Date: _____

3.3 Order of Operations

***MathLinks 9*, pages 108–113**

Key Ideas Review

1. Use the following words to label the table headings. Then, complete the table.

coefficient power repeated multiplication value

Expression	_____	_____	_____	_____
$-3(7)^2$	-3	7^2	$-3 \times 7 \times 7$	-147
$2(5)^4$				

2. Column A shows the solution to $5(-2) - (2 + 4)^2$. Match each step in column A to its description in column B.

A	B
Step 1 $= 5(-2) - (6)^2$	**a)** Evaluate the power.
Step 2 $= 5(-2) - 36$	**b)** Add and subtract from left to right.
Step 3 $= -10 - 36$	**c)** Simplify inside the brackets.
Step 4 $= -46$	**d)** Divide and multiply from left to right.

Check Your Understanding

3. Evaluate each expression.

a) $3(6)^2$

b) $2(-4)^2$

c) $7(10)^5$

d) $4(-3)^3$

4. Write each expression using a coefficient and a power.

a) $2 \times 3 \times 3 \times 3$

b) $5 \times (-7) \times (-7) \times (-7) \times (-7) \times (-7)$

c) $-2 \times 8 \times 8 \times 8 \times 8$

d) $6(9)(9)(9)(9)(9)$

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5. Evaluate. Where necessary, express your answer to the nearest tenth.

a) $5^2 - 3^2$ **b)** $7 + 3(-2)^3$

c) $4 - (2 + 3)^2 \div 25$ **d)** $45 \div (-2)^6$

6. Identify the step where Susan made an error. Explain her mistake. What is the correct answer?

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

$= 12 + 2(8)^2$ Step 1

$= 12 + 2(16)$ Step 2

$= 12 + 32$ Step 3

$= 44$ Step 4

7. Evaluate.

a) $-5(2 + 5^2) + (-4)^3$

b) $[(-7)^2 - (-2)^6]^2$

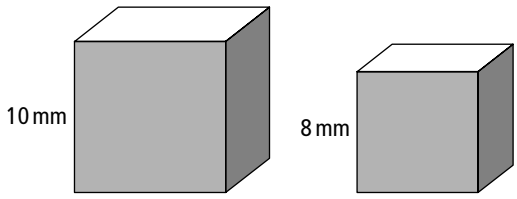
c) $\dfrac{-16 + (-3)^2}{(6 - 2)^2 - (-4)^2}$

d) $5(4)^3 \div (-2)^4$

8. Evaluate the expression $7a^2 - 3b^3$ when

a) $a = 4, b = -2$ **b)** $a = -8, b = 5$

9. Write an expression with powers to determine the difference between the surface areas of the two cubes. Then, solve.



10. The cube of the sum of 5 and 2 is decreased by the square of the product of 6 and 4. Write an expression that models this statement. Then, solve.

11. a) Evaluate -5^2 and $(-5)^2$.

b) Using the words *coefficient*, *base*, and *exponent*, explain why the two answers are not the same.