

Lesson 1.4 Adding Fractions and Mixed Numbers

To add fractions or mixed numbers when the denominators are different, rename the fractions so the denominators are the same.

$$\begin{array}{r} \frac{2}{3} \\ + \frac{3}{7} \\ \hline \end{array} = \frac{\frac{2}{3} \times \frac{7}{7}}{+\frac{3}{7} \times \frac{3}{3}} = \frac{\frac{14}{21}}{+\frac{9}{21}} = \frac{23}{21} = 1\frac{2}{21}$$

$$\begin{array}{r} 3\frac{1}{2} \\ + 2\frac{2}{3} \\ \hline \end{array} = \frac{3\frac{3}{6}}{+ 2\frac{4}{6}} = \frac{5\frac{7}{6}}{6\frac{1}{6}}$$

Add. Write each answer in simplest form.

1.

$$\begin{array}{r} \frac{3}{4} \\ + \frac{5}{8} \\ \hline \end{array}$$

b

$$\begin{array}{r} \frac{1}{2} \\ + \frac{1}{3} \\ \hline \end{array}$$

c

$$\begin{array}{r} \frac{3}{4} \\ + \frac{2}{5} \\ \hline \end{array}$$

d

$$\begin{array}{r} \frac{1}{6} \\ + \frac{1}{3} \\ \hline \end{array}$$

2.

$$\begin{array}{r} \frac{3}{8} \\ + \frac{4}{5} \\ \hline \end{array}$$

$$\begin{array}{r} \frac{1}{2} \\ + \frac{3}{10} \\ \hline \end{array}$$

$$\begin{array}{r} \frac{2}{3} \\ + \frac{3}{12} \\ \hline \end{array}$$

$$\begin{array}{r} \frac{3}{4} \\ + \frac{7}{10} \\ \hline \end{array}$$

3.

$$\begin{array}{r} \frac{1}{4} \\ + \frac{3}{8} \\ \hline \end{array}$$

$$\begin{array}{r} \frac{2}{5} \\ + \frac{3}{7} \\ \hline \end{array}$$

$$\begin{array}{r} \frac{1}{7} \\ + \frac{7}{8} \\ \hline \end{array}$$

$$\begin{array}{r} \frac{2}{3} \\ + \frac{1}{5} \\ \hline \end{array}$$

4.

$$\begin{array}{r} 1\frac{1}{3} \\ + 2\frac{1}{4} \\ \hline \end{array}$$

$$\begin{array}{r} 3\frac{3}{8} \\ + 7\frac{1}{2} \\ \hline \end{array}$$

$$\begin{array}{r} 4\frac{2}{7} \\ + 2\frac{1}{3} \\ \hline \end{array}$$

$$\begin{array}{r} 1\frac{2}{5} \\ + 3\frac{3}{10} \\ \hline \end{array}$$

5.

$$\begin{array}{r} 4\frac{4}{9} \\ + 3\frac{1}{3} \\ \hline \end{array}$$

$$\begin{array}{r} 1\frac{1}{8} \\ + 1\frac{7}{10} \\ \hline \end{array}$$

$$\begin{array}{r} 2\frac{1}{6} \\ + 3\frac{5}{8} \\ \hline \end{array}$$

$$\begin{array}{r} 1\frac{3}{7} \\ + 2\frac{1}{5} \\ \hline \end{array}$$

6.

$$\begin{array}{r} 3\frac{1}{2} \\ + 2\frac{1}{4} \\ \hline \end{array}$$

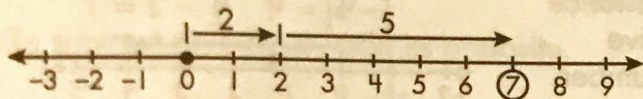
$$\begin{array}{r} 2\frac{5}{6} \\ + 1\frac{5}{9} \\ \hline \end{array}$$

$$\begin{array}{r} 3\frac{4}{7} \\ + 1\frac{1}{10} \\ \hline \end{array}$$

$$\begin{array}{r} 4\frac{1}{3} \\ + 2\frac{1}{2} \\ \hline \end{array}$$

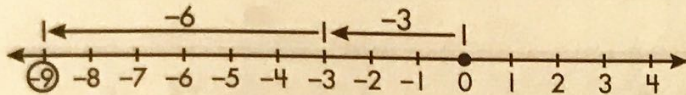
Lesson 1.5 Adding Integers

The sum of two positive integers is a positive integer.



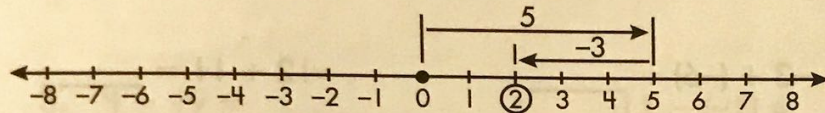
$$2 + 5 = 7$$

The sum of two negative integers is a negative integer.



$$-3 + -6 = -9$$

To find the sum of two integers with opposite signs, subtract the digit of lesser value from the digit of greater value and keep the sign of the greater digit.



$$5 + (-3) = 5 - 3 = 2$$

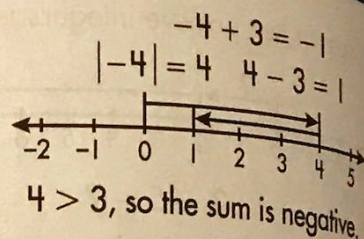
Add.

- | a | b | c | d |
|-----------------------|-------------------|-------------------|-------------------|
| 1. $3 + 4$ _____ | $-3 + (-4)$ _____ | $3 + (-4)$ _____ | $-3 + 4$ _____ |
| 2. $-3 + (-3)$ _____ | $3 + (-3)$ _____ | $-3 + 3$ _____ | $3 + 3$ _____ |
| 3. $5 + (-1)$ _____ | $-5 + 1$ _____ | $-5 + (-1)$ _____ | $5 + 1$ _____ |
| 4. $-7 + 3$ _____ | $-7 + (-3)$ _____ | $7 + (-3)$ _____ | $7 + 3$ _____ |
| 5. $4 + 7$ _____ | $4 + (-7)$ _____ | $-4 + (7)$ _____ | $-4 + (-7)$ _____ |
| 6. $8 + (-8)$ _____ | $-8 + (-8)$ _____ | $8 + 8$ _____ | $-8 + 8$ _____ |
| 7. $-3 + 0$ _____ | $3 + 0$ _____ | $-5 + (-6)$ _____ | $-5 + 6$ _____ |
| 8. $5 + (-6)$ _____ | $5 + 6$ _____ | $-8 + 0$ _____ | $8 + 0$ _____ |
| 9. $-3 + 6$ _____ | $-3 + (-6)$ _____ | $3 + 6$ _____ | $3 + (-6)$ _____ |
| 10. $-6 + (-4)$ _____ | $-6 + 4$ _____ | $6 + (-4)$ _____ | $6 + 4$ _____ |

Lesson 1.5 Adding Integers

To find the sum of two integers with different signs, find their absolute values. Remember, **absolute value** is the distance (in units) that a number is from 0, expressed as a positive quantity. Subtract the lesser number from the greater number. Absolute value is written as $|n|$.

