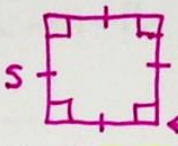
Objectives: I can identify expressions and write variable expressions.

Variables and Expressions



← square

P = 4s A = s*s or s^2

Variables

A variable is a symbol that represents a number. Usually we use letters such as *n*, *t*, or *x* for variables. For example, we might say that *s* stands for the side-length of a square. We now treat *s* as if it were a number we could use. The perimeter of the square is given by 4 * *s*. The area of the square is given by *s* * *s*. When working with variables, it can be helpful to use a letter that will remind you of what the variable stands for: let *n* be the number of people in a movie theater; let *t* be the time it takes to travel somewhere; let *d* be the distance from my house to the park.

Expressions

An expression is a mathematical statement that may use numbers, variables, or both. A **variable expression** contains at least one variable. A **numerical expression** contains just numbers.

The following are examples of expressions. Identify each as a numerical expression or variable expression. For each variable expression, name the variable.

2	Numerical (N)	*x*	(V) variable (x)
3 + 7	Numerical (N)	2*y* + 5	(V) variable (y)
2 + 6(4 - 2)	Numerical (N)	*z* + 3(8 - *z*)	(V) variable (z)

(N) ↑ these expressions only contain numbers

(V) ↑ these letters represent unknown numbers – they can "vary"

Translating words into expressions

Certain words can be translated into math operation symbols. Write the correct symbol beside each given word(s). Use +, - , * , or ÷

less than (−)	times (*)	more than (+)
increased by (+)	product (*)	of (*)
difference (−)	quotient (÷)	sum (+)
decreased by (−)	twice (2*)	half (÷2)
total (+)	double (2*)	quadruple (4*)

Quantity means use parentheses around the next expression.

For example, 5 times the quantity of 18 minus *h* → 5(18 − h)

(goes here!

Write a variable expression for each word phrase.

1. The sum (+) of 6 and x $6+x$
2. m multiplied (*) by 11 $11m$
3. 13 less (−) h $13-h$
4. 13 less (−) than h $h-13$
5. 5 times the sum (+) of n and 8 $5(n+8)$
6. 16 less (−) than the product (*) of m and -1 $-1m-16$ ~or~ $-m-16$
7. y decreased (−) by the product (*) of y and 2 $y-2y$

* Order of subtraction MATTERS!

Ex.: $5-3 \neq 3-5$

Write an expression for each quantity.

8. the value in cents of 5 quarters $5(25)$ — the value in cents of q quarters $25q$
   1 quarter = 25 cents
9. the number of days in 3 weeks $3(7)$ — the number of days in w weeks $7w$
   1 week = 7 days
10. the number of hours in 240 minutes $\frac{240}{60}$ — the number of hours in m minutes $\frac{m}{60}$
    1 hour = 60 min
11. the number of meters in 400 cm $\frac{400}{100}$ — the number of meters in c centimeters $\frac{c}{100}$
    1 meter = 100 cm