

Module 1: Expressions

Topic 1: Translating Verbal Expression & Algebraic Expressions

Introduction



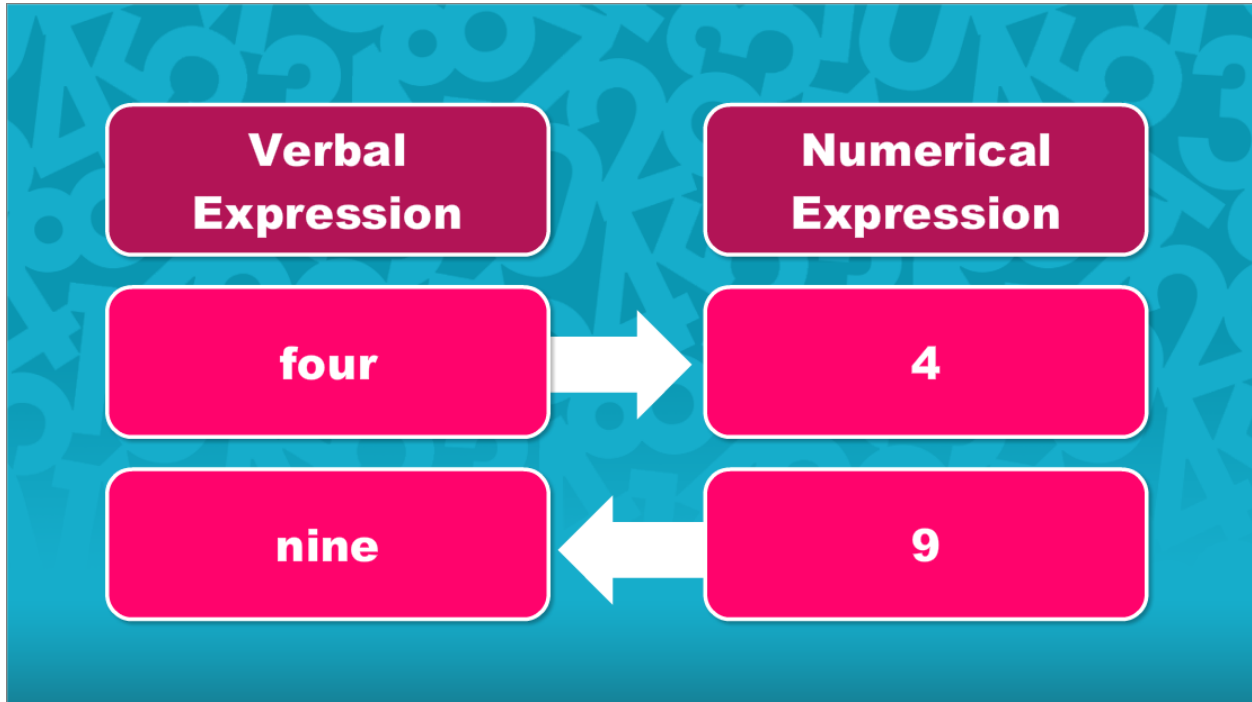
Today's Lesson

- You will learn how to translate between verbal and algebraic expressions.
- This lesson will expand your ability to translate expressions.

Hi there! I'm so glad to have you here for this lesson in Algebra I. In this lesson, you will learn how to translate between verbal and algebraic expressions. You may have had some practice translating expressions in your earlier math studies, so this lesson will extend your knowledge. Let's begin by taking a look at the next few examples.