The sum has the same sign as the integer with the larger absolute value.



Add.

a

b

c

1. $6 + 2 = \underline{\hspace{2cm}}$

$9 + (-4) = \underline{\hspace{2cm}}$

$7 + (-9) = \underline{\hspace{2cm}}$

2. $-4 + 7 = \underline{\hspace{2cm}}$

$-3 + (-6) = \underline{\hspace{2cm}}$

$-12 + 11 = \underline{\hspace{2cm}}$

3. $-16 + 0 = \underline{\hspace{2cm}}$

$13 + (-24) = \underline{\hspace{2cm}}$

$-6 + 8 = \underline{\hspace{2cm}}$

4. $0 + (-9) = \underline{\hspace{2cm}}$

$-1 + 2 = \underline{\hspace{2cm}}$

$1 + (-2) = \underline{\hspace{2cm}}$

5. $-4 + 4 = \underline{\hspace{2cm}}$

$3 + (-6) = \underline{\hspace{2cm}}$

$7 + (-17) = \underline{\hspace{2cm}}$

6. $-45 + 21 = \underline{\hspace{2cm}}$

$41 + 44 = \underline{\hspace{2cm}}$

$33 + 25 = \underline{\hspace{2cm}}$

7. $27 + (-39) = \underline{\hspace{2cm}}$

$20 + 1 = \underline{\hspace{2cm}}$

$3 + (-3) = \underline{\hspace{2cm}}$

8. $-12 + (-12) = \underline{\hspace{2cm}}$

$35 + (-26) = \underline{\hspace{2cm}}$

$-22 + 16 = \underline{\hspace{2cm}}$

9. $31 + 17 = \underline{\hspace{2cm}}$

$-9 + (-6) = \underline{\hspace{2cm}}$

$-47 + 36 = \underline{\hspace{2cm}}$

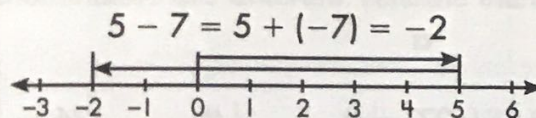
10. $4 + 5 = \underline{\hspace{2cm}}$

$-43 + 35 = \underline{\hspace{2cm}}$

$24 + (-33) = \underline{\hspace{2cm}}$

Lesson 1.6 Subtracting Integers

To subtract an integer, add its opposite.



Subtract.

a

b

c

1. $3 - 11 = \underline{\hspace{2cm}}$

$5 - 2 = \underline{\hspace{2cm}}$

$-4 - 6 = \underline{\hspace{2cm}}$

2. $-12 - 3 = \underline{\hspace{2cm}}$

$-5 - (-6) = \underline{\hspace{2cm}}$

$14 - 19 = \underline{\hspace{2cm}}$

3. $4 - 19 = \underline{\hspace{2cm}}$

$-11 - (-1) = \underline{\hspace{2cm}}$

$16 - (-27) = \underline{\hspace{2cm}}$

4. $-6 - (-6) = \underline{\hspace{2cm}}$

$-11 - 0 = \underline{\hspace{2cm}}$

$-2 - 2 = \underline{\hspace{2cm}}$

5. $8 - 1 = \underline{\hspace{2cm}}$

$8 - (-1) = \underline{\hspace{2cm}}$

$-13 - 3 = \underline{\hspace{2cm}}$

6. $43 - 15 = \underline{\hspace{2cm}}$

$-27 - (-39) = \underline{\hspace{2cm}}$

$-24 - (-38) = \underline{\hspace{2cm}}$

7. $-46 - (-31) = \underline{\hspace{2cm}}$

$-48 - (-47) = \underline{\hspace{2cm}}$

$-38 - (-17) = \underline{\hspace{2cm}}$

8. $9 - (-6) = \underline{\hspace{2cm}}$

$15 - (-1) = \underline{\hspace{2cm}}$

$-19 - (-22) = \underline{\hspace{2cm}}$

9. $(-3) - 24 = \underline{\hspace{2cm}}$

$-11 - 44 = \underline{\hspace{2cm}}$

$42 - 45 = \underline{\hspace{2cm}}$

10. $-33 - 12 = \underline{\hspace{2cm}}$

$-37 - (-40) = \underline{\hspace{2cm}}$

$5 - (-32) = \underline{\hspace{2cm}}$

Lesson 1.6 Subtracting Integers

Subtract.

