Adding And Subtracting Integers

Neg. + Neg. = MORE Negative

(-2) + (-5) = -7

More Negative

-8 + 2= -6

More Positive

-4 + 7 = 3

Subtracting a Neg. → Change to Adding Pos.

-2 –(-5) = -2 + (+5) = +3

Evaluate the following:

1. -1.3 + 1.0 = _____
2. -8 + 4 = _____
3. -1.1 + 2.2 = _____
4. -2.7 + 4.5 =_____
5. -17 + 17 = _____
6. -33 + 26 =_____
7. 1.6 + (-1.5) = _____
8. -7 + (-6) = _____
9. -3 + (-12) =_____
10. 8 + (-16) = _____
11. -16 – (–28) =_____
12. -4 – 7 = _____
13. -4.6 – (–3) = _____
14. 5 – 13 =_____

Multiplying and Dividing Rational Numbers

Multiplication:

- **Same Sign**- The product of two integers with the same sign is positive.
- **Different Signs**- The product of two integers with different signs is negative.

Division:

- **Same Sign**- The quotient of two integers with the same sign is positive.
- **Different Signs**- The quotient of two integers with different signs is negative.

https://learnzillion.com/lessons/1776-compare-the-outcomes-of-fraction-multiplication-with-the-outcomes-of-decimal-multiplication

Exercise 1

Find the product.

a. $3(-4) =$

b. $-7 \bullet 4 =$

c. $-5 \bullet -6 =$

Exercsie 2

Find the quotient

a. $-36 \div (-6) =$

b. $-10 \div 5 =$

c. $\frac{-45}{5} =$

Mixed Practice

Evaluate the following:

1. $\frac{32}{-8} =$

2. $-12 \bullet (-5) =$

3. $-48 \div -6 =$

4. $-\frac{7}{10} \div \frac{2}{5}$

5. $\frac{-18}{-2} =$

6. $\frac{-1}{4} \bullet \left(-\frac{4}{5}\right) =$

7. $-0.05 \bullet (-0.5) =$

8. $-10\frac{2}{7} \div \left(-4\frac{4}{11}\right) =$

9. $-2\frac{4}{5} \div (-7) =$

10. $-2(-3)(-9) =$

11. $\frac{-10}{-\frac{1}{4}} =$

12. $-0.4 \bullet -0.02 =$

Order of Operations

Parenthesis

Exponents

(Multiplication or Division)

(Addition or Subtraction)

$10 - (50 \div (-2 \bullet 25) + 7) \times 4$

$10 - (50 \div (-50) + 7) \times 4$

$10 - (-1 + 7) \times 4$

$10 - (6) \times 4$

$10 - 24$

-14

Simplify each of the following.

1) $(34 - 2^2) \div (11 - 6)$

2) $(9 - 3)^2 + (18 \div 3)$

3) $(40 - 4) \div 3 + 2^2$

4) $(10 + 3)^2 + (12 \div 6)$

5) $6 \times (12 + 5) + 2^2$

6) $2 \times (10 - 5) + 9^2$

7) $(72 - 6^2) \div (8 - 4)$

8) $(6 \times 3 + 5^2) - 7$

9) $(11 \times 9 + 3^2) + 6$

10) $(36 - 6) \div 6 - 2^2$

Combining Like Terms

Example 1 : https://www.khanacademy.org/math/algebra-basics/core-algebra-expressins/core-algebra-manipulating-expressions/v/combining-like-terms-1

Example 2: http://www.mathsisfun.com/algebra/like-terms.htm

Example: **3(5x + 11) + 8(7x + 3)**

15x + 33 + 56x + 24
15x + 56x +33 +24
71x + 57

Simplify the following expressions.

1. $4m+9m-7=$

2. $-2x+16-40x-20=$

3. $2z+6+15-3z=$

4. $-10x-30x+4+18=$

5. $16x+15+3x-3+22x$

6. $20x+15-25x=$

7. $-20x+15+16x-35=$

8. $12r+5s-7t+11r+9s-4r=$

9. $8y-18y-7=$

10. $\frac{1}{4}x+3+\frac{1}{8}x-6=$

11. $\frac{1}{5}+3x-10x+\frac{7}{10}=$

12. $\frac{1}{7}b+4-2+\frac{5}{7}b=$

Distributive Property

Useful links

- https://learnzillion.com/lessons/3721-use-area-models-to-represent-the-distributive-property
- https://learnzillion.com/lessons/810

Example: **3(2x – 5)**
Since in the order of operations, multiplication comes before addition and subtraction, we must get rid of the multiplication **before** you can combine like terms.
We do this by using the **distributive property**

