

Get out your homework and start checking your answers.

Classwork - Identifying and Combining Like Terms

Name the property shown by each statement.

1. $1 \cdot (a + 3) = a + 3$

Multiplicative Identity

2. $2p + (3q + 2) = (2p + 3q) + 2$

Associative Property of Addition

3. $(ab)c = c(ab)$

**Commutative Property of
Multiplication**

4. $2t \cdot 0 = 0$

Multiplicative Property of Zero

5. $m(nr) = (mn)r$

**Associative Property of
Multiplication**

6. $0 + 2s = 2s$

Additive Identity

State whether the following conjectures are *true* or *false*. If *false*, provide a counterexample.

7. The product of an odd number and an even number is always odd. **false; $2 \cdot 3 = 6$**

8. The sum of two whole numbers is always larger than either whole number.
false; $2 + 0 = 2$

FAXES Marcellus sent four faxes to Gem. The first fax took 14 seconds to send, the second fax 19 seconds, the third 16 seconds, and the fourth 11 seconds. Use mental math to find out how many seconds it took to fax all four documents to Gem. Explain your reasoning. **60 s; Sample answer: $14 + 16 = 30$, $19 + 11 = 30$, $30 + 30 = 60$**

SNOW The first four snowfalls of the year in Shawnee's hometown measured 1.6 inches, 2.2 inches, 1.8 inches, and 1.4 inches. Use mental math to find the total amount of snow that fell. Explain your reasoning. **7 in.; Sample answer: $1.6 + 1.4 = 3$, $2.2 + 1.8 = 4$, $3 + 4 = 7$**

Objective: I will be able to identify like terms and know when it is possible to combine terms. This will help me solve more intricate equations in the future

Suppose you had small bags of fruit on a table. As you look from left to right, you see the following:

5 apples 3 pears 7 bananas 3 apples 1 watermelon 1 banana 2 watermelon

Which bags have like fruits?

Which fruit have no other like it?

Apples, Bananas, watermelon

Pears

Often in algebra, we use a **variable** to represent a number we don't know yet. Knowing how to work with variables is important in making the expressions simpler and easier to solve.

Look at the fruits below. I haven't told you the cost of each fruit, however, you can see the types of fruit in the picture and how much of each. Write out the information below and assign each fruit a variable.



$$2a + 3z + 3a$$

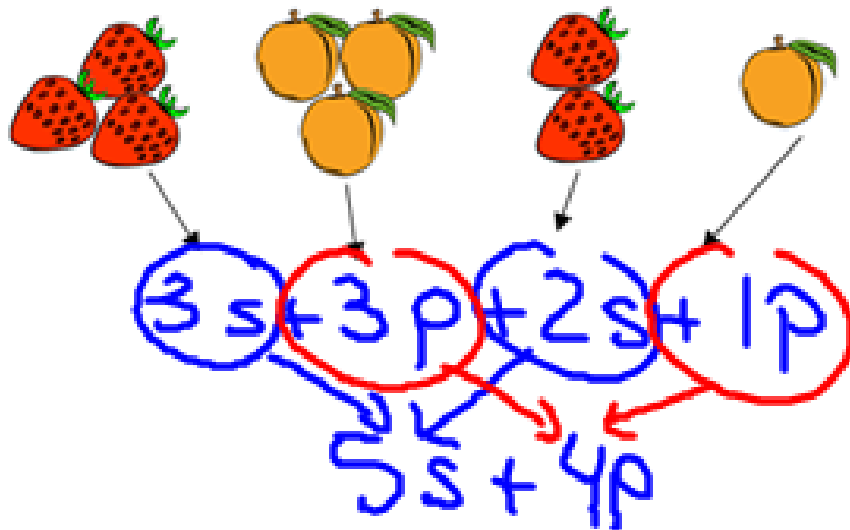
$$5a + 3z$$

Type of fruit \rightarrow Variable to represent the fruit

apples \rightarrow a Bananas \rightarrow z

Write each group of fruit with the number of fruit and the variable you used to represent the cost of each one.