a

1. $-32 - (-27) = \underline{\hspace{2cm}}$

2. $7 - (-37) = \underline{\hspace{2cm}}$

3. $16 - (-1) = \underline{\hspace{2cm}}$

4. $-44 - 24 = \underline{\hspace{2cm}}$

5. $-49 - (-46) = \underline{\hspace{2cm}}$

6. $-32 - (-50) = \underline{\hspace{2cm}}$

7. $-5 - (-30) = \underline{\hspace{2cm}}$

8. $-33 - 39 = \underline{\hspace{2cm}}$

9. $32 - (-41) = \underline{\hspace{2cm}}$

10. $-50 - 19 = \underline{\hspace{2cm}}$

11. $-18 - (-4) = \underline{\hspace{2cm}}$

12. $56 - (-21) = \underline{\hspace{2cm}}$

13. $31 - (-31) = \underline{\hspace{2cm}}$

14. $-87 - 6 = \underline{\hspace{2cm}}$

b

$-26 - 3 = \underline{\hspace{2cm}}$

$-9 - 48 = \underline{\hspace{2cm}}$

$24 - (-49) = \underline{\hspace{2cm}}$

$-31 - 34 = \underline{\hspace{2cm}}$

$-16 - 49 = \underline{\hspace{2cm}}$

$-32 - (-21) = \underline{\hspace{2cm}}$

$14 - (-20) = \underline{\hspace{2cm}}$

$4 - (-8) = \underline{\hspace{2cm}}$

$40 - 44 = \underline{\hspace{2cm}}$

$48 - (-32) = \underline{\hspace{2cm}}$

$-45 - 13 = \underline{\hspace{2cm}}$

$-11 - 34 = \underline{\hspace{2cm}}$

$26 - (-9) = \underline{\hspace{2cm}}$

$-90 - 12 = \underline{\hspace{2cm}}$

c

$28 - (-20) = \underline{\hspace{2cm}}$

$28 - (-15) = \underline{\hspace{2cm}}$

$-30 - (-36) = \underline{\hspace{2cm}}$

$-31 - (-13) = \underline{\hspace{2cm}}$

$18 - 28 = \underline{\hspace{2cm}}$

$-48 - (-47) = \underline{\hspace{2cm}}$

$9 - (-47) = \underline{\hspace{2cm}}$

$1 - (-42) = \underline{\hspace{2cm}}$

$-13 - (-39) = \underline{\hspace{2cm}}$

$-14 - (-39) = \underline{\hspace{2cm}}$

$8 - (-67) = \underline{\hspace{2cm}}$

$24 - (-17) = \underline{\hspace{2cm}}$

$-83 - (-3) = \underline{\hspace{2cm}}$

$-46 - (-9) = \underline{\hspace{2cm}}$

Lesson 1.7 Subtracting Fractions and Mixed Numbers

To subtract fractions or mixed numbers when the denominators are different, rename the fractions so the denominators are the same.

$$\begin{array}{r} 4\frac{4}{5} \\ -1\frac{1}{10} \\ \hline \end{array} = \begin{array}{r} 4\frac{4}{5} \times \frac{2}{2} \\ -1\frac{1}{10} \\ \hline \end{array} = \begin{array}{r} 8\frac{8}{10} \\ -1\frac{1}{10} \\ \hline 7\frac{7}{10} \end{array}$$

$$\begin{array}{r} 4\frac{1}{4} \\ -2\frac{1}{2} \\ \hline \end{array} = \begin{array}{r} 4\frac{1}{4} \\ -2\frac{2}{4} \\ \hline \end{array} = \begin{array}{r} 3\frac{5}{4} \\ -2\frac{2}{4} \\ \hline 1\frac{3}{4} \end{array}$$

Subtract. Write each answer in simplest form.

a**b****c****d****1.**

$$\begin{array}{r} 3\frac{3}{5} \\ -1\frac{1}{4} \\ \hline \end{array}$$

$$\begin{array}{r} 1\frac{1}{2} \\ -3\frac{3}{10} \\ \hline \end{array}$$

$$\begin{array}{r} 7\frac{7}{8} \\ -1\frac{1}{2} \\ \hline \end{array}$$

$$\begin{array}{r} 4\frac{4}{5} \\ -1\frac{1}{3} \\ \hline \end{array}$$

2.

$$\begin{array}{r} 5\frac{5}{6} \\ -1\frac{1}{3} \\ \hline \end{array}$$

$$\begin{array}{r} 2\frac{2}{3} \\ -1\frac{1}{5} \\ \hline \end{array}$$

$$\begin{array}{r} 5\frac{5}{8} \\ -1\frac{1}{6} \\ \hline \end{array}$$

$$\begin{array}{r} 7\frac{7}{10} \\ -1\frac{1}{2} \\ \hline \end{array}$$

3.

$$\begin{array}{r} 3\frac{3}{4} \\ -2\frac{2}{3} \\ \hline \end{array}$$

$$\begin{array}{r} 5\frac{5}{9} \\ -1\frac{1}{2} \\ \hline \end{array}$$

$$\begin{array}{r} 1\frac{1}{2} \\ -1\frac{1}{3} \\ \hline \end{array}$$

$$\begin{array}{r} 7\frac{7}{11} \\ -2\frac{2}{9} \\ \hline \end{array}$$

4.

$$\begin{array}{r} 2\frac{2}{8} \\ -1\frac{2}{9} \\ \hline \end{array}$$

$$\begin{array}{r} 3\frac{3}{4} \\ -1\frac{1}{3} \\ \hline \end{array}$$

$$\begin{array}{r} 4\frac{4}{2} \\ -3\frac{3}{4} \\ \hline \end{array}$$

$$\begin{array}{r} 6\frac{5}{8} \\ -4\frac{6}{7} \\ \hline \end{array}$$

5.

$$\begin{array}{r} 3\frac{2}{11} \\ -1\frac{5}{8} \\ \hline \end{array}$$

$$\begin{array}{r} 7\frac{2}{3} \\ -3\frac{2}{5} \\ \hline \end{array}$$

$$\begin{array}{r} 5\frac{1}{3} \\ -2\frac{1}{2} \\ \hline \end{array}$$

$$\begin{array}{r} 2\frac{5}{6} \\ -1\frac{2}{7} \\ \hline \end{array}$$

6.

$$\begin{array}{r} 4\frac{7}{9} \\ -2\frac{2}{3} \\ \hline \end{array}$$

$$\begin{array}{r} 3\frac{1}{5} \\ -1\frac{3}{4} \\ \hline \end{array}$$

$$\begin{array}{r} 4\frac{5}{6} \\ -2\frac{1}{8} \\ \hline \end{array}$$

$$\begin{array}{r} 3\frac{1}{8} \\ -1\frac{3}{4} \\ \hline \end{array}$$

Lesson 1.9 Problem Solving**SHOW YOUR WORK**

Solve each problem.

1. At closing time, the bakery had $2\frac{1}{4}$ apple pies and $1\frac{1}{2}$ cherry pies left. How much more apple pie than cherry pie was left?

There was _____ more of an apple pie than cherry.

2. The hardware store sold $6\frac{3}{8}$ boxes of large nails and $7\frac{2}{5}$ boxes of small nails. In total, how many boxes of nails did the store sell?

The store sold _____ boxes of nails.

3. Nita studied $4\frac{1}{3}$ hours on Saturday and $5\frac{1}{4}$ hours on Sunday. How many hours did she spend studying?

She spent _____ hours studying.

4. Kwan is $5\frac{2}{3}$ feet tall. Mary is $4\frac{11}{12}$ feet tall. How much taller is Kwan?

Kwan is _____ foot taller.

5. This week, Jim practiced the piano $1\frac{1}{8}$ hours on Monday and $2\frac{3}{7}$ hours on Tuesday. How many hours did he practice this week? How much longer did Jim practice on Tuesday than on Monday?

