

**Learning Goals**  
**Grade 7 Math**  
**Operations with Positive and Negative Decimals and**  
**Fractions**



By the end of the unit, students will be able...

1. To add and subtract positive and negative decimal numbers.
2. To multiply positive and negative decimal numbers.
3. To divide positive and negative decimal numbers.
4. To solve one step equations involving positive and negative decimals.
5. To solve two-step equations involving positive and negative decimals.
6. To find sums and differences of positive and negative fractions and mixed numbers.
7. To multiply positive and negative fractions and mixed numbers.
8. To divide positive and negative fractions and mixed numbers.
9. To solve equations involving positive and negative fractions and mixed numbers.
10. To solve two-step equations involving positive and negative fractions and mixed numbers.
11. To convert between fractions and decimals.
12. To compare and order positive and negative decimals and fractions.



Name \_\_\_\_\_

## Adding and Subtracting Positive and Negative Decimals



Find the sum or difference. Do not forget your integer rules!

1.  $-6.8 + (-1.9)$

2.  $2.489 + (-4.3)$

3.  $4.7 + 5.6$

4.  $-5 + (-7.1)$

5.  $-22.74 - (-18.18)$

6.  $-88.62 - 44.37$

7.  $0.88 + (-0.6)$

8.  $-4.21 + 2.315$

9.  $9.784 - 7.2$

10.  $-0.67 + 5.463$

11.  $-63.46 + 82.11$

12.  $26.12 - (-14.11)$

13.  $-71.86 - 68.33$

14.  $37.59 - 88.8$

15.  $-70.65 + 73.85$

16.  $74.94 + (-40.34)$

17.  $123.45 + (-98.765)$

18.  $12.57 - 30.31$

Solve for x. Be sure to balance your equations!

19.  $x + 12.3 = -17.5$

20.  $k + 72.4 = 100.2$

21.  $w - 23.64 = -12.34$

22.  $r - 36.7 = 78.2$

Solve.

23. Jack's gas credit card bill was \$80.97 for June, \$41.35 for July, and \$65.08 for August. What were his total charges for the summer?

24. The dress Regina wants to buy is \$85.15. If the price was reduced by \$12.78, how much will she pay?

Name \_\_\_\_\_

## Multiplying Positive and Negative Decimals Worksheet

$$\begin{array}{r} 0.67 \\ \times 0.4 \\ \hline 0.268 \end{array}$$

2 decimal places  
1 decimal place  
3 decimal places

Multiply. Remember to pay attention to your negative signs!

1.  $-3.2 \cdot 1.7$

2.  $21.3 * -0.003$

3.  $1.45 \cdot (-9.2)$

4.  $(-14.4)(-3.2)$

5.  $-10.4 * (-4.7)$

6.  $(-36.75)(9.8)$

7.  $0.8 * -54.71$

8.  $11.34 * -0.9$

9.  $-10.103 * 2.5$

10.  $-49.05 * -0.0005$

11.  $(-0.001)(-2)(-0.5)$

12.  $(-3)(-0.5)(7.23)$

Solve each equation. Be sure to show all work and balance!

13.  $a \div (-0.29) = 8.9$

14.  $B \div 0.7 = -8.953$

15.  $\frac{v}{-8.5} = 9.378$

16.  $\frac{m}{-3.155} = -6.4$

Solve.

17. Emily's car payments are \$215.37 per month for the next three years. What is the total amount that she will pay for her car?

18. Tyler decided that he wanted a dog. He went to the pet store and bought one for \$42.95. He also bought three bags of dog food for \$12.55 a bag. How much did Tyler spend altogether?

Name \_\_\_\_\_

Dividing Positive and Negative Decimals Worksheet

$.5 \overline{)6.85}$   
↓ ↓  
 $5 \overline{)68.5}$  →  $5 \overline{)68.5}$   
↑  
don't need

Divide. Remember to pay attention to your negative signs!