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Anticipatory Set

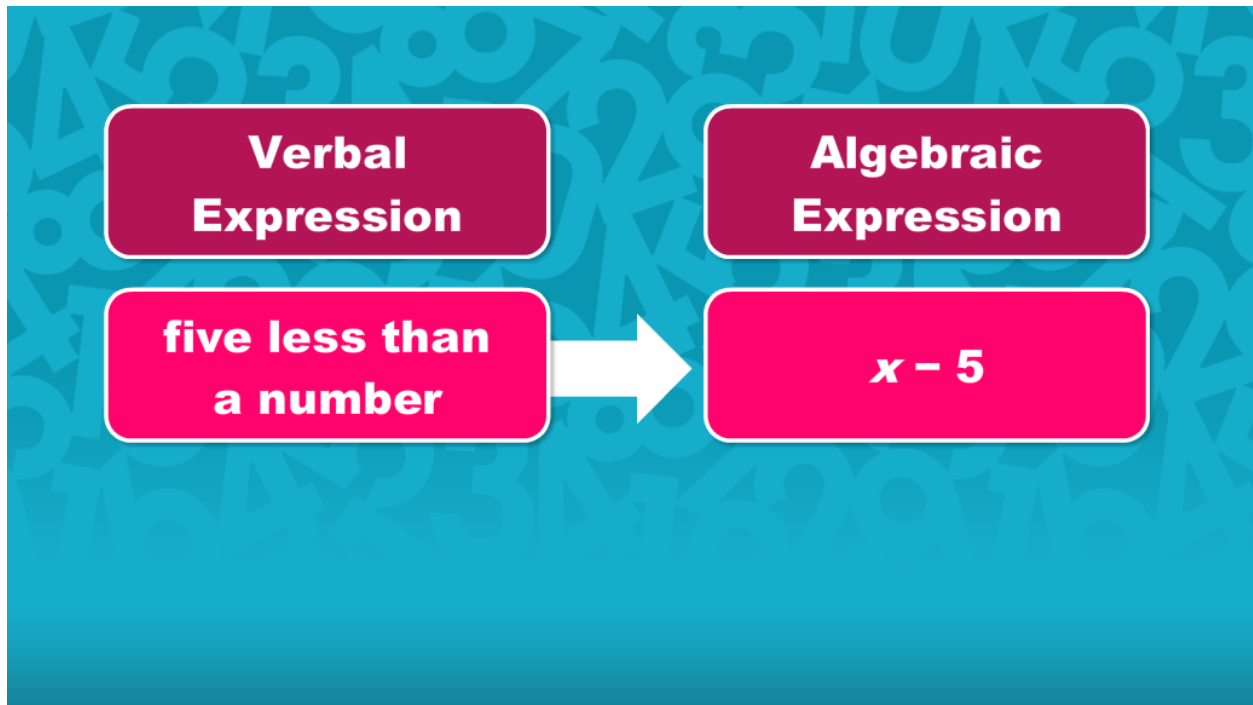


When you see this word, four, you know that it represents this number, 4. You translated a verbal expression to a numerical expression.

When you see this number, 9, you know that it represents this word, nine. You translated a numerical expression to a verbal expression.

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Anticipatory Set (continued)



Now, take for example the verbal expression “five less than a number.” A verbal expression that includes an unknown value can be translated to an algebraic expression.

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Expressions

VERBAL	<ul style="list-style-type: none"> • greater than • is increased by • more than • sum 	<ul style="list-style-type: none"> • less than • is decreased by • difference of • less • diminished by 	<ul style="list-style-type: none"> • product • times • of 	<ul style="list-style-type: none"> • quotient • divided by
OPERATION				
EXAMPLE				

Click each column above to learn more about the verbal expressions.

When translating a verbal expression to an algebraic expression, it is helpful if you are familiar with some of the following keywords and phrases:

- greater than
- is increased by
- more than
- sum
- less than
- is decreased by
- difference of
- less
- diminished by
- product
- times
- of
- quotient
- divided by

Click each column above to learn more about the verbal expressions.

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Expressions (continued)

VERBAL	<ul style="list-style-type: none"> • greater than • is increased by • more than • sum 	<ul style="list-style-type: none"> • less than • is decreased by • difference of • less • diminished by 	<ul style="list-style-type: none"> • product • times • of 	<ul style="list-style-type: none"> • quotient • divided by
OPERATION	+			
EXAMPLE	Two more than a number $2 + x$ or $x + 2$			

Click each column above to learn more about the verbal expressions.

When translating a verbal expression that includes any of these keywords or phrases, it is a signal that one value is added to another. For example, the verbal expression “two more than a number” means that two is added to a number with an unknown value. If you let x represent the unknown value, then the verbal expression can be translated to the algebraic expression “ $2 + x$ ” or “ $x + 2$.”

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Expressions (continued)

VERBAL	<ul style="list-style-type: none"> • greater than • is increased by • more than • sum 	<ul style="list-style-type: none"> • less than • is decreased by • difference of • less • diminished by 	<ul style="list-style-type: none"> • product • times • of 	<ul style="list-style-type: none"> • quotient • divided by
OPERATION	+	—		
EXAMPLE	Two more than a number $2 + x$ or $x + 2$	A number decreased by 4 $x - 4$		

Click each column above to learn more about the verbal expressions.

These keywords and phrases are a signal that one value is subtracted from another. Take for example the expression “a number decreased by four.” This means that four is subtracted from an unknown value. If you let x represent the unknown value, the verbal expression can be translated to “ $x - 4$.”