Jim practiced _____ hours this week.

Jim practiced _____ hours longer on Tuesday.

6. Oscar caught a fish that weighed $4\frac{1}{6}$ pounds and then caught another that weighed $6\frac{5}{8}$ pounds. How much more did the second fish weigh?

The second fish weighed _____ pounds more.

1.

2.

3.

4.

5.

6.

Lesson 1.9**Problem Solving****SHOW YOUR WORK**

Solve each problem.

1. One cake recipe calls for $\frac{2}{3}$ cup of sugar. Another recipe calls for $1\frac{1}{4}$ cups of sugar. How many cups of sugar are needed to make both cakes?

_____ cups of sugar are needed.

2. Nicole and Daniel are splitting a pizza. Nicole eats $\frac{1}{4}$ of a pizza and Daniel eats $\frac{2}{3}$ of it. How much pizza is left?

_____ of the pizza is left.

3. The Juarez family is making a cross-country trip. On Saturday, they traveled 450.8 miles. On Sunday, they traveled 604.6 miles. How many miles have they traveled so far?

They have traveled _____ miles.

4. Kathy's science book is $1\frac{1}{6}$ inches thick. Her reading book is $1\frac{3}{8}$ inches thick. How much thicker is her reading book than her science book?

It is _____ inches thicker.

5. A large watermelon weighs 10.4 pounds. A smaller watermelon weighs 3.6 pounds. How much less does the smaller watermelon weigh?

It weighs _____ pounds less.

6. Terrance picked 115.2 pounds of apples on Monday. He picked 97.6 pounds of apples on Tuesday. How many pounds of apples did Terrance pick altogether?

Terrance picked _____ pounds of apples.

Lesson 2.2 Multiplying Fractions and Mixed Numbers

Reduce to simplest form if possible. Then, multiply the numerators and multiply the denominators.

$$\frac{3}{8} \times \frac{5}{6} \times \frac{1}{7} = \frac{\cancel{3} \times 5 \times \cancel{1}}{8 \times \cancel{6} \times 7} = \frac{1 \times 5 \times 1}{8 \times 2 \times 7} = \frac{5}{112}$$

Rename the numbers as improper fractions. Reduce to simplest form. Multiply the numerators and denominators. Simplify.

$$3\frac{1}{5} \times 2\frac{2}{3} \times 1\frac{1}{8} = \frac{16 \times \cancel{8} \times \cancel{3}}{5 \times \cancel{3} \times \cancel{8}} = \frac{16 \times 1 \times 3}{5 \times 1 \times 1} = \frac{48}{5} = 9\frac{3}{5}$$

Multiply. Write each answer in simplest form.

a

1. $\frac{1}{2} \times \frac{3}{4}$

b

$\frac{2}{3} \times \frac{4}{5}$

c

$\frac{3}{4} \times \frac{3}{4}$

d

$\frac{4}{5} \times \frac{1}{8}$

2.

$\frac{3}{5} \times \frac{7}{8}$

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

$\frac{3}{7} \times \frac{1}{5}$

$\frac{3}{10} \times \frac{4}{5}$

3.

$\frac{5}{8} \times \frac{3}{8}$

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

$\frac{5}{6} \times \frac{2}{3}$

$\frac{4}{7} \times \frac{1}{3}$

4.

$3 \times 1\frac{2}{7}$

$2\frac{1}{4} \times 3\frac{1}{3}$

$1\frac{1}{9} \times 3\frac{1}{4}$

$2\frac{1}{4} \times 6$

5.

$1\frac{2}{3} \times 3\frac{7}{8}$

$2\frac{1}{7} \times 1\frac{1}{3}$

$4\frac{1}{2} \times 2\frac{1}{3} \times 3$

$5\frac{1}{4} \times 2\frac{1}{2} \times 1\frac{1}{3}$

6.

$4\frac{1}{8} \times 3\frac{2}{7} \times 7$

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

$\frac{2}{3} \times 1\frac{5}{8} \times 3\frac{1}{4}$

$1\frac{1}{2} \times 2\frac{2}{3} \times 1\frac{1}{8}$

Lesson 2.3 Multiplying Integers

The product of two integers with the same sign is positive.

$$3 \times 3 = 9$$

$$-3 \times -3 = 9$$

The product of two integers with different signs is negative.

$$3 \times (-3) = -9$$

$$-3 \times 3 = -9$$

Multiply.

a

b

c

d

1. $3 \times 2 =$ _____ $-4 \times 6 =$ _____ $8 \times (-3) =$ _____ $-3 \times (-4) =$ _____
2. $-8 \times 7 =$ _____ $6 \times (-5) =$ _____ $-3 \times (-8) =$ _____ $-4 \times 11 =$ _____
3. $16 \times (-2) =$ _____ $-4 \times (-1) =$ _____ $8 \times (-11) =$ _____ $-7 \times (-10) =$ _____
4. $5 \times 8 =$ _____ $6 \times (-6) =$ _____ $-13 \times (-2) =$ _____ $-9 \times 9 =$ _____
5. $17 \times (-1) =$ _____ $5 \times (-2) =$ _____ $-14 \times 3 =$ _____ $-7 \times (-5) =$ _____
6. $(-6) \times 0 =$ _____ $7 \times 3 =$ _____ $6 \times (-10) =$ _____ $(-3) \times (-5) =$ _____
7. $8 \times (-2) =$ _____ $(-4) \times (-10) =$ _____ $10 \times (-3) =$ _____ $3 \times 5 =$ _____
8. $9 \times (-4) =$ _____ $10 \times 4 =$ _____ $10 \times (-4) =$ _____ $5 \times 9 =$ _____
9. $0 \times (-10) =$ _____ $11 \times 11 =$ _____ $2 \times 3 =$ _____ $(-4) \times (-12) =$ _____
10. $(-4) \times (-6) =$ _____ $(-10) \times (-2) =$ _____ $3 \times 12 =$ _____ $4 \times 7 =$ _____

Lesson 2.3 Multiplying Integers

Multiply.

