



## Vocab

A **numerical expression** is an expression that contains only numbers and operations. To **evaluate**, or find the value of, a numerical expression, use a set of rules called the **order of operations**.

Word	Definition	Example
numerical expression	expression that only contains numbers	$3 \times 5 + 6$
evaluate	find the value, or answer	$3 \times 5 + 6$ $15 + 6$ $= 21$
order of operations	<ol style="list-style-type: none"><li>1) parentheses</li><li>2) exponents</li><li>3) mult or div <u>left to right</u></li><li>4) add or subt <u>left to right</u></li></ol>	Please Excuse My Dear Aunt Sally  PEMDAS

Complete the following problems in your composition book.

$$\begin{array}{r} 1) \quad 12 - \underline{2 \times 4} \\ \quad \quad 12 - 8 \\ \quad \quad \quad 4 \end{array}$$

$$\begin{array}{r} 2) \quad 7 + 60 \div \underline{(3 \times 5)} \\ \quad \quad 7 + \underline{60 \div 15} \\ \quad \quad \quad 7 + 4 \\ \quad \quad \quad \quad 11 \end{array}$$

$$3) \quad 30 \div (7 + \underline{2^3}) \times 6$$

$$30 \div (\underline{7 + 8}) \times 6$$

$$\underline{30 \div 15} \times 6$$

$$2 \times 6$$

$$12$$



Refer to your notes page.

**symbols**

The symbols  $\times$  and  $\cdot$  are used to indicate multiplication. You can also use parentheses to indicate multiplication. For example,  $3(2 + 7)$  is the same as  $3 \times (2 + 7)$ .

Complete problems 1-6 on your notes page.

$$\begin{array}{l} 1) \quad \underline{7 \cdot 5 + 3} \\ \underline{35 + 3} \\ 38 \end{array}$$

$$\begin{array}{l} 2) \quad (\underline{28 - 20}) \div 4 \\ \underline{8 \div 4} \\ 2 \end{array}$$

$$\begin{array}{l} 3) \quad \underline{6 \times 15 - 10 \div 2} \\ \underline{90 - 10 \div 2} \\ \underline{90 - 5} \\ 85 \end{array}$$

$$\begin{array}{l} 4) \quad 6 + \underline{2^4 - 1} \\ \underline{6 + 16 - 1} \\ \underline{22 - 1} \\ 21 \end{array}$$

$$\begin{array}{l} 5) \quad \underline{4 \cdot 3^2 + 18 - 9} \\ \underline{4 \cdot 9 + 18 - 9} \\ \underline{36 + 18 - 9} \\ \underline{54 - 9} \\ 45 \end{array}$$

$$\begin{array}{l} 6) \quad 16 + (\underline{5^2 - 7}) \div 3 \\ 16 + (\underline{25 - 7}) \div 3 \\ 16 + (\underline{18}) \div 3 \\ \underline{16 + 6} \\ 22 \end{array}$$

Complete the following problems in your composition book.

$$4) \quad 9 + 7(\underline{5 - 2})$$

$$9 + 7(\underline{3})$$

$$\underline{9 + 21}$$

$$30$$

$$5) \quad 15 - 4(\underline{6 + 1}) \div 2^2$$

$$15 - 4(\underline{7}) \div \underline{2^2}$$

$$15 - \underline{4(7)} \div 4$$

$$15 - \underline{28} \div 4$$

$$\underline{15 - 7}$$

$$8$$

Complete #7-9 on your notes page.

$$7) \quad 50 + 6(\underline{12 \div 4}) - 8^2$$

$$50 + 6(3) - \underline{8^2}$$

$$50 + \underline{6(3)} - 64$$

$$\underline{50 + 18} - 64$$

$$\underline{68} - 64$$

$$4$$



$$8) \quad 5^2 - 5(10 - 5)$$

$$\underline{5^2} - 5(5)$$

$$25 - \underline{5(5)}$$

$$\underline{25 - 25}$$

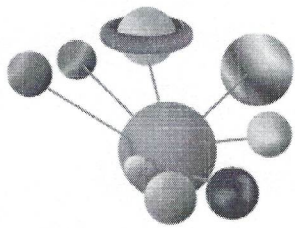
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$$9) \quad \frac{8(3 + 4)}{7}$$

$$\frac{8(7)}{7}$$

$$\frac{56}{7}$$

8



You buy foam spheres, paint bottles, and wooden rods to construct a model of our solar system. What is your total cost?

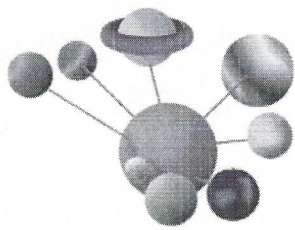
Item	Quantity	Cost per Item
Spheres	9	\$2
Paint	6	\$3
Rods	8	\$1

$$\underline{9 \times 2} + \underline{6 \times 3} + \underline{8 \times 1}$$

$$\underline{18} + \underline{18} + \underline{8}$$

$$44$$

Answer: \$44



You buy foam spheres, paint bottles, and wooden rods to construct a model of our solar system. What is your total cost?

Item	Quantity	Cost per Item
Spheres	9	\$2
Paint	6	\$3
Rods	8	\$1

What if you didn't follow the order of operations?

$$9 \times 2 + 6 \times 3 + 8 \times 1$$

$$18 + 6 \times 3 + 8 \times 1$$

$$24 \times 3 + 8 \times 1$$

$$72 + 8 \times 1$$

$$80 \times 1$$

Answer: \$80