1.  $16.51 \div 2.54$

2.  $2.13 \div (-0.3)$

3.  $-9.966 \div 15.1$

4.  $-14.4 \div (-3.2)$

5.  $13.26 \div (-3)$

6.  $-36.75 \div 9.8$

7.  $-19.458 \div (-4.7)$

8.  $11.34 \div (-0.9)$

9.  $6.963 \div 2.11$

10.  $-49.05 / 4.5$

Solve each equation. Be sure to show all work and balance!

11.  $-5 m = -112.2$

14.  $0.1n = 0.313$

15.  $-1.13k = -0.2712$

16.  $2.08j = -5.3456$

Solve.

17. One cup of hot chocolate can be made with 0.18 ounces of hot chocolate mix. How many cups can be made from a 6.48 ounce canister of mix?

18. I owe my sister \$93. If I plan on paying her \$15.50 a month, how long will it be before I have paid off my debt?



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## Two-Step Decimal Equations Worksheet

Examples for Solving Two Step Equations		
Type of Equation	Step 1	Step 2
$6m - 3 = 39$	Add 3 to both sides.	Divide by 6 on both sides.
$4n + 13 = 57$	Subtract 13 from both sides.	Divide by 4 on both sides.
$\frac{m}{3} - 11 = 13$	Add 11 to both sides.	Multiply by 3 on both sides.
$\frac{m}{9} + 42 = 15$	Subtract 42 from both sides.	Multiply by 9 on both sides.

Solve each equation. Be sure to show all work and balance your equations.

1.  $9.2x + 5.514 = 158.234$

2.  $-8.38x + 10.71 = 131.382$

3.  $-9.1 + 1.7k = -3.83$

4.  $-0.3 + 7.6x = -26.14$

5.  $\frac{x}{7} - 2.4 = -4.285$

6.  $\frac{x}{10} + 0.4 = -0.791$

7.  $-3.8 + \frac{x}{5.1} = -0.25$

8.  $7.4 + \frac{x}{-31.2} = 3.34$

9.  $-13.4 - 0.5x = 10.1$

10.  $-13.9 + \frac{x}{12.8} = -13.306$

Write and solve an equation to find the answer to each of the following questions.

Pairs of Socks Kelly Bought

1. Variable

$s = \#$  of Sock Pairs

2. Equation

$2.95s + 1.75 = 10.60$

3. Solve for s

$2.95s = 8.85$

$s = 3$  pairs

4. Check

$2.95(3) + 1.75 \stackrel{?}{=} 10.60$

$8.85 + 1.75 \stackrel{?}{=} 10.60$

$10.60 = 10.60$  ✓

11. Kathy purchased colored pencils for her students. The total cost for her order was \$31.46. Each box of colored pencils costs \$3.29. The sales tax for the order is \$1.85. How many boxes of colored pencils did Kathy purchase? Let  $x$  represent the number of boxes of colored pencils.

12. Harry bought video games for his son for Christmas. Each game cost \$39.99 and the sales tax was \$7.50. Harry's total cost for the purchase was \$127.47. How many video games did Harry buy? Let  $x$  represent the number of video games.

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## Adding and Subtracting Positive and Negative Fractions

To subtract, Add the Opposite!

1. Don't change the sign of the first number.

2. Change the subtraction sign to an addition sign.

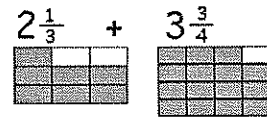
4. Now, use the rules of Addition to get the answer.

$$-5 - 4 = -5 + 4 = -9$$

3. Change the sign of the second number.

### Adding Integers Using Absolute Values:

<p>Both pos. → +</p> <p>Both neg. → -</p> $9 + 17 =  9  +  17 $ $= 9 + 17$ $= 26$ $-9 + (-17) =  -9  +  -17 $ $= 9 + 17$ $= 26$	<p>Larger # is pos. → +</p> <p>Larger # is neg. → -</p> $-9 + 17 =  17  -  -9 $ $= 17 - 9$ $= 8$ $-17 + 9 =  -17  -  9 $ $= 17 - 9$ $= 8$
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Add the whole numbers. "Store" the answer for later use.  $2 + 3 = 5$

Add the fraction parts.  $\frac{1}{3} + \frac{3}{4}$

12 is a common multiple of 3 and 4.