a

1. $2 \times 4 = \underline{\hspace{2cm}}$

2. $9 \times (-7) = \underline{\hspace{2cm}}$

3. $10 \times (-1) = \underline{\hspace{2cm}}$

4. $(-2) \times 1 = \underline{\hspace{2cm}}$

5. $11 \times 2 = \underline{\hspace{2cm}}$

6. $8 \times 5 = \underline{\hspace{2cm}}$

7. $6 \times (-2) = \underline{\hspace{2cm}}$

8. $2 \times 7 = \underline{\hspace{2cm}}$

9. $(-6) \times (-3) = \underline{\hspace{2cm}}$

10. $6 \times 9 = \underline{\hspace{2cm}}$

11. $12 \times 32 = \underline{\hspace{2cm}}$

12. $11 \times (-41) = \underline{\hspace{2cm}}$

13. $11 \times (-46) = \underline{\hspace{2cm}}$

14. $(-27) \times 16 = \underline{\hspace{2cm}}$

b

$3 \times (-3) = \underline{\hspace{2cm}}$

$9 \times 8 = \underline{\hspace{2cm}}$

$7 \times 4 = \underline{\hspace{2cm}}$

$(-11) \times 2 = \underline{\hspace{2cm}}$

$7 \times 11 = \underline{\hspace{2cm}}$

$11 \times 7 = \underline{\hspace{2cm}}$

$9 \times (-4) = \underline{\hspace{2cm}}$

$3 \times 8 = \underline{\hspace{2cm}}$

$(-8) \times 8 = \underline{\hspace{2cm}}$

$(-4) \times 8 = \underline{\hspace{2cm}}$

$7 \times (-14) = \underline{\hspace{2cm}}$

$4 \times 33 = \underline{\hspace{2cm}}$

$21 \times 4 = \underline{\hspace{2cm}}$

$(-11) \times 36 = \underline{\hspace{2cm}}$

c

$-12 \times (-12) = \underline{\hspace{2cm}}$

$4 \times (-12) = \underline{\hspace{2cm}}$

$6 \times (-5) = \underline{\hspace{2cm}}$

$12 \times 3 = \underline{\hspace{2cm}}$

$(-12) \times 7 = \underline{\hspace{2cm}}$

$1 \times (-6) = \underline{\hspace{2cm}}$

$(-4) \times (-3) = \underline{\hspace{2cm}}$

$3 \times (-7) = \underline{\hspace{2cm}}$

$2 \times 5 = \underline{\hspace{2cm}}$

$6 \times (-5) = \underline{\hspace{2cm}}$

$-19 \times (-4) = \underline{\hspace{2cm}}$

$18 \times (-18) = \underline{\hspace{2cm}}$

$13 \times (-5) = \underline{\hspace{2cm}}$

$(-6) \times (-92) = \underline{\hspace{2cm}}$

Lesson 2.4 Dividing Fractions and Mixed Numbers

To divide by a fraction, multiply by its reciprocal.

$$\frac{2}{3} \div \frac{5}{8} = \frac{2}{3} \times \frac{8}{5} = \frac{16}{15} = 1\frac{1}{15}$$

$$1\frac{2}{3} \div 2\frac{5}{9} = \frac{5}{3} \times \frac{9}{23} = \frac{15}{23}$$

Divide. Write each answer in simplest form.

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

2. $7 \div \frac{3}{5} =$ _____ $2\frac{1}{12} \div 1\frac{1}{3} =$ _____ $2\frac{1}{7} \div \frac{3}{4} =$ _____ $3 \div 5 =$ _____

3. $1\frac{1}{8} \div \frac{1}{10} =$ _____ $1\frac{2}{5} \div 2\frac{1}{3} =$ _____ $5 \div 1\frac{1}{2} =$ _____ $3\frac{1}{4} \div 1\frac{1}{2} =$ _____

4. $6\frac{2}{3} \div \frac{2}{3} =$ _____ $3\frac{1}{8} \div \frac{2}{7} =$ _____ $4\frac{1}{4} \div \frac{1}{12} =$ _____ $14 \div \frac{1}{7} =$ _____

5. $2\frac{3}{5} \div 1\frac{2}{7} =$ _____ $1\frac{1}{9} \div \frac{7}{11} =$ _____ $12 \div 15 =$ _____ $2\frac{4}{5} \div 3 =$ _____

Lesson 2.6 Dividing Integers

The quotient of two integers with the same sign is positive.

$$\begin{aligned} 8 \div 2 &= 4 \\ -8 \div (-2) &= 4 \end{aligned}$$

The quotient of two integers with different signs is negative.

$$\begin{aligned} 8 \div (-2) &= -4 \\ -8 \div 2 &= -4 \end{aligned}$$

Divide.

a

b

c

$$1. \quad 12 \div 4 = \underline{\hspace{2cm}} \qquad 16 \div (-4) = \underline{\hspace{2cm}} \qquad -8 \div 4 = \underline{\hspace{2cm}}$$

$$2. \quad 7 \div (-1) = \underline{\hspace{2cm}} \qquad -14 \div 7 = \underline{\hspace{2cm}} \qquad 24 \div (-6) = \underline{\hspace{2cm}}$$

$$3. \quad 81 \div (-3) = \underline{\hspace{2cm}} \qquad -63 \div 9 = \underline{\hspace{2cm}} \qquad -55 \div (-5) = \underline{\hspace{2cm}}$$

$$4. \quad 21 \div (-7) = \underline{\hspace{2cm}} \qquad -38 \div 2 = \underline{\hspace{2cm}} \qquad -19 \div (-1) = \underline{\hspace{2cm}}$$

$$5. \quad 12 \div (-12) = \underline{\hspace{2cm}} \qquad 42 \div (-21) = \underline{\hspace{2cm}} \qquad -60 \div (-10) = \underline{\hspace{2cm}}$$

$$6. \quad 20 \div 2 = \underline{\hspace{2cm}} \qquad 30 \div (-10) = \underline{\hspace{2cm}} \qquad (-50) \div (-10) = \underline{\hspace{2cm}}$$

$$7. \quad 288 \div (-18) = \underline{\hspace{2cm}} \qquad (-85) \div (-5) = \underline{\hspace{2cm}} \qquad (-36) \div 4 = \underline{\hspace{2cm}}$$

$$8. \quad 136 \div (-8) = \underline{\hspace{2cm}} \qquad (-171) \div 19 = \underline{\hspace{2cm}} \qquad 240 \div 15 = \underline{\hspace{2cm}}$$

$$9. \quad 168 \div 12 = \underline{\hspace{2cm}} \qquad (-200) \div 20 = \underline{\hspace{2cm}} \qquad 14 \div (-7) = \underline{\hspace{2cm}}$$

$$10. \quad 240 \div (-15) = \underline{\hspace{2cm}} \qquad (-120) \div (-8) = \underline{\hspace{2cm}} \qquad 102 \div (-17) = \underline{\hspace{2cm}}$$

Lesson 2.6 Dividing Integers

Divide.

