2.5 Evaluate Multiplication Expressions

You can evaluate expressions using multiplication by following these steps:

1. Substitute the given value for the variable.

2. Simplify to find the value of the expression.

Example: Evaluate each expression.

1.) $26 \bullet 2010$

$$\begin{array}{r} 2010 \\ \times \quad 26 \\ \hline 12060 \\ +40200 \\ \hline 52,260 \end{array}$$

2.) $6.5n$ when $n = 12$

$6.5(12)$

$$\begin{array}{r} {\scriptstyle 1} \\ 65 \\ \times 12 \\ \hline 130 \\ +650 \\ \hline 78.0 \end{array}$$

3.) $5r$ when $r = 2500$

$5(2500)$

$$\begin{array}{r} {\scriptstyle 2}\,{\scriptstyle 5} \\ 2500 \\ \times \quad 5 \\ \hline 12,500 \end{array}$$

4.) $3 \bullet y \bullet 4$ when $y = 3$

$3 \cdot 3 \cdot 4$

$9 \cdot 4$

36

Example: Evaluate each expression when x = 3 and y = 0.2.

5.) 2x

$2 \cdot 3$

6

6.) 9y

$9 \cdot 0.2$

9×2

1.8

7.) 3x • 1.8

$3 \cdot 3 \cdot 1.8$

$9 \cdot 1.8$

$+18$

$\times 9$

16.2

Example: Evaluate each expression when c = 0.4 and d = 200.
(Multiply before you add or subtract)

8.) cd

$0.4 \cdot 200$

200×4

800

9.) 12c

$12 \cdot 0.4$

12×4

4.8

10.) cd + 8

$0.4 \cdot 200 + 8$

200×4

800

$80 + 8$

88

Example: **PROBLEM SOLVING**

11.) Let h represent the number of hours it takes to fix a computer. The expression 40h shows the cost a computer repair center charges its customers. How much does a 3.5-hour repair cost?

h = 3.5

$40h = 40 \cdot 3.5 = \$140$

40 × 35 → 200 + 1200 → 1400

12.) Let m represent the number of kilometers Mien jogs one week. Bonita jogs double the number of kilometers Mien jogs. Write an algebraic expression to represent the kilometers Bonita jogs that week. Then evaluate the expression if Mien jogs 4.2 km.

2 times m

m = 4.2

$2m = 2(4.2) = 8.4 \text{ km}$

42 × 2 → 8.4

Example: **PROBLEM SOLVING**

13.) A movie website charges a one-time membership fee of $19. Then each movie rental costs a flat fee of $0.50.

a.) Write an expression that shows the total cost of n movie rentals.

$19 + 0.50n$

b.) Use your expression to find the total cost of 8 movie rentals

n = 8

$19 + 0.50(8)$

50 × 8 → 400

$19 + 4$

$= \$23$