Change fraction #1 to an equivalent fraction with a denominator of 12.  $\frac{1 \times 4}{3 \times 4} = \frac{4}{12}$

Do the same for fraction #2.  $\frac{3 \times 3}{4 \times 3} = \frac{9}{12}$

Add the fraction parts. Convert to mixed number if necessary.  $\frac{4}{12} + \frac{9}{12} = \frac{13}{12} = 1\frac{1}{12}$

And finally, Add result of the whole number addition.  $1\frac{1}{12} + 5 = 6\frac{1}{12}$

Add or subtract. Show all work.

1.  $-3\frac{4}{7} + 9\frac{6}{7}$

2.  $7\frac{1}{3} - 18\frac{2}{3}$

3.  $-13\frac{3}{4} + (-6\frac{5}{6})$

4.  $3\frac{1}{2} + (-7\frac{7}{8})$

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

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

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

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

9.  $-3\frac{5}{8} - 4\frac{2}{5}$

10.  $2\frac{4}{5} - \frac{5}{8}$

11.  $-2\frac{7}{8} + (-1\frac{1}{2})$

12.  $1\frac{2}{7} + -3\frac{4}{7}$

13.  $-4\frac{3}{4} + 16$

14.  $-5\frac{1}{8} + 3\frac{4}{5}$

15.  $14\frac{4}{9} - 18\frac{5}{6}$

16.  $-7\frac{5}{8} + -13\frac{5}{6}$

17.  $2\frac{1}{8} - 14\frac{4}{5}$

18.  $-\frac{4}{5} - \frac{7}{8}$

19. An amusement park sold  $6\frac{1}{2}$  gallons of soda.  $2\frac{1}{5}$  gallons were regular soda, and the rest was diet soda. How many gallons of diet soda were sold?

20. Amy made a fruit salad with  $1\frac{1}{4}$  pounds of watermelon and  $5\frac{2}{3}$  pounds of berries. How many pounds of fruit did Amy use in all?

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## Multiplying Positive and Negative Fractions

### MULTIPLY FRACTIONS

**FRACTION BY A FRACTION**

<b>Step #1</b> Multiply the numerators. $\frac{2}{5} \times \frac{3}{4} = \frac{6}{20} = \frac{3}{10}$	<b>Step #2</b> Multiply the denominators. $\frac{2}{5} \times \frac{3}{4} = \frac{3}{10}$	<b>Step #3</b> Simplify. $\frac{2}{5} \times \frac{3}{4} = \frac{3}{10}$
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**FRACTION BY WHOLE #**


<b>Step #1</b> Rewrite the whole # as fraction. $1 \times \frac{5}{4} \rightarrow \frac{1}{4} \times \frac{5}{1} = \frac{5}{4}$	<b>Step #2</b> Multiply the fractions. $1 \times \frac{5}{4} = \frac{5}{4}$	<b>Step #3</b> Simplify. $1 \times \frac{5}{4} = \frac{5}{4}$
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**MIXED NUMBERS**

<b>Step #1</b> Convert mixed #s to improper fractions. $1\frac{1}{2} \times 2\frac{1}{5} \rightarrow \frac{3}{2} \times \frac{11}{5} = \frac{33}{10}$	<b>Step #2</b> Multiply the fractions. $1\frac{1}{2} \times 2\frac{1}{5} = \frac{33}{10}$	<b>Step #3</b> Convert back to mixed number. $1\frac{1}{2} \times 2\frac{1}{5} = \frac{33}{10} = 3\frac{3}{10}$
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Example 1:  $\frac{6}{17} \times \frac{34}{27}$

6 = 3 x 2  
27 = 3 x 9



Frank

17 = 17 x 1  
34 = 17 x 2



Fred

$\frac{2}{17} \times \frac{2}{9} = \frac{4}{153}$

Multiply or Divide. Show all work. Be sure to pay attention to the SIGNS on the fractions.