What would be the simplest way to write all the fruit in the picture? Write it as an expression



Vocabulary

Term – a single number or variable OR a number multiplied with a variable

Type of fruit → Variable to represent the fruit
Define Variables
 Strawberry → s peach → p

Write each group of fruit with the number of fruit and the variable you used to represent the cost of each one.

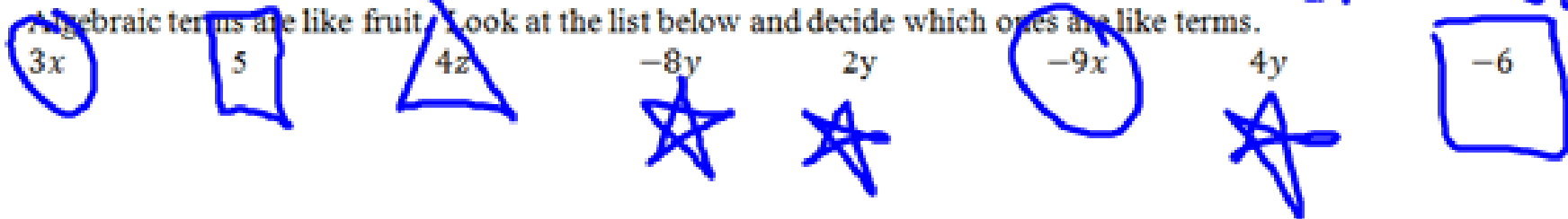
What would be the simplest way to write all the fruit in the picture? Write it as an expression

Vocabulary

Like Terms -

Terms that have the same variable(s) or no variable (constant)

Algebraic terms are like fruit. Look at the list below and decide which ones are like terms.



Like terms have:

- same variable with the SAME exponent (if there is one)
- are number with no variables (constants)
- PAY ATTENTION TO THE + OR - in front of each term**

x and x² aren't like terms

Below is a list of variable terms. You also have these terms on slips. You will be using these terms to do the classwork today.

⊕

+7x	-3	+7y	2xy	7y
+2y	-4xy	+5	2x	-3x
+9	-1x	5xy	y	1xy
+2xy	-4y	7x	4	6

First, sort the terms into groups of like terms. Write the like terms in each box below.

Terms with an x in it

+7x 7x -3x
-1x 2x

Terms with an y in it

+2y +7y 7y
-4y y y

Terms with an xy in it

+2xy 5xy 1xy
-4xy 2xy

Terms with no variable

+9 +5 6
-3 4

Steps to Combining like terms

- A) Draw boxes around like terms (INCLUDE THE SIGN)
- B) Draw a circle around other like terms (INCLUDE THE SIGN)
- C) Look at like terms and add/subtract them
 - Write the answer BELOW the expression

What number can I write in front of a variable that has no number?

$$\boxed{\quad} x \qquad \boxed{\quad} y \qquad \boxed{\quad} z$$

Practice:

*Hint – If the first term doesn't have a sign in front of it → write a + sign

Combine the like terms in the expressions below. If you cannot combine anything, explain why.

A) $5x + 8x$
 $13x$

B) $7y - 4y$
 $3y$

C) $-10a + 4b$

They aren't like terms so they can't be combined

D) $-1a + 3a$
 $-4a$

$$D) 10x + 9x + 7$$

$$10x + 7$$

$$H) 12b + 15 - 8b$$

$$4b + 15$$

$$E) -15 + 3y - 5y$$

$$-15 - 2y$$

$$\text{or } -2y - 15$$

$$I) -4x - 12 + 3x$$

$$\text{or } -1x - 12$$

$$\text{or } -x - 12$$

$$-12 - 1x$$

$$F) -3a - 5a - 9$$

$$-8a - 9$$

$$J) 11 - 7y - 9$$

$$\text{or } 2 - 7y$$

$$-7y + 2$$

$$G) 5a + a - 12$$

$$6a - 12$$

$$K) 3a + 15 + 2a - 12$$

$$5a + 3$$