Name: _____   Date: _____
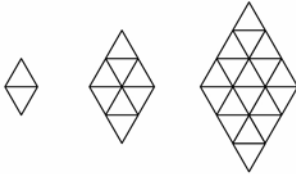
Chapter 8 Prerequisite Skills

Identify Linear, Quadratic, and Exponential Growth Patterns

1. Consider this pattern built from equilateral triangles.

    a) Draw the next stage of the pattern.
    b) Is the pattern linear, quadratic, exponential, or other?
    c) Create a scatter plot of the total number of triangles, T, in stage n of the pattern.
    d) Determine the equation relating T and n.

Graph and Analyse Power Functions

2. For what values of n is $f(x) = x^n$

    a) an even function?
   **b)** and odd function?

Graph and Analyse Rational Functions

3. Sketch the graph of $y = \dfrac{1}{x+2}$, and state its domain and range.

4. Consider the function $y = \dfrac{x+1}{x^2 - 2x - 3}$.
    a) Simplify the function and state any restrictions on the variables.
    b) State the domain and range.
    c) Sketch the graph.
    d) Identify any asymptotes or holes in the graph.

5. Sketch a possible position-time graph that would show the height of a marble released from a position on the side of a bowl whose cross section is shown in the diagram.
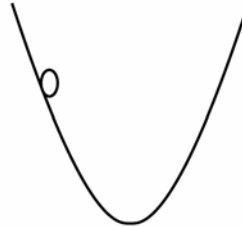
Inverses

6. Determine the defining equation for the inverse of each function.
    a) $f(x) = (x+2)^2 + 5$
    b) $f(x) = \dfrac{1}{x-2} + 4$

7. Which inverses in question 6 are functions? Explain.