Name: _____ Date: _____

BLM 6–1

Prerequisite Skills

Powers and Square Roots

1. Identify the base and the exponent of each power. Then, evaluate.
a) 3^2 **b)** $(-2)^6$ **c)** 3^{-2}

2. Determine the value of each exponent.
a) $11^x = 121$ **b)** $4^x = 64$

3. Evaluate each square root.
a) $\sqrt{144}$ **b)** $\sqrt{400}$

4. Use a calculator to evaluate each expression to two decimal places.
a) $\sqrt{44}$ **b)** $\sqrt{57.3}$

Exponent Laws

5. Write each expression as a single power, then evaluate.
a) $3^3 \times 3^2$
b) $2^7 \times 2$
c) $(-5) \times (-5)^3$

6. Write each expression as a single power, then evaluate.
a) $4^7 \div 4^3$ **b)** $12^4 \div 12^2$
c) $\dfrac{10^9}{10^5}$ **d)** $\dfrac{(-2)^9}{(-2)^3}$

7. Write each expression as a single power, then evaluate.
a) $(2^4)^2$ **b)** $(10^3)^3$
c) $[(-3)^3]^2$ **d)** $[(-10)^3]^5$

8. Simplify.
a) $(m^3)(m^4)(m)$
b) $\dfrac{p^4q^5}{p^3q}$
c) $(5b)^3(b)(b^6)$

Zero and Negative Exponents

9. Evaluate.
a) 4^0 **b)** x^0 **c)** $-(6)^0$
d) -6^0 **e)** $(-6)^0$ **f)** $\left(\dfrac{1}{3}\right)^0$

10. Examine your answers to question 9, parts c) to e). Explain why the signs are different.

11. Write each expression with a positive exponent, then evaluate.
a) 10^{-3} **b)** 6^{-2} **c)** $(-2)^{-6}$
d) $(-4)^{-3}$ **e)** $\left(\dfrac{1}{3}\right)^{-4}$ **f)** $\left(\dfrac{1}{6}\right)^{-2}$

Algebraic and Graphical Models

12. a) Complete the table of values. Then calculate the first and second differences and the ratios.

x	$y = 2x^2 - 5$
−2	
−1	
0	
1	
2	

b) Is the relation linear, quadratic, exponential, or none of these? Explain how you know.
c) Graph the relation. Does the graph confirm your answer to part b)? Explain.

13. Repeat question 12 for each relation.
a) $y = 3x + 2$ **b)** $y = \left(\dfrac{1}{2}\right)^x$

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