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Expressions (continued)

VERBAL	<ul style="list-style-type: none"> greater than is increased by more than sum 	<ul style="list-style-type: none"> less than is decreased by difference of less diminished by 	<ul style="list-style-type: none"> product times of 	<ul style="list-style-type: none"> quotient divided by
OPERATION	+	—	• ()	
EXAMPLE	Two more than a number $2 + x$ or $x + 2$	A number decreased by 4 $x - 4$	The product of six and a number $6 \cdot x$ $6(x)$ $6x$	

Click each column above to learn more about the verbal expressions.

These words inform you that you are multiplying two values. In algebra, a dot or parentheses is often used to represent multiplication. For example, the expression “the product of six and a number” can be represented as “ $6 \cdot x$,” or “ $6(x)$,” or even simply by “ $6x$.”

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Expressions (continued)

VERBAL	<ul style="list-style-type: none"> greater than is increased by more than sum 	<ul style="list-style-type: none"> less than is decreased by difference of less diminished by 	<ul style="list-style-type: none"> product times of 	<ul style="list-style-type: none"> quotient divided by
OPERATION	+	—	• ()	—
EXAMPLE	Two more than a number $2 + x$ or $x + 2$	A number decreased by 4 $x - 4$	The product of six and a number $6 \cdot x$ $6(x)$ $6x$	The quotient of a number and nine $\frac{x}{9}$

Click each column above to learn more about the verbal expressions.

These words imply division. In algebra, a division bar is often used to represent the quotient of two values. For example, “the quotient of a number and nine” can be translated to $\frac{x}{9}$.

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Expressions (continued)

VERBAL	<ul style="list-style-type: none">• raised to the power of	<ul style="list-style-type: none">• squared• raised to the second power	<ul style="list-style-type: none">• cubed• raised to the third power	<ul style="list-style-type: none">• equivalent to• the same as• equal to• is
OPERATION				
EXAMPLE				

Click each column above to learn more about the verbal expressions.

Click each column above to learn more about the verbal expressions.

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Expressions (continued)

VERBAL	<ul style="list-style-type: none"> raised to the power of 	<ul style="list-style-type: none"> squared raised to the second power 	<ul style="list-style-type: none"> cubed raised to the third power 	<ul style="list-style-type: none"> equivalent to the same as equal to is
OPERATION	an exponent			
EXAMPLE	A number to the power of four x^4			

Click each column above to learn more about the verbal expressions.

When you translate a verbal expression that includes the phrase “raised to the power of,” the resulting algebraic expression will include an exponent. For example, the expression “a number raised to the power of four” can be translated to an algebraic expression where x is the base and four is the exponent, x^4 .

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Expressions (continued)

VERBAL	<ul style="list-style-type: none"> raised to the power of 	<ul style="list-style-type: none"> squared raised to the second power 	<ul style="list-style-type: none"> cubed raised to the third power 	<ul style="list-style-type: none"> equivalent to the same as equal to is
OPERATION	an exponent	an exponent of 2		
EXAMPLE	A number to the power of four x^4	A number squared x^2		

Click each column above to learn more about the verbal expressions.

When you translate a verbal expression that includes the word “squared,” or the phrase “raised to the second power,” the resulting algebraic expression will include an exponent of two. For example, the expression “a number squared” can be translated to an algebraic expression where x is the base and two is the exponent, x^2 .

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Expressions (continued)

VERBAL	<ul style="list-style-type: none"> raised to the power of 	<ul style="list-style-type: none"> squared raised to the second power 	<ul style="list-style-type: none"> cubed raised to the third power 	<ul style="list-style-type: none"> equivalent to the same as equal to is
OPERATION	an exponent	an exponent of 2	an exponent of 3	
EXAMPLE	A number to the power of four x^4	A number squared x^2	A number cubed x^3	

Click each column above to learn more about the verbal expressions.

When you translate a verbal expression that includes the word “cubed” or the phrase “raised to the third power,” the resulting algebraic expression will include an exponent of three. For example, the expression “a number cubed” can be translated to an algebraic expression where x is the base and three is the exponent, x^3 .