Step 1: 3(2x – 5)

Step 2: 3(2x) – 3(5)

Step 3: 6x - 15

Final answer: 6x - 15

Simplify the following expressions

1. $2\,(x+4)$
2. $3\,(5-y)$
3. $-2\,(5+14p)$
4. $9\,(3x+10)$
5. $8\,(-7t-5)$
6. $-3\,(4f-12)$
7. $-3\,(6v+8)+11$
8. $4\,(-1\,y-10)+80$
9. $-6\,(3c-3)-6$
10. $k+3(5k-0)$
11. $-\,(5+4w)$
12. $7+q(6-2)$
13. $1-(7n+9)$
14. $2-3(y+13)$
15. $\frac{1}{2}(9+4m)$

One Step Equations

Solve by doing the inverse operation. Addition and Subtraction are opposites.

Goal: ISOLATE THE VARIABLE

Solve each equation.

1) $26 = 8 + v$

2) $3 + p = 8$

3) $15 + b = 23$

4) $-15 + n = -9$

5) $m + 4 = -12$

6) $x - 7 = 13$

7) $m - 9 = -13$

8) $p - 6 = -5$

9) $v - 15 = -27$

10) $n + 16 = 9$

Solving Multi- Step Equations

Go to the following site to watch a video to refresh your memory:
https://www.khanacademy.org/math/algebra-basics/core-algebra-linear-equations-inequalities/core-algebra-solving-basic-equations/v/two-step-equations

Solve the following equations for the given variable.

1. $2v+7=3$

2. $4b+3=-9$

3. $17=5k-2$

4. $-6t-7=17$

5. $8n+16.2=1.6$

6. $-5g+2.3=-18.8$

7. $-18-6k=6(1+3k)$

8. $5n+34=-2(1-7n)$

9. $2(4x-3)-8=4+2x$

10. $-3(4x+3)+4(6x+1)=43$

Identifying terms in an equation

Example: $2x^2 + 5x - 4$

Terms: $2x^2$, 5x, -4 Coefficients: 2, 5

Constant: -4 Variable: x

Define the following vocabulary words:

Term: _____

Constant: _____

Coefficient: _____

Variable: _____

1. Which of the following terms describes the 6 in the expression $8x^3 + 6x^2 - 3x + 4$

A. Constant B. Coefficient C. Term D. Variable

2. Which of the following terms describes the 9 in the expression $-4x + 8y + 6z + 9$

A. Constant B. Coefficient C. Term D. Variable

3. Circle each **term** in the equation. $5x^2$ - 3 + 2x + 1

4. Circle each **coefficient** in the equation. 4x + 1 – 2x + 7

5. Circle each **constant** in the equation. $3x^2$ + 10 + 7x - 6

6. Circle each **variable** in the equation. $10x + 7 - 3x - 2$

Unit Rates

Example: 240 miles in 4 hours

240 miles ÷ 4 hours = 60 miles per hour **OR** $\frac{240\ miles}{4\ hours} = \frac{x\ miles}{1\ hour}$

Cross Multiply

To Solve

Basic Skills: Unit Rates
Independent Practice 1

1. 5000 words in 10 pages

_____words per page

2. 256 students in 8 buses

_____ in each bus

3. 35 Oranges in 7 bags

_____ oranges in each bag

4. 20 candies for 10 dollars

_____ dollars per candy

5. type 600 words in 20 minutes

_____ words per minute

6. 600 km in 10 hours

_____ km per hour

Fraction Review

Simplify fractions: $\frac{20}{60} = \frac{2}{6} = \frac{1}{3}$

1) $\frac{40}{56} =$ ____

2) $\frac{2}{8} =$ ____

3) $\frac{42}{56} =$ ____

11) $\frac{7}{14} =$ ____

12) $\frac{14}{70} =$ ____

13) $\frac{6}{9} =$ ____

21) $\frac{16}{18} =$ ____

22) $\frac{16}{40} =$ ____

23) $\frac{10}{90} =$ ____

Multiply.

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

(2) $\frac{2}{3} \times 3\frac{11}{13} =$

(3) $\frac{14}{15} \times 2\frac{1}{2} =$

(4) $\frac{5}{8} \times 1\frac{1}{5} =$

(5) $\frac{1}{2} \times 1\frac{1}{9} =$

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

Divide.

(1) $\frac{1}{3} \div \frac{8}{13} =$

(2) $\frac{1}{2} \div \frac{7}{9} =$

(3) $\frac{1}{3} \div \frac{7}{10} =$

(4) $\frac{1}{2} \div \frac{5}{6} =$

(5) $\frac{1}{2} \div \frac{11}{14} =$

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