Arithmetic
Skill-Builder # W - 2
Performing Combined Operations on Whole Numbers

When performing combined operations on whole numbers, follow **PEMDAS** (**P**arentheses, **E**xponentiation, **M**ultiplication, **D**ivision, **A**ddition, **S**ubtraction). This means everything within parentheses (or any other symbol of grouping) has to be performed first, then all exponentiations; multiplication and division need to be performed in the order in which they appear from left to right; likewise, addition and subtraction need to be performed in the order in which they appear from left to right.

<u>Examples</u>

1. $12 + 20 \cdot 4$

Solution:

$12 + \underline{20 \cdot 4}$ The operations are A and M, so M goes first.

$= 12 + \quad 80$ 20 times 4 equals 80.

$= \quad\quad 92$ Add 12 and 80 to get 92.

2. $18 + 36 \div 9 - 8$

Solution:

$18 + \underline{36 \div 9} - 8$ D has to be performed before A or S.

$= \underline{18 + \quad 4} \quad - 8$ Divide 36 by 9 to get 4.

$= \quad 22 \quad - 8$ Add 18 and 4 to get 22.

$= \quad\quad 14$ Subtract 8 from 22 to get 14.

3. $4 \cdot 10 \div 2^3$

Solution:

$4 \cdot 10 \div \underline{2^3}$ E has to be performed before M or D.

$= \underline{4 \cdot 10} \div 8$ $2^3 = 2 \cdot 2 \cdot 2 = 8$

$= 40 \div 8$ Multiply 4 by 10 to get 40.

$= \quad 5$ Divide 40 by 8 to get 5.

4. $\left(5 \cdot 5 - 4 \cdot 5\right)^2$

Solution:

$\left(5 \cdot 5 - 4 \cdot 5\right)^2$ Perform the operations inside the parentheses first.

$= \left(25 - 20\right)^2$ Multiply 5 by 5 and 4 by 5 to get 25 and 20, respectively.

$= \quad 5^2$ Subtract 20 from 25 to get 5.

$= \quad 25$ $5^2 = 5 \cdot 5 = 25$

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Find the value of the given numeric expression.

1. $32 - 5 \cdot 6$

2. $14 + 35 \div 7$

3. $8 \cdot 3 \div 6$

4. $48 \div 8 \cdot 5$

5. $12 + 34 - 28$

6. $31 - 14 + 42$

7. $2 \cdot 5^2 - 5$

8. $20 - 2^2 \cdot 3$

9. $6 + 45 \div 3^2$

10. $5 \cdot 2^3 - 2 \cdot 3^2$

11. $4^2 + 6^2$

12. $\left(4 + 6\right)^2$

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Answers
1. 2
2. 19
3. 4
4. 30
5. 18
6. 59
7. 45
8. 8
9. 11
10. 22
11. 52
12. 100