

Lesson 2-1 Variables and Algebraic Expressions

Variable	A symbol that represents one or more numbers.	x a ? □	*usually a letter
Expression	A mathematical phrase with at least one variable (no = sign!)	x+5 2+7	100-8

Evaluating Algebraic Expressions

We can evaluate, or solve, an expression, if we know the value of a given variable.

Example) Evaluate each expression. Use $p = 2$, $n = 3$, and $s = 5$.

a. $2p + 7$

$$2p + 7 = 2(2) + 7$$

$$= 4 + 7$$

$$= 11$$

← Substitute. →

← Multiply. →

← Add. →

b. $p + (n \cdot s)$

$$p + (n \cdot s) = 2 + (3 \cdot 5)$$

$$= 2 + 15$$

$$= 17$$

You Try!

Evaluate $n + t \cdot y$. Use $n = 3$, $t = 5$, and $y = 7$.

$$3 + 5 \cdot 7 = 3 + (35) = \boxed{38}$$

Evaluate $n + 2t$. Use $n = 3$, $t = 5$, and $y = 7$.

$$3 + 2(5) = 3 + 10 = \boxed{13}$$

Writing Algebraic Expressions

We can write an expression to represent a certain mathematical situation.

Example) Sally has 20 pieces of candy. Her brother gave her some more pieces.

We know how many pieces of candy Sally has $\rightarrow 20$

Her brother gave her some more pieces, so we'll add $\rightarrow 20 +$

We do not know how many pieces he gave her, so we'll use a variable c to represent the number of pieces of candy. $\rightarrow 20 + c$

You Try!

a. a temperature of t degrees increased by 5 degrees $t + 5$

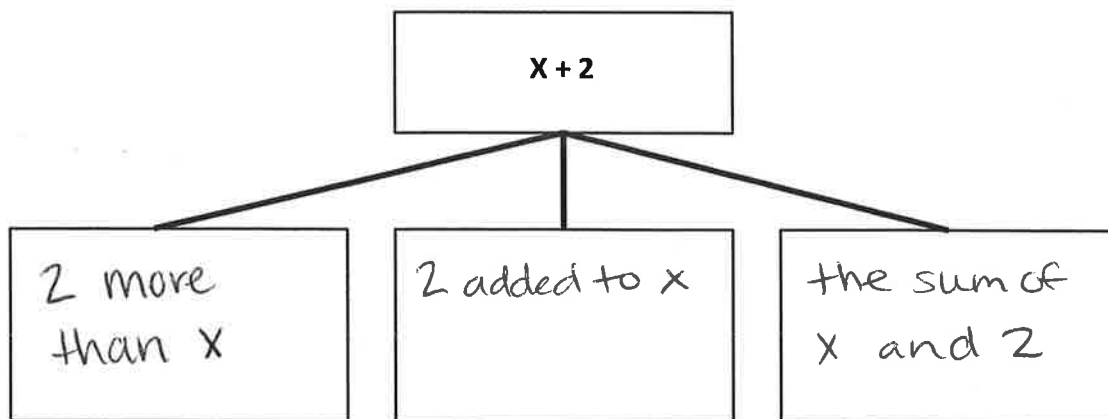
b. five cats fewer than c cats $c - 5$

c. the product of 5 and n nickels $5n$ $5 \cdot n$ $5 \times n$

d. a dinner bill of d dollars divided among five friends $\frac{d}{5}$ $d \div 5$ $5 \overline{)d}$
 $d/5$

We can also *translate* an algebraic expression into words.

What are three different word phrases you could use to describe $x + 2$.



Write a word phrase for:

$5 - n \rightarrow n$ less than 5, the difference between 5 and n

$6p \rightarrow 6$ groups of p , the product of 6 and p .

$\frac{p}{3} \rightarrow p$ divided by 3, p split into 3 groups

Independent Practice:

Evaluate each expression. Use the values $p = 4$, $n = 6$, and $s = 2$.

Exercise 1 has been started for you.

1. $7n = 7(6) = \square$
42

2. $-6p$

3. $5 - s$

4. $2p + 1$

Write an algebraic expression for each word phrase.

10. four shirts more than s shirts

$$s + 4$$

11. the quotient of p and 5

$$\frac{p}{5}$$

12. the sum of t TVs and 11 TVs

$$t + 11$$

13. five times your quiz score q

$$5q$$

Write a word phrase for each algebraic expression.

16. $d + 2$

The sum of d and 2.

or Two more than d

17. $\frac{4}{n}$

The quotient of 4 and n

18. $c - 9.1$

The difference of c and 9.1 or

9.1 less than c