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

2.  $1\frac{1}{7} * \frac{7}{10}$

3.  $\frac{4}{9} * 1\frac{3}{4}$

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

5.  $-2 * \frac{3}{7}$

6.  $-2\frac{2}{3} * 4\frac{1}{10}$

7.  $-2\frac{1}{5} * -1\frac{3}{4}$

8.  $-1\frac{1}{4} * 9$

9.  $-1\frac{5}{7} * -2\frac{1}{2}$

10.  $-2\frac{3}{8} * 2\frac{1}{2}$

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

12.  $-1\frac{1}{2} * -1\frac{3}{7}$

13.  $-1\frac{4}{5} * 2$

14.  $-2 * -3\frac{4}{5}$

15.  $1\frac{6}{7} * -5\frac{3}{4}$

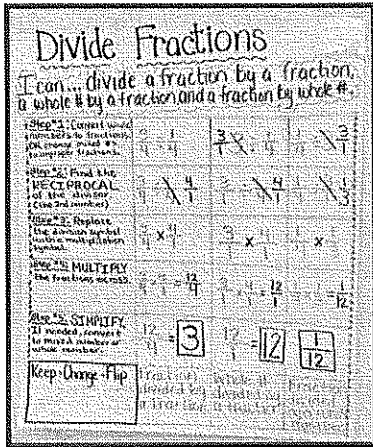
16.  $-3\frac{7}{10} * 2\frac{1}{4}$

17. Max has enough chicken to make  $8\frac{1}{2}$  servings of salad. He needs  $\frac{1}{8}$  pound of chicken per serving. How much chicken does he have?

18. The weight of an object on the moon is  $\frac{1}{6}$  its weight on Earth. If a bowling ball weighs  $12\frac{1}{2}$  pounds on Earth, how much would it weigh on the moon?

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## Dividing Positive and Negative Fractions



Example 2:  $\frac{2}{7} \div \frac{8}{21}$

$2 = 2 \times 1$   
 $8 = 2 \times 4$

$7 = 7 \times 1$   
 $21 = 7 \times 3$

$\frac{2}{7} \times \frac{21}{8} = \frac{3}{4}$

Frank

Fred

Divide. Show all work. Be sure to pay attention to the SIGNS on the fractions.

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

2.  $\frac{7}{11} \div 4\frac{1}{5}$

3.  $-14\frac{2}{3} \div -1\frac{1}{6}$

4.  $3\frac{5}{7} \div 9\frac{1}{7}$

5.  $-\frac{8}{9} \div \frac{1}{4}$

6.  $\frac{4}{9} \div 12$

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

8.  $-\frac{1}{2} \div 1\frac{1}{4}$

9.  $-1\frac{1}{2} \div -1\frac{3}{7}$

10.  $\frac{1}{2} \div 1\frac{1}{7}$

11.  $-1\frac{4}{5} \div 2$

12.  $-3\frac{5}{9} \div 3$

13.  $-2 \div -3\frac{4}{5}$

14.  $\frac{1}{9} \div -1\frac{1}{3}$

15.  $1\frac{6}{7} \div 5\frac{3}{4}$

16.  $-3\frac{7}{10} \div 2\frac{1}{4}$

17. A juicer holds  $43\frac{3}{4}$  pints of juice. How many  $2\frac{1}{2}$  pint bottles can be filled with that much juice?

18. How many  $24\frac{1}{2}$  in. pieces of ribbon can be cut from a roll of ribbon that is 147 inches long?



Name: \_\_\_\_\_

### One Step Fraction Equations with Negatives Worksheet

One Step	Two Steps
$\frac{3}{2} \cdot \frac{2}{3} x = \frac{6}{12} \cdot \frac{3}{2}$	$3 \cdot \frac{2}{3} x = 12 \cdot 3$
$x = 18$	$\frac{2x}{2} = \frac{36}{2}$
	$x = 18$

Solve each equation. Be sure to show work on both sides of the equation. Simplify your answer.

