

Lesson 3.2

November 21, 2013

# Essential Question

How can you write an expression that represents an unknown quantity?

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# LessonTarget

To be able to:

- write an algebraic expression that represents a verbal phrase.

## Self-Evaluation Rubric

Score	Description
4	I can teach other students how to write an algebraic expression that represents a verbal phrase.
3	I can write an algebraic expression that represents a verbal phrase.
2	I recognize how to write an algebraic expression that represents a verbal phrase.
1	I do not know how to write an algebraic expression that represents a verbal phrase.

**Lesson Target:** To be able to write an algebraic expression that represents a verbal phrase.

## Activity 1

With a partner(s) work on  
**Activity 1** on page 61 & 62 in  
the so cover Big Ideas and  
Pracce Journal.

## Activity 2

With a partner(s) work on  
**Activity 2** on page 62 & 63 in  
the so cover Big Ideas and  
Pracce Journal.

20 - cost of \_\_\_\_\_.

20 - CS

20 - S

KIDS

$$4.95 + 2d \quad s < 5$$

$$\begin{array}{r} \cancel{20} - 4.65s \\ C - 4.65s \end{array}$$

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# Words That Imply Math Operations

Operation	Addition	Subtraction	Multiplication	Division
<b>Key Words and Phrases</b>	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

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## 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*.



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## 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 word *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*.

Handwritten blue annotations showing division examples:  $2 \overline{)6}$ ,  $6 : 2$ , and  $2 \overline{)6}$ .

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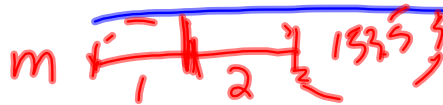
## Tryit!

### **On Your Own**

**Write the phrase as an expression.**

1. the sum of 18 and 35
2. 6 times 50
3. 25 less than a number  $b$
4. a number  $x$  divided by 4
5. the total of a number  $t$  and 11
6. 100 decreased by a number  $k$

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### 3 Writing an Algebraic Expression

The length of Interstate 90 from the West Coast to the East Coast is 153.5 miles more than 2 times the length of Interstate 15 from southern California to northern Montana. Let  $m$  be the length of Interstate 15. Which expression can you use to represent the length of Interstate 90?

- (A)  $2m + 153.5$    (B)  $2m - 153.5$    (C)  $153.5 - 2m$    (D)  $153.5m + 2$

The word *times* means *multiplication*. So, multiply 2 and  $m$ .

$$2m + 153.5$$

The phrase *more than* means *addition*. So, add  $2m$  and 153.5.

❖ The correct answer is (A).

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#### 4 Real-Life Application



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

- Make a table that shows the height of the tree for 4 years. Then write an expression for the height after  $t$  years.
  - What is the height after 9 years?
- a. The height is *increasing*, so *add* 15 each year as shown in the table.

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.

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$$F = 5t + 2\pi$$

**Tryit!**

$$S = t$$



### On Your Own

7. Your friend has 5 more than twice as many game tokens as your sister. Let  $t$  be the number of game tokens your sister has. Write an expression for the number of game tokens your friend has.
8. **WHAT IF?** In Example 4, what is the height of the cypress tree after 16 years?

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# Homework

Big Ideas Record and  
Pracce Journal  
(so cover)  
Page 64