CCSS: 6.EE.1, 6.EE.2.c

Lesson 17: Evaluating Expressions

To evaluate an expression with a variable or symbols, substitute the given number for the variable or symbol. Then follow the order of operations to simplify the expression. If there is more than one variable or symbol, substitute each of their values with the given numbers.

Example

Evaluate $k + 25$ for $k = 16$.

Given that $k = 16$, substitute 16 for k in the expression and simplify.

$k + 25 = (16) + 25$ **Substitute 16 for *k*.**

$= 41$ **Add.**

The expression $k + 25$ evaluated for $k = 16$ is 41.

Example

Evaluate $8y - 3$ for $y = 0.9$.

Given that $y = 0.9$, substitute 0.9 for y in the expression, and simplify.

$8y - 3 = 8(0.9) - 3$ **Substitute 0.9 for *y*.**

$= 7.2 - 3$ **Multiply 8 and 0.9.**

$= 4.2$ **Subtract.**

The expression $8y - 3$ evaluated for $y = 0.9$ is 4.2.

Example

Evaluate $4m + 3n^2$ for $m = 3$ and $n = 5$.

Given that $m = 3$ and $n = 5$, substitute 3 for m and 5 for n in the expression, and simplify.

$4m + 3n = 4(3) + 3(5)^2$ **Substitute 3 for *m* and 5 for *n*.**

$= 12 + 75$ **Multiply 4 by 3 and 3 by 5.**

$= 87$ **Add.**

The expression $4m + 3n$ evaluated for $m = 3$ and $n = 5$ is 87.

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You can evaluate an expression to solve a formula. Substitute the given values into the expression on one side of the equal sign.

Example

The formula to convert temperature from Celsius to Fahrenheit is $F = \frac{9}{5}C + 32$. What is the Fahrenheit temperature, F, if the Celsius temperature, C, is 25^0?

Given that $C = 25$, substitute 25 for C, and simplify.

$F = \frac{9}{5}C + 32$

$F = \frac{9}{5}(25) + 32$ **Substitute 25 for *C*.**

$F = 45 + 32$ **Multiply $\frac{9}{5}$ and 25.**

$F = 77$ **Add.**

If the Celsius temperature, C, is 25^0, the Fahrenheit temperature, F, is 77^0.

Example

The formula for the area of a triangle is $A = \frac{1}{2}bh$, where A is the area, b is the base of the triangle, and h is the height of the triangle. What is the area of a triangle with a base of 8.8 and a height of 10.5?

Given that $b = 8.8$ and $h = 10.5$, substitute 8.8 for b and 10.5 for h, and simplify.

$A = \frac{1}{2}bh$

$A = \frac{1}{2}(8.8)(10.5)$ **Substitute 8.8 for *b* and 10.5 for *h*.**

$F = \frac{1}{2}(92.4)$ **Multiply 8.8 and 10.5.**

$F = 46.2$ **Multiply $\frac{1}{2}$ and 92.4.**

The area of the triangle is 46.2 square units.