

Indicator 17 Class Notes by Mrs. Joshi

Writing Expressions

14. Write, evaluate, and compare expressions involving whole number exponents.

1.2 Lesson



Some words imply math operations.

Operation	Addition	Subtraction	Multiplication	Division
Key Words and Phrases	added to plus sum of more than increased by total of and	subtracted from minus difference of less than decreased by fewer than take away	multiplied by times product of twice of	divided by quotient of

EXAMPLE 1 Writing Numerical Expressions

Write the phrase as an expression.

- a. 8 **fewer than** 21

$$21 - 8$$

The phrase "fewer than" means subtraction.

- b. The **product of** 30 and 9

$$30 \times 9, \text{ or } 30 \cdot 9$$

The phrase "product of" means multiplication.

EXAMPLE 2 Writing Algebraic Expressions

Write the phrase as an expression.

- a. 14 **more than** a number x

$$x + 14$$

The phrase "more than" means addition.

- b. A number y **minus** 75

$$y - 75$$

The phrase "minus" means subtraction.

- c. The **quotient of** 3 and a number z

$$3 \div z, \text{ or } \frac{3}{z}$$

The phrase "quotient of" means division.

Common Error

When writing expressions involving subtraction or division, order is important. For example, the quotient of a number x and 2 means

$$x \div 2, \text{ not } 2 \div x.$$

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EXAMPLE 3 Standardized Test Practice

In 2009, the number of members from Florida in the House of Representatives was 3 less than 4 times the number from Alabama. Let a be the number of members from Alabama. Which expression could be used to find the number of members from Florida?

- (A) $4a - 3$ (B) $4a + 3$ (C) $3 - 4a$ (D) $4 - 3a$

The phrase "times" means multiplication. So, multiply 4 and a .

The phrase "less than" means subtraction. So, subtract 3 from $4a$.

$$4a - 3$$

∴ The correct answer is (A).

EXAMPLE 4 Real-Life Application

You plant a cypress tree that is 10 inches tall. Each year, its height increases by 15 inches.

a. Make a table and graph that show the height of the tree for 4 years. Then write an expression for the height after t years.

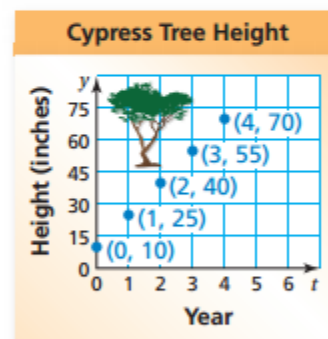
b. What is the height after 9 years?

a. The height is *increasing*, so *add* $15t$ as shown in the table. From the table, you can then graph the ordered pairs.

Year, t	Height (inches)
0	10
1	$10 + 15(1) = 25$
2	$10 + 15(2) = 40$
3	$10 + 15(3) = 55$
4	$10 + 15(4) = 70$

When t is 0, the height is 10 inches.

You can see that an expression is $10 + 15t$.



∴ So, the height after year t is $10 + 15t$.

b. Evaluate $10 + 15t$ when $t = 9$.

$$10 + 15t = 10 + 15(9) = 145$$

∴ After 9 years, the height of the tree is 145 inches.