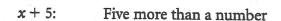## Quick Review

➤ **Algebraic expressions** contain **variables** such as x and n.
x and n can represent any numbers you choose.
Here are some examples of algebraic expressions and what they mean.

$x + 5$:	Five more than a number
$n - 3$:	Three less than a number
$3 - n$:	Three subtract a number
$5x$	Five times a number
$5n + 3$:	Five times a number, then add 3; or three more than five times a number
$\dfrac{100}{n}$:	One hundred divided by a number
$\dfrac{n}{100}$:	A number divided by one hundred

➤ In the algebraic expression $7t + 2$

  7 is the **numerical coefficient** of the variable.
  2 is the **constant term**.
  t is the variable.

➤ An algebraic expression can help you solve similar problems more efficiently. Once you know the algebraic expression, you can use it again, even if the numbers change.

HINT

If you see how to solve a problem using numbers, then you can write an algebraic expression for the problem. Replace the number that changes with a variable.

Suppose you earn $8 per hour.

For 3 hours, you earn: $3 \times \$8 = \$24$

For t hours, you earn: $t \times \$8 = 8t$ dollars

➤ To evaluate an expression means to substitute a number for the variable, then calculate the answer.

To evaluate $2a - 5$ for $a = 7$:

Replace a with 7 in the expression $2a - 5$.

$2a - 5 = 2(7) - 5$

$\quad\quad\ = 14 - 5$
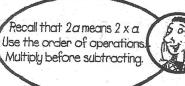
$\quad\quad\ = 9$

HINT

Recall that 2a means 2 × a Use the order of operations. Multiply before subtracting.

Practice

1. Match each algebraic expression with its meaning.

$6 + x$	Five less than a number
$4n$	One more than double a number
$1 + 2t$	Five subtract a number
$5 - p$	Four times a number
$s - 5$	Three times a number subtract four
$3g - 4$	Six more than a number

2. Identify the numerical coefficient, the variable, and the constant term in each expression.

a) $4 + 5s$

Numerical coefficient: _____   Variable: _____   Constant term: _____

b) $x + 7$

Numerical coefficient: _____   Variable: _____   Constant term: _____

c) $9m$

Numerical coefficient: _____   Variable: _____   Constant term: _____

3. An algebraic expression has constant term 12, variable t, and numerical coefficient 8. What might the expression be? _____

4. Write an algebraic expression for each phrase. Use the variable n.

a) Ten times a number _____   b) Double a number _____

c) A number divided by four _____   d) Six less than a number _____

e) Three more than ten times a number _____

f) Six less than ten times a number _____

5. A clerk earns $12 an hour. Find how much the clerk earns for each time.

a) 5 h work   b) 8 h work   c) p hours work

$5 \times$ ____ = ____   _____ = ____   _____ = _____

6. A car travels at an average speed of 60 km/h. Find how far it travels in each time.

a) 3 h   b) 5 h   c) x hours

$3 \times$ _____ = _____   _____ = _____   _____ = _____

7. Evaluate each expression by replacing z with 10.

a) $z + 5 = 10 + 5$

$\quad = \underline{\hspace{3em}}$

b) $8 + z = \underline{\hspace{3em}}$

$\quad = \underline{\hspace{3em}}$

c) $z - 6 = \underline{\hspace{3em}}$

$\quad = \underline{\hspace{3em}}$

d) $15 - z = \underline{\hspace{3em}}$

$\quad = \underline{\hspace{3em}}$

e) $3z = \underline{\hspace{3em}}$

$\quad = \underline{\hspace{3em}}$

f) $5z = \underline{\hspace{3em}}$

$\quad = \underline{\hspace{3em}}$

8. Evaluate each expression by replacing n with 2.

a) $2n + 3$

$\quad = 2 \times \underline{\hspace{3em}} + 3$

$\quad = \underline{\hspace{3em}} + 3$

$\quad = \underline{\hspace{3em}}$

b) $20 - 5n$

$\quad = \underline{\hspace{3em}} - 5 \times 2$

$\quad = \underline{\hspace{3em}}$

$\quad = \underline{\hspace{3em}}$

> **Tip**
>
> Use the order of operations:
> B — Brackets
> D, M — Divide, Multiply
> A, S — Add, Subtract

c) $\frac{n}{2} + 8$

$\quad = \underline{\hspace{3em}}$

$\quad = \underline{\hspace{3em}}$

$\quad = \underline{\hspace{3em}}$

d) $14 - \frac{n}{2}$

$\quad = \underline{\hspace{3em}}$

$\quad = \underline{\hspace{3em}}$

$\quad = \underline{\hspace{3em}}$

9. Sofia works part-time in a convenience store.
She earns \$6/h during the day, and \$8/h during the evening.

a) In one week, Sofia worked 10 h in the day and 9 h in the evening.
Write an expression for her earnings in dollars.

$\underline{\hspace{30em}}$

b) Suppose Sofia works n hours in the day and 7 h in the evening.

i) Write an expression for her earnings in dollars.

$\underline{\hspace{25em}}$

ii) How much does Sofia earn when $n = 5$?

$\underline{\hspace{25em}}$

c) Suppose Sofia works 9 h in the day and m hours in the evening.

i) Write an expression for her earnings in dollars.

$\underline{\hspace{20em}}$

ii) How much does Sofia earn when $m = 11$?

$\underline{\hspace{18em}}$

KEY TO SUCCESS

Evaluating algebraic expressions is an important skill. Carpenters, computer scientists, designers, electricians, and auto mechanics all use this skill to solve problems on the job.