

Module 1: Expressions

Topic 1: Examples of Translating Verbal Expression & Algebraic Expressions

Introduction

EXAMPLES OF TRANSLATING VERBAL EXPRESSIONS & ALGEBRAIC EXPRESSIONS

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EDUCATION

Examples of Translating Verbal Expressions and Algebraic Expressions

Click the examples below to learn more.

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Topic 1: Examples of Translating Verbal Expression & Algebraic Expressions

Example 1

EXAMPLE 1

Translate the following verbal expression to an algebraic expression.

Five times the **sum of two and a number**

$$5 \cdot (2 + x)$$
$$5(2 + x)$$

Menu

Translate the following verbal expression to an algebraic expression.

Five times the sum of two and a number

In this example, there are two keywords to notice: times and sum. When translating verbal expressions that include more than one keyword or phrase, it is a good practice to begin translating near the end of the expression and then work your way to the beginning. For example:

Five **times** the **sum** of two and a number

Begin by translating the part of the expression that includes the last keyword: the sum of two and a number. “Sum” implies addition. If you let “ x ” represent the unknown number, then this part of the verbal expression can be translated to “ $2 + x$.”

Now, address the part of the expression that includes the first keyword: Five times the sum of two and a number. “Times” implies multiplication. Therefore, the entire verbal expression can be translated to “ $5 \cdot (2 + x)$ ” or simply “ $5(2 + x)$.”

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Example 2

EXAMPLE 2

Translate the following verbal expression to an algebraic expression.

The cube of four more than five times a number

Which of the following correctly translates this part of the expression? Click your answer below.

$5 + x$

$5x$

$5 - x$

Translate the following verbal expression to an algebraic expression.

The cube of four more than five times a number

In this example, there are three keywords or phrases that signal operations: cube, more than, and times.

The **cube** of four **more than** five **times** a number

Begin by translating the part of the expression that includes the last keyword: five times a number.

Which of the following correctly translates this part of the expression? Click your answer below.

- A) $5 + x$
- B) $5x$
- C) $5 - x$

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Example 2 (continued)

EXAMPLE 2

Translate the following verbal expression to an algebraic expression.

The cube of four more than five times a number

The keyword “times” signals multiplication. Therefore, the expression “five times a number” can be translated to $5x$.

$5x$

Next

Feedback: The keyword “times” signals multiplication. Therefore, the expression “five times a number” can be translated to “ $5x$.”

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Example 2 (continued)

EXAMPLE 2

Translate the following verbal expression to an algebraic expression.

The cube of four more than five times a number

Which of the following correctly translates this part of the expression? Click your answer below.

$5x + 4$ $5x - 4$ $5x^4$

Now continue working your way to the beginning by translating the part of the expression that includes the second key phrase: four more than five times a number.

Which of the following expressions correctly translates this part of the verbal situation?

- A) $5x + 4$
- B) $5x - 4$
- C) $5x^4$

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Example 2 (continued)

EXAMPLE 2

Translate the following verbal expression to an algebraic expression.

The cube of four more than five times a number

The key phrase “more than” signals addition. Therefore, the expression “four more than five times a number” can be translated as $5x + 4$.

$$5x + 4$$

Next

Feedback: The key phrase “more than” signals addition. Therefore the expression “four more than five times a number” can be translated to “ $5x + 4$ ”.

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Example 2 (continued)

EXAMPLE 2

Translate the following verbal expression to an algebraic expression.

The cube of four more than five times a number

Which of the following algebraic expressions correctly translates the verbal expression? Click your answer below.

(5x + 4)²

(5x + 4)³

(5x + 4)⁴

Finally, translate the part of the expression that includes the first keyword: The cube of four more than five times a number.

Which of the following expressions correctly translates the verbal situation?

- A) $(5x + 4)^2$
- B) $(5x + 4)^3$
- C) $(5x + 4)^4$

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Example 2 (continued)

EXAMPLE 2

Translate the following verbal expression to an algebraic expression.