1.  $y + \frac{2}{3} = \frac{8}{9}$

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

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

4.  $x - 1\frac{1}{2} = -1\frac{1}{4}$

5.  $-\frac{3}{4}x = 2$

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

7.  $y - 4\frac{2}{5} = 2\frac{1}{4}$

8.  $z + 8\frac{5}{6} = -9\frac{7}{8}$

$$9. 2\frac{1}{10}x = 1\frac{1}{6}$$

$$10. x + 5\frac{2}{7} = 2\frac{27}{70}$$

$$11. 2\frac{5}{12} = -3\frac{1}{5} + x$$

$$12. -9\frac{1}{3} = -1\frac{2}{3}x$$

$$13. -1\frac{1}{2} + x = -3\frac{3}{10}$$

$$14. -7\frac{4}{5} = 2x$$

$$15. x - \frac{3}{4} = -2\frac{3}{4}$$

$$16. x - \frac{1}{2} = 1\frac{1}{4}$$

Name: \_\_\_\_\_

### Two Step Fraction Equations Worksheet

Solve each equation. Be sure to show work on balance your equation.

1.  $-2n + 1\frac{1}{8} = -5\frac{11}{40}$

2.  $2\frac{2}{5}x + 4\frac{1}{2} = 23\frac{2}{5}$

3.  $4\frac{1}{2}x - 1\frac{3}{4} = -19\frac{3}{16}$

4.  $5\frac{5}{6}x + 4\frac{7}{8} = 17\frac{3}{8}$

5.  $3\frac{1}{5} + 1\frac{3}{8}x = -9\frac{7}{40}$

6.  $-1\frac{3}{7}x - \frac{3}{8} = 23\frac{3}{8}$

$$7. 1\frac{1}{2}x + 2\frac{3}{4} = 5\frac{3}{4}$$

$$8. \frac{5}{8}x + \frac{5}{6} = 3\frac{11}{48}$$

$$9. \frac{2}{3}x + 4\frac{1}{2} = 4\frac{3}{10}$$

$$10. -3\frac{5}{6}x + 1 = 6\frac{3}{4}$$

Name \_\_\_\_\_

### Converting Between Fractions and Decimals

4/5 (four-fifths) as a decimal	
Divide the numerator by the denominator	$5 \overline{)4}$
Add the decimal point plus the trailing zeros	$5 \overline{)4.0}$

Convert each fraction to a decimal.

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

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

3.  $\frac{7}{15}$

4.  $2\frac{1}{9}$

5.  $3\frac{13}{15}$

6.  $1\frac{5}{16}$

Convert each decimal to a fraction.

7. 0.125

8. 0.625

9. 0.36

10. 0.55

11. 1.45

12. 5.6875

Compare using  $<$ ,  $>$ , or  $=$ .

13.  $2.5$  \_\_\_\_\_  $2\frac{13}{34}$

14.  $-8\frac{7}{8}$  \_\_\_\_\_  $-8.857$

15.  $13\frac{5}{8}$  \_\_\_\_\_  $13.6$

16.  $-7.8$  \_\_\_\_\_  $-7\frac{24}{30}$

Write in order from least to greatest.

17.  $7\frac{5}{8}$ ,  $7\frac{3}{4}$ ,  $7.775$

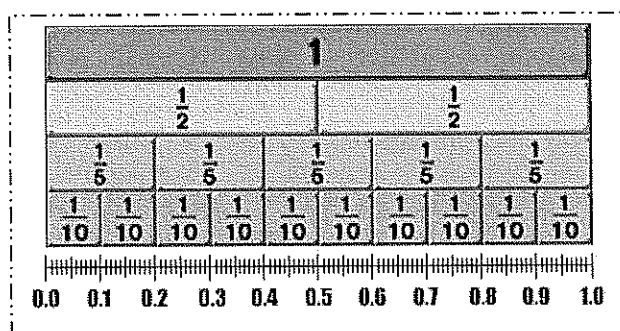
18.  $3.08$ ,  $3\frac{4}{5}$ ,  $3\frac{3}{5}$

19.  $-1.35$ ,  $-1\frac{1}{8}$ ,  $-1\frac{1}{4}$

20.  $-.030$ ,  $-\frac{33}{100}$ ,  $-.003$

Name \_\_\_\_\_

### Positive and Negative Decimals and Fractions



Find the sum, difference, product, or quotient.