a**b****c**

1. $(-140) \div (-10) = \underline{\hspace{2cm}}$ $(-210) \div 15 = \underline{\hspace{2cm}}$ $(-224) \div (-14) = \underline{\hspace{2cm}}$
2. $(-13) \div (-1) = \underline{\hspace{2cm}}$ $120 \div 8 = \underline{\hspace{2cm}}$ $144 \div (-8) = \underline{\hspace{2cm}}$
3. $400 \div (-20) = \underline{\hspace{2cm}}$ $39 \div (-13) = \underline{\hspace{2cm}}$ $(-3) \div 1 = \underline{\hspace{2cm}}$
4. $(-200) \div 10 = \underline{\hspace{2cm}}$ $224 \div (-16) = \underline{\hspace{2cm}}$ $66 \div 11 = \underline{\hspace{2cm}}$
5. $88 \div 11 = \underline{\hspace{2cm}}$ $(-60) \div 12 = \underline{\hspace{2cm}}$ $288 \div 16 = \underline{\hspace{2cm}}$
6. $288 \div (-16) = \underline{\hspace{2cm}}$ $(-90) \div 6 = \underline{\hspace{2cm}}$ $90 \div (-10) = \underline{\hspace{2cm}}$
7. $133 \div 19 = \underline{\hspace{2cm}}$ $55 \div 5 = \underline{\hspace{2cm}}$ $128 \div 8 = \underline{\hspace{2cm}}$
8. $48 \div (-8) = \underline{\hspace{2cm}}$ $(-306) \div 17 = \underline{\hspace{2cm}}$ $(-64) \div 4 = \underline{\hspace{2cm}}$
9. $35 \div 5 = \underline{\hspace{2cm}}$ $34 \div (-17) = \underline{\hspace{2cm}}$ $252 \div (-14) = \underline{\hspace{2cm}}$
10. $51 \div 3 = \underline{\hspace{2cm}}$ $(-18) \div (-9) = \underline{\hspace{2cm}}$ $(-33) \div (-3) = \underline{\hspace{2cm}}$
11. $176 \div 11 = \underline{\hspace{2cm}}$ $(-180) \div 15 = \underline{\hspace{2cm}}$ $(-105) \div (-7) = \underline{\hspace{2cm}}$
12. $(-96) \div 12 = \underline{\hspace{2cm}}$ $26 \div (-2) = \underline{\hspace{2cm}}$ $(-54) \div (-9) = \underline{\hspace{2cm}}$
13. $(-156) \div (-12) = \underline{\hspace{2cm}}$ $(-248) \div 4 = \underline{\hspace{2cm}}$ $(-272) \div (-34) = \underline{\hspace{2cm}}$
14. $(-1037) \div (-17) = \underline{\hspace{2cm}}$ $688 \div 8 = \underline{\hspace{2cm}}$ $1008 \div (-42) = \underline{\hspace{2cm}}$

Lesson 2.9 Problem Solving**SHOW YOUR WORK**

Solve each problem. Write each answer in simplest form.

1. Each month, Kelsey donates $\frac{1}{5}$ of her allowance to her school for supplies. $\frac{1}{2}$ of that amount goes to the chorus class. How much of her allowance goes to supplies for the chorus class?

_____ of her allowance goes to help the chorus classes.

2. Alvin cuts $\frac{3}{4}$ of a piece of cheese. He gives $\frac{1}{8}$ of it to Matt. How much of the cheese does Alvin give to Matt?

Alvin gives _____ of the cheese to Matt.

3. Katie has $16\frac{3}{4}$ hours to finish 3 school projects. How much time may she spend on each project, if she plans to spend the same amount of time on each?

Katie will spend _____ hours on each project.

4. Martha spent \$2.90 on $3\frac{1}{2}$ pounds of bananas. How much did she spend on each pound of bananas?

She spent _____ on each pound.

5. Monica has $5\frac{1}{2}$ cups of sugar to make pies. If each pie uses $\frac{1}{3}$ cup of sugar, how many pies can Monica make?

Monica can make _____ pies.

6. Vince has $12\frac{1}{2}$ hours to mow the lawn, do the laundry, make dinner, and finish his homework. How much time can Vince spend on each task, if he plans to spend the same amount of time on each?

Vince will spend _____ hours on each project.

7. Drew spent \$38.97 on $3\frac{1}{4}$ pounds of shrimp. How much did he spend on each pound of shrimp?

Drew spent _____ on each pound of shrimp.

1.

2.

3.

4.

5.

6.

7.

Lesson 4.3 Constants of Proportionality

A unit rate can also be called a **constant of proportionality**. The constant of proportionality describes the rate at which variables in an equation change.

x	2	3	5	6
y	6	9	15	18

Step 1: Set up an equation in which the constant (k) is equal to $y \div x$.

Step 2: Check the equation across multiple points to verify the constant.

Step 3: $6 \div 2 = 3$; $9 \div 3 = 3$; $15 \div 5 = 3$; $18 \div 6 = 3$; $k = 3$

Find the constant of proportionality for each set of values.

a

1.

x	1	2	3	8
y	1.5	3	4.5	12

$k =$ _____

b

x	0.4	0.8	1.4	1.8
y	2	4	7	9

$k =$ _____

2.

x	1	2	2.5	3.5
y	2	4	5	7

$k =$ _____

x	4.5	6	10.5	12
y	7.5	10	17.5	20

$k =$ _____

3.

x	2	4	6	8
y	1	2	3	4

$k =$ _____

x	10	20	30	40
y	2	4	6	8

$k =$ _____

Lesson 4.3 Constants of Proportionality

Find the constant of proportionality for each set of values.

a

1.

x	1	2	3	4
y	2	4	6	8

$$k = \underline{\hspace{2cm}}$$

b

x	3	6	9	12
y	2	4	6	8

$$k = \underline{\hspace{2cm}}$$

2.

x	5	15	25	35
y	1	3	5	7

$$k = \underline{\hspace{2cm}}$$

x	5	10	15	25
y	4	8	12	20

$$k = \underline{\hspace{2cm}}$$

3.

x	18	30	42	54
y	3	5	7	9

$$k = \underline{\hspace{2cm}}$$

x	0.25	1	3	4
y	0.5	2	6	8

$$k = \underline{\hspace{2cm}}$$

4.

