Reading and Evaluating Complex Expressions

A. Fill in the Blanks

1. In the acronym PEMDAS, the 'M' and 'D' are done from _____ to _____.

2. To _____ an expression means to find its single numerical value.

3. The first step in solving 5 × (8 - 2) is to calculate _____.

4. The value of (-3)² is 9, while the value of -3² is _____.

5. A fraction bar acts as a grouping symbol, meaning you should solve the _____ and _____ before dividing.

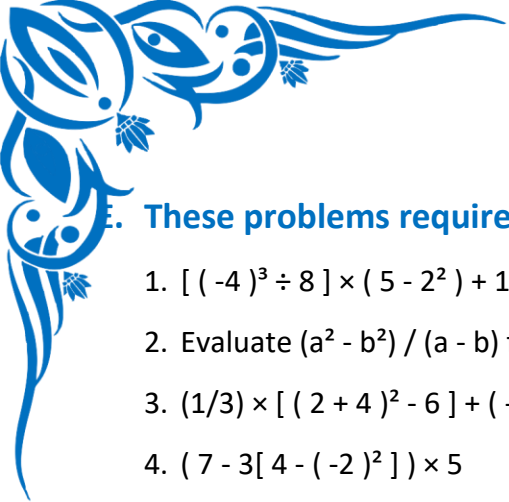## B. Match the expression in Column A with its correct value in Column B.

Column A	Column B
1. 3² + 1	A. 20
2. 3 × (4 + 1)	B. − 6
3. 20 ÷ (2 + 3)	C. 10
4. (6 - 2) × 5	D. 15
5. -2 × (7 - 4)	E. 4

C. Evaluate these more complex expressions. Show your steps.

1. (6 + 2) × 5 - 12 ÷ 3

2. 5² + [10 ÷ (8 - 6)]

3. -7 + (4 × 3)² ÷ 12

4. (1/2) × (16 - 4) + 5

5. Evaluate 4x² - 3y for x = 3 and y = -2

D. Evaluate the following expressions.

1. 10 + 2 × 6

2. (15 - 5) × 3

3. 20 ÷ 4 + 3²

4. 8 - (-4) + 2

5. Evaluate 3a - 5 for a = 5

E. These problems require careful attention to detail. Take your time and show every step.

1. $[(-4)^3 \div 8] \times (5 - 2^2) + 15$

2. Evaluate $(a^2 - b^2) / (a - b)$ for $a = 5$ and $b = -3$

3. $(1/3) \times [(2 + 4)^2 - 6] + (-2)^5$

4. $(7 - 3[4 - (-2)^2]) \times 5$

5. Evaluate $(xy - z) / (x + y + z)$ for $x = -2$, $y = 1/2$, and $z = 3$

F. Write an expression for each problem and then solve it.

1. The temperature was 15°C. It dropped by 3°C every hour for 4 hours. What was the temperature after 4 hours? Expression: Solution:

2. A theater sold 12 adult tickets for 8eachand5childticketsfor8eachand5childticketsfor5 each. How much money did the theater collect in total? Expression: Solution:

3. In a video game, you start with 50 points. You gain 10 points for each of the 3 treasures you find, but you lose 5 points for each of the 2 traps you hit. What is your final score? Expression: Solution:

4. A baker is making 3 batches of cookies. Each batch requires 2 cups of flour and 1/2 cup of sugar. What is the total number of cups of ingredients the baker will use? Expression: Solution:

5. Your cell phone plan costs 25permonth,whichincludes100freetextmessages.Foreverytextover100,youarecharged25permonth,whichincludes100freetextmessages.Foreverytextover100,youarecharged0.10. If you sent 150 text messages this month, what is your bill? Expression: Solution:

G. True or False

1. $6 + 4 \times 2 = 20$ _____

2. $(5 - 3)^2 = 5^2 - 3^2$ _____

3. $-4^2 = 16$ _____

4. $10 - (3 + 2) = 10 - 3 + 2$ _____

5. When $x = -2$, the expression $5x$ is equal to $5 - 2 = 3$. _____