1.  $-1.6 + 1\frac{7}{10}$

2.  $6.75 - 2\frac{11}{20}$

3.  $-7\frac{3}{10} - 16.53$

4.  $-8\frac{3}{4} - (-5.9)$

5.  $11 - 18.6 + (-3\frac{3}{5})$

6.  $-31.5 - (-3\frac{7}{10}) + 21$

7.  $4.5 * -2\frac{2}{7}$

8.  $-3.45 \div 1\frac{1}{2}$

$$9. -12 \cdot (-3.25) \cdot 2\frac{2}{3}$$

$$10. -6 \div (-2.5) \div \frac{2}{5}$$

Don't forget about the order of operations!

$$11. 2\frac{2}{3} + \left[ \left( -\frac{16}{9} \right) + 0.6 \right] \div 1.1$$

$$12. 2\frac{5}{7} \div 1.5 + 2\frac{1}{6} + 5$$

$$13. (-1.5) \div \left( -1\frac{1}{3} \right) + (-1.5)^2$$



L1 - Decimal and Fraction  
Unit Review

Name: \_\_\_\_\_  
Date: \_\_\_\_\_ Color: \_\_\_\_\_

1-2. Order from least to greatest. Show all work.

1.  $-\frac{5}{6}, 2.2, -0.5$

2.  $-\frac{7}{8}, 0.\bar{3}, \frac{3}{4}$

3-6. Compare using  $>$ ,  $<$ , or  $=$ . Show all work.

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

4.  $-6.45$  \_\_\_\_\_  $-6.425$

5.  $-6\frac{3}{8}$  \_\_\_\_\_  $-6.36$

6.  $-9.26$  \_\_\_\_\_  $-9\frac{2}{9}$

7-16. Find the sum, product, difference or quotient. Show all work.

7.  $-10\frac{7}{12} + (-5\frac{5}{8})$

8.  $1\frac{1}{2} - 7\frac{5}{6}$

9.  $4 * -6\frac{2}{5}$

10.  $-4\frac{1}{6} \div -3\frac{2}{3}$

11.  $-79.9 - (-16.43)$

12.  $-16 + (-19.7)$

13.  $-30.15 \div 1.5$

14.  $-6.6 * -21.21$

15.  $19.25 - -6\frac{3}{4} + 12\frac{5}{12}$

16.  $\frac{3}{5} * 15 * -2.5$

17-22. Solve each equation. Be sure to show work on both sides of the equation.

17.  $x + 4\frac{4}{7} = 3\frac{5}{14}$

18.  $-7\frac{3}{5} = -\frac{2}{5}m$

19.  $1.13d = -0.2712$

20.  $\frac{x}{4.1} = -0.15$

21.  $b + 16 = -43.216$

22.  $x - 7\frac{5}{9} = -12\frac{2}{5}$

23-24. Write and solve an equation to answer each question.

23. Patrick has \$156.89 in each checking account after writing checks to pay his bills that totaled \$478.98. How much did Patrick have in his bank account before he paid his bills? Let  $x$  represent the amount of money Patrick had in his bank account before paying his bills.

24. Christine bought Xbox games for her son for his birthday. Each game cost \$39.99 and the sales tax was \$15. She spent a total of \$254.94. How many games did Christine buy? Let  $x$  represent the number of Xbox games she bought?

25. Two boards are nailed together. One is  $\frac{7}{8}$  in. thick, the other is  $1\frac{5}{12}$  inch thick. What is their combined thickness?

26. Mr. Zamborski, the art teacher, has  $12\frac{3}{4}$  ounce jar of tempera paint. He wants to divide it equally among 6 students. How much should he give to each student?