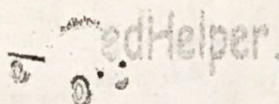
x	4	8	12	16
y	1	2	3	4

$$k = \underline{\hspace{2cm}}$$

x	4	8	12	16
y	3	6	9	12

$$k = \underline{\hspace{2cm}}$$

Name _____



Date _____

Percent

(Answer ID # 0799797)

Write each percent as a fraction in simplest form.

1. 310%	2. 23%	3. 99%
---------	--------	--------

Write each percent as a decimal.

4. 1%	5. 56.5%	6. 330%
-------	----------	---------

Write each decimal as a percent.

7. 0.349	8. 0.083	9. 0.390
----------	----------	----------

Write each fraction as a percent. Round to the nearest hundredth of a percent.

10. $\frac{1}{4}$	11. $\frac{5}{8}$	12. $\frac{93}{25}$	13. $\frac{2}{5}$
-------------------	-------------------	---------------------	-------------------

Find the percent of each number.

14. 14% of 229	15. 75% of 262	16. 298% of 41
----------------	----------------	----------------

Complete. Round your answer to the nearest tenth.

17. 140 is 70% of what number?

18. 397% of what number is 297.75?

Find each percent of change. Round your answer to the nearest tenth of a percent.

19. 290 is increased to 435

20. 355 is increased to 639

21. Ronald bought a book that was regularly priced \$7.99. It was discounted 20%. How much did Ronald pay?

22. A bicycle costs \$129.95 plus 6.8% sales tax. Find the total cost.

23. A jacket costs \$120 regular price. It is on sale for 55% off. The sales tax is 7%. What will the final cost of the jacket be?

24. A computer priced \$900 was marked down 25%. One month later it was marked down 10% from the already reduced price.
a. Find the price of the computer after the first discount.

BONUS (4 points) – Find the price of the computer after the second discount.

Solve.

1. $x + 8 = 12$

4

2. $x + 7 = 30$

3. $x - 5 = 20$

4. $x - 13 = 44$

5. $x + 3 = -34$

6. $x + 7 = -22$

7. $x - 14 = -43$

8. $x - 15 = -34$

9. $x + 10 = 100$

10. $x + 14 = 121$

11. $x - 42 = 13$

12. $x - 63 = 17$

13. $x + 91 = 52$

14. $x + 86 = 47$

15. $x + 5 = 13$

16. $x + 9 = 25$

17. $x - 4 = 19$

18. $x - 17 = 22$

19. $x + 5 = -14$

20. $x + 11 = -23$

21. $x - 19 = -14$

22. $x - 23 = -7$

23. $x - 4 = -34$

24. $x - 9 = -27$

25. $x + 27 = -9$

26. $x + 13 = -37$

27. $x + 14 = 3$

28. $x + 22 = 11$

29. $x + 25 = 2$

30. $x + 29 = 4$

31. $x - 14 = -21$

32. $x - 19 = -33$

Solve.

- | | | |
|-------------------------------------|-----------------------------|-------------------------------------|
| 1. $x + \frac{1}{4} = 1$ | <u> </u> | |
| 3. $x - \frac{1}{2} = \frac{3}{2}$ | <u> </u> | 2. $x + \frac{2}{3} = 3$ |
| 5. $x + \frac{7}{8} = 2$ | <u> </u> | 4. $x - \frac{4}{5} = \frac{2}{5}$ |
| 7. $x - \frac{3}{7} = 5$ | <u> </u> | 6. $x + \frac{5}{3} = 3$ |
| 9. $x + \frac{9}{8} = 7$ | <u> </u> | 8. $x - \frac{5}{6} = 11$ |
| 11. $x - \frac{5}{8} = \frac{3}{4}$ | <u> </u> | 10. $x + \frac{17}{11} = 9$ |
| 13. $x + \frac{5}{9} = \frac{2}{3}$ | <u> </u> | 12. $x - \frac{2}{3} = \frac{5}{6}$ |
| 15. $x - \frac{3}{5} = \frac{3}{5}$ | <u> </u> | 14. $x + \frac{7}{8} = \frac{3}{4}$ |
| 17. $x + 0.25 = 1$ | <u> </u> | 16. $x - \frac{2}{3} = \frac{5}{3}$ |
| 19. $x - 0.75 = 9$ | <u> </u> | 18. $x + 0.82 = 4$ |
| 21. $x + 2.31 = -4.4$ | <u> </u> | 20. $x + 0.81 = 15$ |
| 23. $x - 1.15 = -3.61$ | <u> </u> | 22. $x + 5.32 = -3.3$ |
| 25. $x + 3.7 = -2.2$ | <u> </u> | 24. $x - 3.42 = -5.54$ |
| 27. $x - 8.22 = -7$ | <u> </u> | 26. $x + 4.3 = -8.1$ |
| 29. $x + 2.2 = 3.5$ | <u> </u> | 28. $x - 9.94 = -2$ |
| 31. $x - 5.3 = 6.21$ | <u> </u> | 30. $x + 4.7 = 8.2$ |
| | | 32. $x - 8.1 = 9.55$ |

Solutions of Equations

Name _____

Date _____ Period _____

Solve.

1. $5x = 10$

2

2. $2x = 4$

3. $3x = -6$

4. $4x = -12$

5. $13x = 91$

6. $21x = 147$

7. $-6y = 84$

8. $-8y = 96$

9. $9z = -9$

10. $12z = -36$

11. $-4u = 0$

12. $10u = 0$

13. $-16p = -128$

14. $-23p = -161$

15. $-x = 115$

16. $-x = 108$

17. $36x = 18$

18. $15x = 45$

19. $85x = -17$

20. $48x = -12$

21. $98x = 14$

22. $102x = 17$

23. $-x = 4$

24. $-x = 20$

25. $36x = 27$

26. $45x = 60$

27. $-15x = 6$

28. $-28x = 21$

29. $14x = -35$

30. $24x = -36$

31. $12x = 32$

32. $16x = 20$

Solve.

