Foundations of Algebra
Day 2: Evaluating Expressions
Practice Assignment

Unit 3: Arithmetic to Algebra

Name: Key Practice

0 25 50 75 100

1. Evaluate each of the following expressions:

a. $35 - (17 - 2) \div 5$

$= 35 - 15 \div 5$

$= 35 - 3$

$= \boxed{32}$

b. $24 - 9 \cdot 2 + 6 \div 3$

$= 24 - 18 + 6 \div 3$

$= 24 - 18 + 2$

$= 6 + 2$

$= \boxed{8}$

c. $12(2 + 7) - 24 \div 12$

$= 12(9) - 24 \div 12$

$= 108 - 24 \div 12$

$= 108 - 2$

$= \boxed{106}$

d. $4(9 - 3) \div (8 - 2)$

$= 4(6) \div (6)$

$= 24 \div 6$

$= \boxed{4}$

e. $26 - [(25 - 11) - 2^3]$

$= 26 - [14 - 2^3]$

$= 26 - [14 - 8]$

$= 26 - 6$

$= \boxed{20}$

f. $\dfrac{5(16-5)-1}{4^2-7}$

$= \dfrac{5(11)-1}{16-7}$

$= \dfrac{55-1}{16-7} = \dfrac{54}{9} = \boxed{6}$

2. Describe the error in evaluating the expression when m = 8.

✗ $5m + 3 = 5 \cdot 8 + 3$
$= 5 \cdot 11$
$= 55$

They should have multiplied 5·8 first (order of operations).

Correct Answer: 43

3. Evaluate the following expressions when a = 10, b = 9, and c = 4.

a. $a^2 - 18$

$= 10^2 - 18$

$= 100 - 18$

$= \boxed{82}$

b. $bc + 12.3$

$= 9.4 + 12.3$

$= 36 + 12.3$

$= \boxed{48.3}$

c. $3a + 2b - 6c$

$= 3(10) + 2(9) - 6(4)$

$= 30 + 18 - 24$

$= 48 - 24$

$= \boxed{24}$

4. Given $a = 8$, $b = -6$, $d = 3$, $x = -4$, $y = 0.5$, evaluate the following:

a. $x^2 + 3d$

$= (-4)^2 + 3(3)$

$= 16 + 9$

$= \boxed{25}$

b. $y(a - 2)$

$= 0.5(8 - 2)$

$= 0.5(6)$

$= \boxed{3}$

c. $d(x - b)$

$= 3(-4 - -6)$

$= 3(2)$

$\boxed{6}$

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5. Evaluate the following expressions:

a. $6(3x-5)-9x$ if $=4$

$= 18x - 30 - 9x$

$= \boxed{9x-30}$

$9(4)-30$

$\boxed{16}$

b. $4(8+5x)+2x$ if $x=-2$

$= 32 + 20x + 2x$

$= \boxed{32+22x}$

$= 32 + 22(-2)$

$= 32 - 44 = \boxed{-12}$

c. $4-8(-2-6x)$ if $x=-1$

$= 4 + 16 + 48x$

$= \boxed{20+48x}$

$= 20 + 48(-1)$

$= 20 - 48$

$= \boxed{-28}$

6. The expression $20a + 13c$ is the cost for a adults and c students to enter the science museum.

a. Find the total cost for 4 adults and 24 students.

$20(4) + 13(24)$

$80 + 312$

$\boxed{\$392}$

b. You figure out the cost for the group, but then the number of adults and students in the group both double. Does the cost double? Explain your answer using an example.

4 adults → 8 adults

24 students → 48 adults

$20(8) + 13(48)$

$160 + 624$

$\boxed{\$784}$

Yes, The price doubles when the number of people doubled.

c. In part A, the number of adults doubles, but the number of students is cut in half. Does the cost remain the same? Explain why or why not.

4 adults → 8 adults

24 students → 12 students

$20(8) + 13(24)$

$160 + 312$

$\boxed{\$472}$

No, the price does not remain the same.

7. Answer the following using the scenario:

You really want to purchase the skateboard shown at the left. Your aunt gives you $45 to start and you save $3 each week. The expression $\boxed{45+3w}$ *gives the amount of money you save after w weeks. Answer the following:*

a. How much will you have after 4 weeks? 10 weeks? 20 weeks?

$45 + 3(4)$

$45 + 12$

$\$57$

$45 + 3(10)$

$45 + 30$

$\$75$

$45 + 3(20)$

$45 + 60$

$\$105$

b. What does the 45 represent in the expression? What does the 3w represent?

45 represents what your aunt gave you to start

3w represents how much you save each week

c. Challenge: After how many weeks will you have enough money? Show how you arrived at your answer.

$125 = 45 + 3w$

$-45 \quad -45$

$\frac{80}{3} = \frac{3w}{3}$

$\boxed{27 \text{ weeks}}$