NAME   DATE   PERIOD

Unit 7, Lesson 6
Practice Problems

1. Priya says "I can figure out 5^0 by looking at other powers of 5. 5^3 is 125, 5^2 is 25, then 5^1 is 5."

   a. What pattern do you notice?

   b. If this pattern continues, what should be the value of 5^0? Explain how you know.

   c. If this pattern continues, what should be the value of 5^{-1}? Explain how you know.

2. Select **all** the expressions that are equivalent to 4^{-3}.

   A. -12

   B. 2^{-6}

   C. $\frac{1}{4^3}$

   D. $\left(\frac{1}{4}\right) \cdot \left(\frac{1}{4}\right) \cdot \left(\frac{1}{4}\right)$

   E. 12

   F. $(-4) \cdot (-4) \cdot (-4)$

   G. $\frac{8^{-1}}{2^2}$

3. Write each expression using a single exponent.

   a. $\frac{5^3}{5^6}$

   b. $(14^3)^6$

   c. $8^3 \cdot 8^6$

   d. $\frac{16^6}{16^3}$

   e. $(21^3)^{-6}$

4. Andre sets up a rain gauge to measure rainfall in his back yard. On Tuesday, it rains off and on all day.

   - He starts at 10 a.m. with an empty gauge when it starts to rain.

   - Two hours later, he checks, and the gauge has 2 cm of water in it.

   - It starts raining even harder, and at 4 p.m., the rain stops, so Andre checks the rain gauge and finds it has 10 cm of water in it.

   - While checking it, he accidentally knocks the rain gauge over and spills most of the water, leaving only 3 cm of water in the rain gauge.

   - When he checks for the last time at 5 p.m., there is no change.

Graph A   Graph B
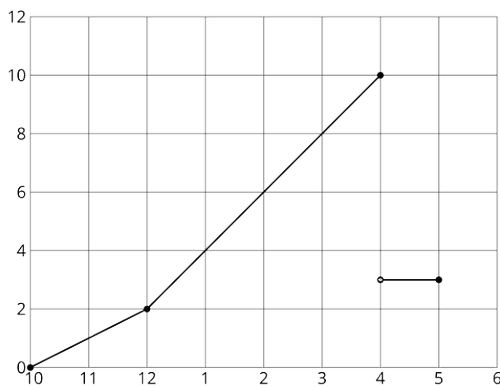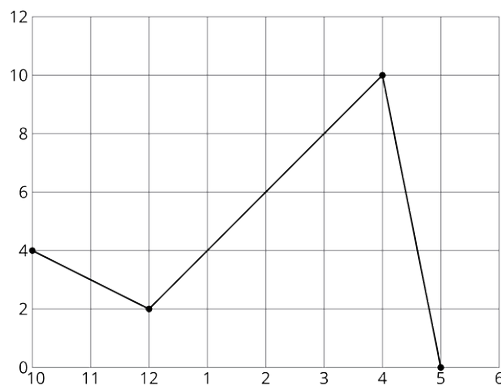
   a. Which of the two graphs could represent Andre's story? Explain your reasoning.

   b. Label the axes of the correct graph with appropriate units.

   c. Use the graph to determine how much total rain fell on Tuesday.