1. $\frac{1}{2}x = 5$ 10

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

3. $\frac{1}{4}x = 3$ 12

4. $\frac{1}{5}x = 1$ 5

5. $\frac{1}{7}x = -3$ -21

6. $\frac{1}{6}x = -2$ -12

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

8. $\frac{1}{9}x = -3$ -27

9. $\frac{-1}{2}x = 4$ -8

10. $\frac{-1}{5}x = 2$ -10

11. $\frac{-1}{4}x = 7$ -28

12. $\frac{-1}{3}x = 9$ -27

13. $\frac{-1}{7}x = -2$ 14

14. $\frac{-1}{9}x = -7$ 63

15. $\frac{2}{5}x = 12$ 30

16. $\frac{3}{4}x = 9$ 12

17. $\frac{3}{8}z = 12$ 32

18. $\frac{4}{5}z = 16$ 20

19. $\frac{5}{6}k = 30$ 36

20. $\frac{7}{8}k = 21$ 24

21. $\frac{-1}{3}a = 18$ -54

22. $\frac{5}{7}b = -50$ -70

23. $\frac{-4}{9}c = -20$ 45

24. $\frac{-6}{7}d = 36$ -42

25. $\frac{3}{5}e = -24$ -40

26. $\frac{4}{7}f = -32$ -56

27. $\frac{x}{5} = 32$ 160

28. $\frac{y}{7} = 15$ 105

29. $\frac{2x}{9} = 22$ 99

30. $\frac{3y}{7} = 24$ 56

31. $\frac{-4a}{13} = 44$ -121

32. $\frac{-5x}{11} = 35$ -77

CHALLENGE!

Highly recommended
for those entering
Advanced Math in
7th Grade.

Date

Name

Level



■ The Answer Key is

1 Calculate.

(1) $\frac{1}{6} + 0.5 =$

(6) $0.75 - \frac{1}{3} =$

(2) $0.45 + \frac{1}{5} =$

(7) $\frac{17}{20} - 0.55 =$

(3) $0.85 + \frac{3}{5} =$

(8) $\frac{7}{12} - 0.35 =$

(4) $1\frac{5}{6} + 0.5 =$

(9) $2.75 - \frac{2}{3} =$

(5) $1\frac{1}{8} + 0.6 =$

(10) $4\frac{7}{10} - 1.35 =$

2 Calculate.

5 points per question

(1) $\frac{1}{4} + 0.25 + \frac{2}{5} =$

(6) $5\frac{9}{10} - 2.3 - 1\frac{13}{20} =$

(2) $\frac{5}{6} + 0.4 + \frac{2}{3} =$

(7) $\frac{9}{10} + 0.45 - \frac{11}{20} =$

(3) $0.25 + \frac{1}{8} + 0.6 =$

(8) $\frac{5}{6} - 0.25 + \frac{3}{8} =$

(4) $6\frac{17}{20} - 1.4 - \frac{3}{10} =$

(9) $0.875 - \frac{3}{4} + 1\frac{2}{3} =$

(5) $7\frac{1}{4} - 1.2 - 3\frac{1}{5} =$

(10) $0.75 + \frac{4}{9} - \frac{5}{6} =$

Fantastic work!



Date

Name

Level



■ The Answer Key is at the end of the book.

1 Calculate.

(1) $\frac{1}{6} \times 0.5 =$

(6) $0.45 \div \frac{1}{4} =$

(2) $\frac{5}{6} \times 0.75 =$

(7) $0.55 \div \frac{9}{10} =$

(3) $\frac{5}{12} \times 0.08 =$

(8) $0.325 \div \frac{1}{6} =$

(4) $2\frac{2}{3} \times 0.9 =$

(9) $1\frac{1}{12} \div 0.13 =$

(5) $0.04 \times 1\frac{2}{3} =$

(10) $0.625 \div 2\frac{1}{12} =$



Convert each decimal into a fraction to calculate.

2**Calculate.**

5 points per question

$$(1) \frac{5}{6} \times \frac{2}{3} \times 0.9 =$$

$$(6) \frac{3}{4} \div \frac{2}{3} \div 0.2 =$$

$$(2) \frac{5}{8} \div \frac{8}{9} \times 0.8 =$$

$$(7) 1.8 \div \frac{5}{8} \times \frac{8}{9} =$$

$$(3) \frac{5}{7} \times 0.4 \div \frac{3}{7} =$$

$$(8) 2\frac{5}{7} \times 1.4 \div 1\frac{3}{7} =$$

$$(4) 0.6 \times \frac{2}{3} \div 0.42 =$$

$$(9) 2\frac{1}{3} \times 4 \times 1.2 =$$

$$(5) \frac{5}{7} \times 0.25 \div \frac{2}{7} =$$

$$(10) 1\frac{5}{12} \div 1.25 \div 1\frac{2}{3} =$$

Hooray!



Date

Name



■ The Answer Key is on page 127

3 points per question

1 Calculate. Write the intermediate steps.

Don't forget!

According to the order of operations,

- **calculate the numbers in parentheses and brackets first**
- then perform multiplication and division before addition and subtraction
- then calculate from left to right

(1) $9 - 3 + 5 =$

(6) $7 - 2 \times 2 - 1 =$

(2) $9 - (3 + 5) = 9 - \square =$

(7) $(7 - 2) \times (2 - 1) =$

(3) $6 \times 2 \div 4 =$

(8) $(7 - 2) \times 2 - 1 =$

(4) $(6 \times 2) \div 4 =$

(9) $7 - 2 \times (2 - 1) =$

(5) $6 \times (2 \div 4) =$

(10) $7 - (2 \times 2 - 1) =$

2 Calculate. Write the intermediate steps.

5 points per question

$$(1) 2 - \frac{1}{2} + 3 \times \frac{1}{3} =$$

$$(7) 1 \frac{3}{4} - \frac{1}{2} \div (4 \times 2) =$$

$$(2) \left(2 - \frac{1}{2} + 3\right) \times \frac{1}{3} =$$

$$(8) \left(1 \frac{3}{4} - \frac{1}{2} \div 4\right) \times 2 =$$

$$(3) 2 - \left(\frac{1}{2} + 3\right) \times \frac{1}{3} =$$

$$(9) \left[\left(1 \frac{3}{4} - \frac{1}{2}\right) \div 4\right] \times 2 =$$

$$(4) 20 - [4 \div (2 + 6)] \div 2$$

$$=$$

$$(10) \left(1 \frac{3}{4} - \frac{1}{2}\right) \div (4 \times 2) =$$

$$(5) [(20 - 4) \div (2 + 6)] \div 10$$

$$=$$

$$(11) 8.2 - \frac{1}{5} + 3 \div 6 \times 2$$

$$=$$

$$(6) 1 \frac{3}{4} - \frac{1}{2} \div 4 \times 2 =$$

$$(12) \left(8.2 - \frac{1}{5}\right) + [3 \div (6 \times 2)]$$

$$=$$

3 Answer each word problem. Write the question as an expression first, and then calculate.

10 points for completion

Robert bought 5 books each day for 2 days. He then bought 2 books each day for 4 days. If each book is worth \$15.00, how much money did he spend?