The cube of four more than five times a number

The keyword “cube” informs you that you are raising an expression to the third power. Therefore, the expression “the cube of four more than five times a number” can be translated to $(5x + 4)^3$.

$$(5x + 4)^3$$

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Feedback: The keyword “cube” informs you that you are raising an expression to the third power. Therefore, the expression “the cube of four more than five times a number” can be translated to “ $(5x + 4)^3$.”

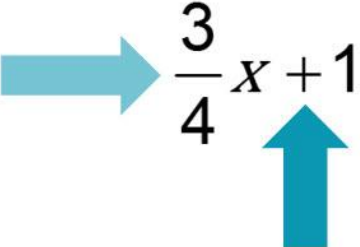
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Example 3

EXAMPLE 3

Translate the following algebraic expression to a verbal expression.



Begin by addressing the operation completed last

Translate the following algebraic expression to a verbal expression.

$$\frac{3}{4}x + 1$$

When translating an algebraic expression to a verbal expression, it is helpful to interpret the symbols that are included. This will help you identify what operations are involved in the expression and what keywords and phrases should be included in the translation. It is often helpful to begin by addressing the operation that was completed last.

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Example 3 (continued)

EXAMPLE 3

Translate the following algebraic expression to a verbal expression.

$$\frac{3}{4}x + 1$$

Keywords for Addition

- greater than
- is increased by
- more than
- sum

In this example, notice the symbol for addition:

$$\frac{3}{4}x + 1$$

Now consider some of the keywords and phrases that imply addition: greater than, is increased by, more than, and sum. Choose one of the keywords and phrases to use in the translation. You could choose “sum” for this example.

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Example 3 (continued)

EXAMPLE 3

Translate the following algebraic expression to a verbal expression.

$$\frac{3}{4}x + 1$$

the sum of three-fourths of a number

Now complete the translation by explaining what this expression represents “the sum of,” or in other words, what values are being added together.

The first value in the expression is the term, $\frac{3}{4}x$. Notice that $\frac{3}{4}$ is written next to x . This is a signal that $\frac{3}{4}$ is multiplied by x . Consider the keywords and phrases that signal multiplication: product, times, and of. “Of” is most often chosen to explain the multiplication of a number by a fraction. Therefore, $\frac{3}{4}x$, can be translated to “three-fourths of a number.” Other acceptable translations include:

- three-fourths times a number; or
- the product of three-fourths and a number.

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Example 3 (continued)

EXAMPLE 3

Translate the following algebraic expression to a verbal expression.

$$\frac{3}{4}x + 1$$

one more than three-fourths of a number

In the expression, $\frac{3}{4}x$ is added to 1.

Therefore, this expression can be translated to: the sum of three-fourths of a number and one.

Keep in mind, however, that this is not the only correct translation for this algebraic expression. A few additional translations that are also correct are:

- one more than three-fourths of a number
- three-fourths of a number increased by one
- one more than the product of three-fourths and a number

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Example 4

EXAMPLE 4

Choose the options that correctly complete the translation of:

$$3x - 5 = 8$$

Five ? three _____ a number is eight

Which of the following options represents subtraction?

less than **more than**

Choose the options that correctly complete the translation of: $3x - 5 = 8$.

Five _____ three _____ a number is eight.

Notice that the sentence begins with the word “five.” In the given equation, 5 is subtracted from $3x$.

Which of the options given for the first blank represents subtraction? Less than or more than?

correct answer: less than

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Example 4 (continued)

EXAMPLE 4

Choose the options that correctly complete the translation of:

$$3x - 5 = 8$$

Five less than three _____ a number is eight

**The phrase “less than” signals subtraction.
The phrase “more than” signals addition.**

less than

Feedback: The phrase “less than” signals subtraction. The phrase “more than” signals addition.

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Example 4 (continued)

EXAMPLE 4

Choose the options that correctly complete the translation of:

$$3x - 5 = 8$$

Five less than three ? a number is eight

Which of the following options represents multiplication?

divided by

times

The second blank separates the words “three” and “a number.” Therefore, you can infer that this blank will include the keyword or phrase that describes the relationship between 3 and x . In the given equation, 3 is multiplied by x .