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Expressions (continued)

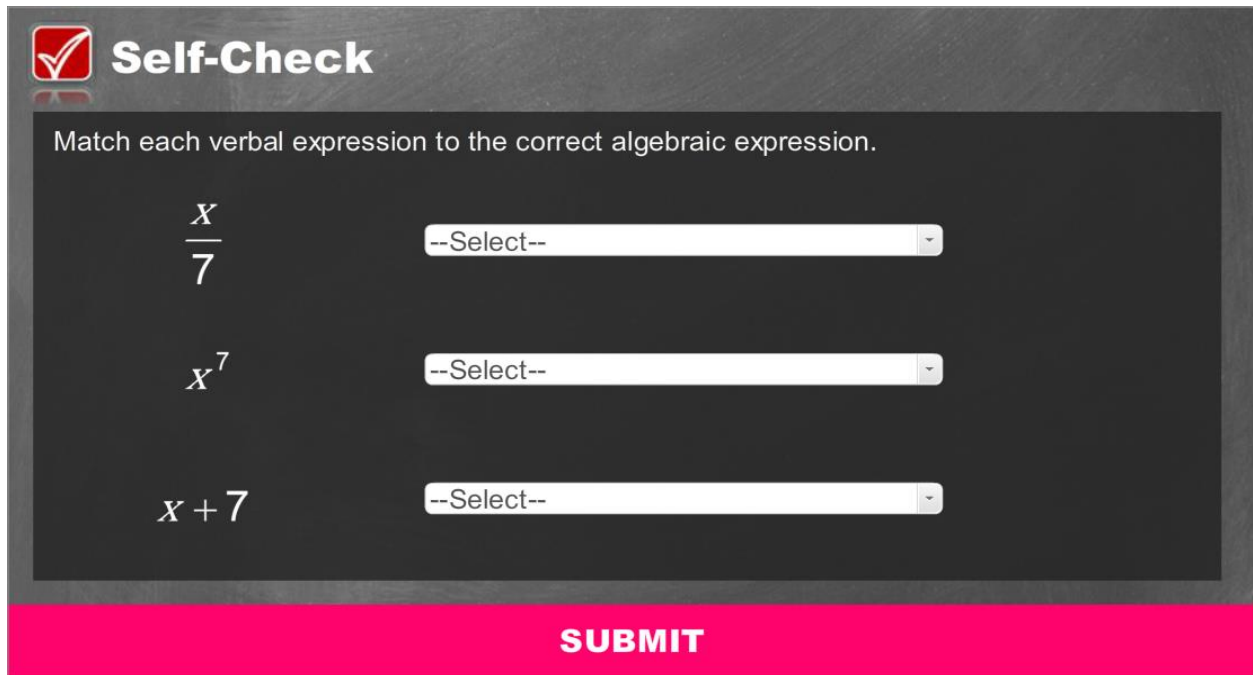
VERBAL	<ul style="list-style-type: none"> raised to the power of 	<ul style="list-style-type: none"> squared raised to the second power 	<ul style="list-style-type: none"> cubed raised to the third power 	<ul style="list-style-type: none"> equivalent to the same as equal to is
OPERATION	an exponent	an exponent of 2	an exponent of 3	=
EXAMPLE	A number to the power of four x^4	A number squared x^2	A number cubed x^3	The product of six and a number is twenty-one $6x = 21$

Click each column above to learn more about the verbal expressions.

The phrases “equivalent to,” “the same as,” “equal to,” “is,” are all a signal that you are translating a verbal situation to an equation. For example, “the product of six and a number is twenty-one” can be translated to the equation “ $6x = 21$.”

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Self-Check



Self-Check

Match each verbal expression to the correct algebraic expression.

$\frac{x}{7}$	--Select--
x^7	--Select--
$x + 7$	--Select--

SUBMIT

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

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Self-Check: Answer

Self-Check

Mat **Correct**

That's correct!

$\frac{x}{7}$	the quotient of a number and seven
x^7	a number raised to the power of seven
$x + 7$	a number increased by seven

The keyword "quotient" informs you that one value is divided by another.

When translating a verbal expression with the phrase "raised to the power of," the resulting algebraic expression includes an exponent.

The phrase "increased by" is a signal that one value is added to another.

Continue

SUBMIT

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

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Conclusion



The image shows a digital interface for a lesson conclusion. On the right, a woman with dark curly hair and a pink top is smiling. On the left, a white box with a pink header titled "Today's Lesson" contains two checked items: "Represent verbal situations algebraically" and "Represent algebraic expressions and equations verbally". Below the list are two pink buttons: "Exit Lesson" and "Restart Lesson". The background is a blue pattern of mathematical symbols.

Today's Lesson

- ✓ Represent verbal situations algebraically
- ✓ Represent algebraic expressions and equations verbally

Exit Lesson

Restart Lesson

Congratulations! You have reached the conclusion of this lesson on translating between verbal and algebraic expressions. You are now well-skilled in how to represent verbal situations algebraically, as well as how to represent algebraic expressions and equations, verbally.