

Order of Operations 2

A. On the back, give the order of operations in detail.

(KEY)

Parentheses: Left to Right, Inside-out

Exponents (Powers and Roots): Left to Right

Multiplication/Division: Left to Right

Addition/Subtraction: Left to Right

Simplify the following expressions.

1) $14 + 7 \cdot 4 - 21$

$$\begin{array}{r} 14 + 28 - 21 \\ \mathbf{21} \end{array}$$

2) $30 \div 6 + 4 \cdot 7$

$$\begin{array}{r} 5 + 28 \\ \mathbf{33} \end{array}$$

3) $12 - 9 \cdot 8 \div 18$

$$\begin{array}{r} 12 - 72 \div 18 \\ 12 - 4 \\ \mathbf{8} \end{array}$$

4) $12 + 36 \div 4 \cdot 3$

$$\begin{array}{r} 12 + 9 \cdot 3 \\ 12 + 27 \\ \mathbf{39} \end{array}$$

5) $11 + (-65) \div 5 + (-8)$

$$\begin{array}{r} 11 + (-13) + (-8) \\ \mathbf{-10} \end{array}$$

6) $8 \cdot 2 - 60 \div (-5)$

$$\begin{array}{r} 16 - (-12) \\ \mathbf{28} \end{array}$$

7) $28 - 6^2 \div 9$

$$\begin{array}{r} 28 - 36 \div 9 \\ 28 - 4 \\ \mathbf{24} \end{array}$$

8) $9 \cdot 7 + 3^2$

$$\begin{array}{r} 63 + 9 \\ \mathbf{72} \end{array}$$

9) $8 + 6^2$

$$\begin{array}{r} 8 + 36 \\ \mathbf{44} \end{array}$$

10) $4^2 - 7$

$$\begin{array}{r} 16 - 7 \\ \mathbf{9} \end{array}$$

11) $(3 + 6)^2$

$$\begin{array}{r} 9^2 \\ \mathbf{81} \end{array}$$

12) $5^2 \div (3 + 2)$

$$\begin{array}{r} 25 \div 5 \\ \mathbf{5} \end{array}$$

13) $(6^2 - 4) \div 4$

$$\begin{array}{r} (36 - 4) \div 4 \\ 32 \div 4 \\ \mathbf{8} \end{array}$$

14) $8^2 - (4 \cdot 7)$

$$\begin{array}{r} 64 - 28 \\ \mathbf{36} \end{array}$$

15) $[5(9 - 5)] + 6^2$

$$\begin{array}{r} [(5(4)) + 36 \\ 20 + 36 \\ \mathbf{56} \end{array}$$

16) $87 - [4(6^2 - 5^2)]$

$$\begin{array}{r} 87 - [4(36 - 25)] \\ 87 - [4(11)] \\ 87 - 44 \\ \mathbf{43} \end{array}$$

17) $4[(5^2 - 17)^2 - 8] \div \sqrt{49} + 23$

$$\begin{array}{r} 4[(25 - 17)^2 - 8] \div 7 + 23 \\ 4[(8)^2 - 8] \div 7 + 23 \\ 4[(64) - 8] \div 7 + 23 \\ 4[56] \div 7 + 23 \\ 224 \div 7 + 23 \\ 32 + 23 = \mathbf{55} \end{array}$$

18) $6^2 = \mathbf{36}$

19) $5^4 = \mathbf{625}$

20) $13^2 = \mathbf{169}$

21) $4^3 = \mathbf{64}$

22) $2^4 = \mathbf{16}$

23) $6^5 = \mathbf{7,776}$

24) $\sqrt{121}$
 $\mathbf{11}$

25) $\sqrt{49}$
 $\mathbf{7}$

26) $\sqrt{64}$
 $\mathbf{8}$

27) $\sqrt{72}$
 $\sqrt{36 \cdot 2}$
 $6\sqrt{2}$

28) $\sqrt{45}$
 $\sqrt{9 \cdot 5}$
 $3\sqrt{5}$

29) $\sqrt{28}$
 $\sqrt{4 \cdot 7}$
 $2\sqrt{7}$