Which of the options given for the second blank represents multiplication

correct answer: times

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Example 4 (continued)

EXAMPLE 4

Choose the options that correctly complete the translation of:

$$3x - 5 = 8$$

Five less than three **times** a number is eight

The phrase “divided by” signals division.

The word “times” signals multiplication.

times

Feedback: The phrase “divided by” signals division. The word “times” signals multiplication.

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Example 4 (continued)

EXAMPLE 4

Choose the options that correctly complete the translation of:

$$3x - 5 = 8$$

 **Five less than three times a number is eight**

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Now consider the complete sentence and verify that it correctly translates the given equation:


Five less than three times a number is eight.

This is correct.

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Topic 1: Examples of Translating Verbal Expression & Algebraic Expressions

Self-Check 1

**Self-Check**

Choose the algebraic expression that correctly represents the phrase below:

the quotient of seventeen and six less than two times a number

- $17(2x - 6)$
- $\frac{17}{2x - 6}$
- $(2x - 6)^{17}$
- $\frac{17}{6x - 2}$

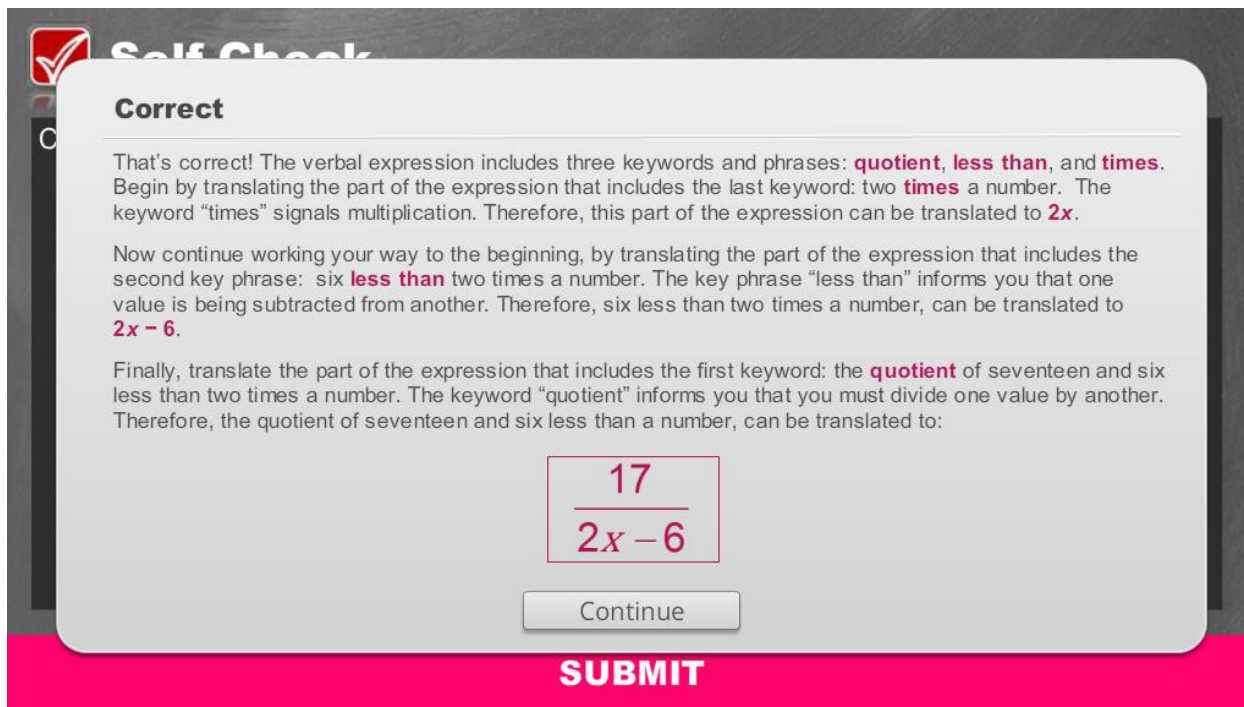
SUBMIT

Solve the problem in the image above to check your understanding of the content.

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Self-Check 1: Answer



Correct

That's correct! The verbal expression includes three keywords and phrases: **quotient**, **less than**, and **times**. Begin by translating the part of the expression that includes the last keyword: two **times** a number. The keyword "times" signals multiplication. Therefore, this part of the expression can be translated to $2x$.

Now continue working your way to the beginning, by translating the part of the expression that includes the second key phrase: six **less than** two times a number. The key phrase "less than" informs you that one value is being subtracted from another. Therefore, six less than two times a number, can be translated to $2x - 6$.

Finally, translate the part of the expression that includes the first keyword: the **quotient** of seventeen and six less than two times a number. The keyword "quotient" informs you that you must divide one value by another. Therefore, the quotient of seventeen and six less than a number, can be translated to:

$$\frac{17}{2x - 6}$$

Continue

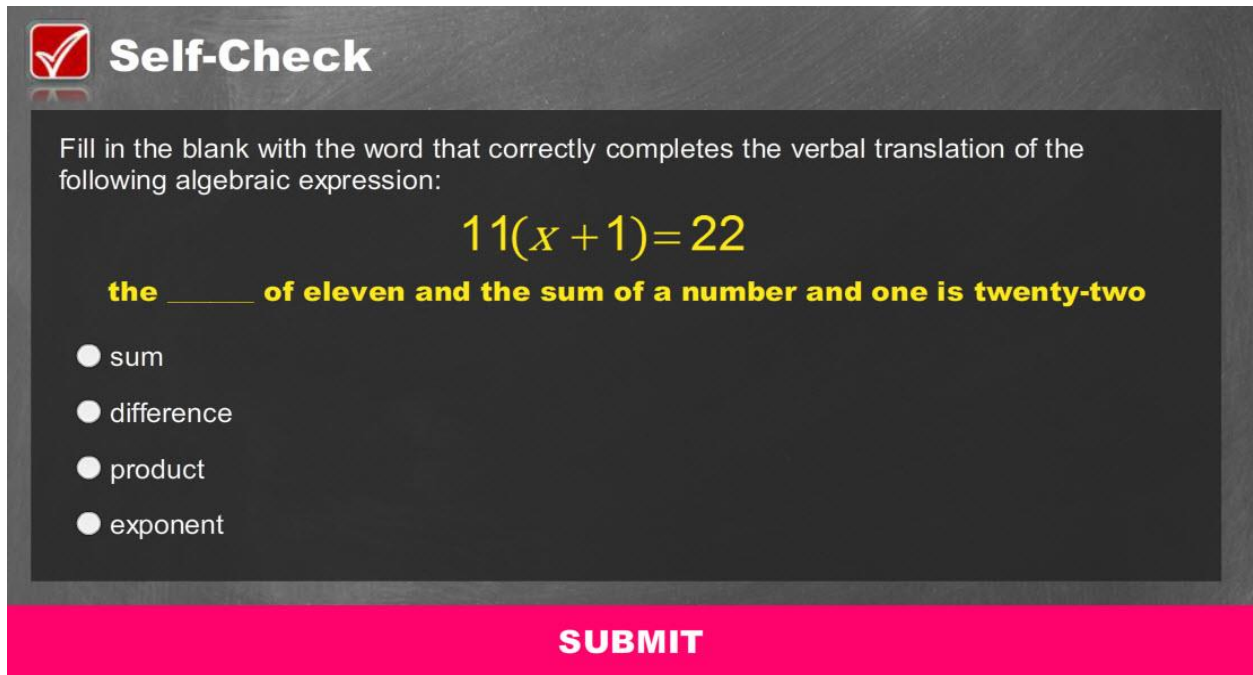
SUBMIT

For your reference, the image above shows the correct solution to the self-check problem.

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Self-Check 2

A self-check interface with a dark grey background. At the top left is a red checkmark icon in a white square, followed by the text "Self-Check" in white. Below this, a white text prompt asks to fill in a blank. The algebraic expression $11(x + 1) = 22$ is shown in yellow. Below the expression is a yellow text prompt with a blank line. At the bottom left are four radio button options. At the bottom center is a pink button with the word "SUBMIT" in white.

Self-Check

Fill in the blank with the word that correctly completes the verbal translation of the following algebraic expression:

$$11(x + 1) = 22$$

the _____ of eleven and the sum of a number and one is twenty-two

- sum
- difference
- product
- exponent

SUBMIT

Solve the problem in the image above to check your understanding of the content.

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Self-Check 2: Answer

Self-Check

Correct

That's correct! In the given equation, 11 is multiplied by $(x + 1)$

$$11(x + 1) = 22$$

The word "product" describes multiplication, therefore, the answer is **product**.

Continue

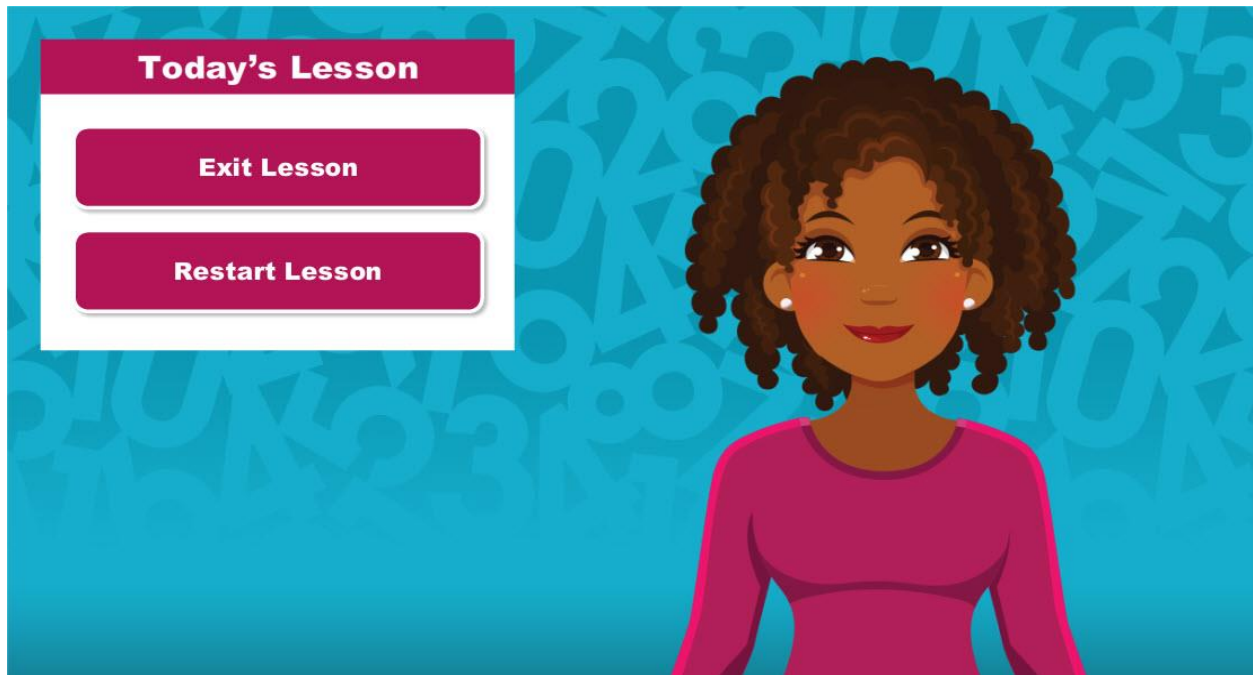
SUBMIT

For your reference, the image above shows the correct solution to the self-check problem.

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Conclusion



Today's Lesson: Exit Lesson or Restart Lesson