

Alg 1 1.2

Evaluate numerical expressions using the order of operations.

Evaluate algebraic expressions using order of operations

PEMDAS

GEMA



### Key Concept

### Order of Operations

- Step 1** Evaluate expressions inside grouping symbols.
- Step 2** Evaluate all powers.
- Step 3** Do all multiplications and/or divisions from left to right.
- Step 4** Do all additions and/or subtractions from left to right.

Evaluate each expression if  $g = 4$ ,  $h = 6$ ,  $j = 8$ , and  $k = 12$ .

10.  $hk - gj$

$$\begin{array}{c} \downarrow \downarrow \quad \searrow \swarrow \\ (6 \cdot 12) + (4 \cdot 8) \\ \downarrow \quad \downarrow \\ 72 + -32 \\ 40 \end{array}$$

11.  $2k + gh^2 - j$

$$\begin{array}{c} 2 \cdot 12 + 4 \cdot 36 - 8 \\ 24 + 144 - 8 \\ 160 \end{array}$$

12.  $\frac{2g(h-g)}{gh-j}$

$$\begin{array}{c} \frac{(2 \cdot 4(6-4))}{(4 \cdot 6 - 8)} \\ \frac{(2 \cdot 4 \cdot 2)}{(4 \cdot 6 - 8)} = \frac{16}{16} \\ = 1 \end{array}$$

Whiteboards:

$$\begin{array}{l} \rightarrow a + a \cdot b \\ \frac{4}{5} + \frac{4}{5} \cdot \frac{3}{5} \\ \frac{4}{5} + \frac{12}{25} \end{array}$$

$$\frac{14}{25}$$

$\frac{17}{25}$

$$a(a+b) = \frac{4}{5} \cdot \frac{7}{5} = \frac{28}{25}$$

Evaluate each expression if  $x = 2$ ,  $y = 3$ ,  $z = 4$ ,  $a = \frac{4}{5}$ , and  $b = \frac{3}{5}$ .

$$1. a + 7 = 9$$

$$2. 3x - 5 = 1$$

$$3. x + y^2 = 11$$



Evaluate each expression if  $x = 2$ ,  $y = 3$ ,  $z = 4$ ,  $a = \frac{4}{5}$ , and  $b = \frac{3}{5}$ .

$$1 \frac{21}{25}$$

10.  $(10x)^2 + 100a$

11.  $\frac{3xy - 4}{7x}$

12.  $a^2 + 2b$

$$\begin{aligned} & (10 \cdot 2)^2 + 100 \cdot \frac{4}{5} \\ & (20)^2 \end{aligned}$$

$$\begin{aligned} & \frac{(3 \cdot 2 \cdot 3 - 4)}{(7 \cdot 2)} \end{aligned}$$

$$\frac{4^2}{5} + 2 \cdot \frac{3}{5}$$

$$\frac{4}{5} \cdot \frac{4}{5} + 2 \cdot \frac{3}{5}$$

$$\begin{aligned} & 20 \cdot 20 + 100 \cdot \frac{4}{5} \\ & 400 + 80 = 480 \end{aligned}$$

$$\frac{(1 \cdot 8 - 4)}{7 \cdot 2} \frac{14}{14} = 1$$

$$\frac{16}{25} + 1 \frac{1}{5}$$

Evaluate each expression if  $x = 2$ ,  $y = 3$ ,  $z = 4$ ,  $a = \frac{4}{5}$ , and  $b = \frac{3}{5}$ .

16.  $\frac{25ab + y}{xz}$

17.  $\frac{5a^2b}{y}$

18.  $(z \div x)^2 + ax$

