraction and the number of cookies eaten as a fraction. Subtract the two fractions to find what fraction of the box was left uneaten.

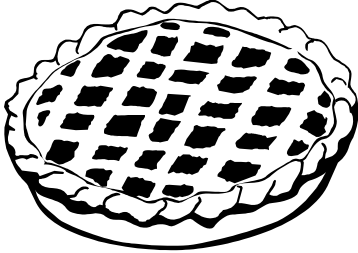


Name: **-Answer Key-**

Date: _____

Solve each of the following. Show work!

1. Ryan and his mother baked a large blueberry pie. Ryan ate one third of the pie, his mother also ate one third of the pie. What fraction of the pie did they both eat?



Think:	addition
Solve:	$\frac{1}{3} + \frac{1}{3} = \frac{2}{3}$ of the pie was eaten.
Explain:	Both means all together, so you add the two fractions.

2. What fraction of the pie was left?

Think:	subtraction
Solve:	$\frac{3}{3} - \frac{2}{3} = \frac{1}{3}$ of the pie was left.
Explain:	Represent the whole pie as a fraction and subtract what was eaten.

3. An alien from a far off planet landed her spacecraft on Earth. She had left her planet with a full tank of super interplanetary fuel. She knew that she'd need at least $\frac{3}{8}$ of that fuel to return home from Earth. She used half ($\frac{1}{2} = \frac{4}{8}$) a tank of fuel to get here. She figured that she would still have _____ of the original supply of fuel when she arrived home.

- a. none
- b. $\frac{4}{8}$
- c. $\frac{7}{8}$
- d. $\frac{1}{8}$

Think:	subtraction
Solve:	$\frac{4}{8} - \frac{3}{8} = \frac{1}{8}$ (d)
Explain:	The correct answer would be d . Since she used $\frac{1}{2}$ of a tank to get here, that would leave her $\frac{1}{2}$ of a tank to get home. Therefore, $\frac{4}{8} - \frac{3}{8} = \frac{1}{8}$ of a tank left

4. Miss Joan had her students draw pictures of their favorite pets. Five twenty-thirds of the students used colored pencils, $\frac{4}{23}$ used crayons, and the rest of the class used paint. What fraction of the class did not use paint to draw the pictures?



Think: The question asked for who did NOT use paint. So, use addition.

Solve: $\frac{5}{23} + \frac{4}{23} = \frac{9}{23}$ of the class did not use paint.

Explain: Since pencils and crayons are not paint, it is just a matter of adding the two fractions.

5. What fraction of the class used paint to draw the pictures?

Think: subtraction

Solve: $\frac{23}{23} - \frac{9}{23} = \frac{14}{23}$ of the class used paint.

Explain: Subtract the fraction of the class that did not use paint from the whole class to get the fraction that used paint.

Assessing What You Have Learned



Name: _____

Date: _____

The following is a sample problem that might be encountered in a real-world situation. Read the problem carefully and find the solution using the Think, Solve, Explain format. All work must be organized and legible.

While installing water pipes, a plumber used pieces of pipe measuring $2\frac{3}{4}$ feet, $4\frac{1}{4}$ feet, $3\frac{3}{4}$ feet, and $1\frac{1}{4}$ feet. How much pipe would remain if these pieces were cut from a 14-foot length of pipe? (Ignore waste in cutting.)

Think: (What arithmetic operations are needed?)

Solve: (Show all arithmetic steps needed to solve the problem.)

Explain: (Be clear in your explanation. Make all responses in complete sentences.)

Rubric for Assessment of Adding/Subtracting Like Fractions

Name: _____

Date: _____

Criteria				
	3	2	1	Rating
Basic Arithmetic	Student makes no errors in basic arithmetic skills.	Student makes 1 error in basic arithmetic skills.	Student makes 2 or more errors in basic arithmetic skills.	_____
Format	Student efficiently demonstrates the ability to solve problems in the Think, Solve, Explain format.	Student is inconsistent using the Think, Solve, Explain format.	Student does not use Think, Solve, Explain format.	_____
Reasoning	Student's ability to reason is of an exceptionally high standard. All work is shown and clearly defined.*	Student can arrive at the correct answer but cannot explain how the answer was obtained.	Student does not have a clue what the problem is asking.	_____
Completeness	Student completes all steps of the Think, Solve, Explain format.	Student's work is complete but, inconsistent with format.	Student's work is incomplete & inconsistent with format.	_____
Correctness	Student completes the problem and gets the correct answer.	Student completes the problem but does not get the correct answer.	Student does not arrive at an answer for the problem.	_____

*This is demonstrated through the student's ability to explain rather than just give an answer.

Teacher Comments: