Name: _____ Date: _____

Chapter 8 Problems of the Week

1. Think about two six-sided dice, one red and one green.

a) Make a table of values to show the number of ways to get each possible sum of the two dice.

Hint: You can get a sum of 3 two ways: a red 2 and a green 1 or a red 1 and a green 2.

b) Use the table to create a circle graph that shows the number of ways to roll each sum.

Hint: Round to the nearest percent.

2. Suppose a boat's radar has three settings for the radius of the circle it will cover: 1 km, 5 km, and 10 km.

a) Draw a diagram that represents each radar setting shaded differently.

b) Calculate the area each setting covers.

c) If the power needed is proportional to area covered, how much more power is needed for the largest setting compared to the smallest one? Explain your thinking.

3. a) Draw a series of five circles. Each circle must have four times the area of the previous one.

b) What change in radius is necessary to quadruple the area?

c) Write a rule that predicts how change in radius affects the area of a circle.

4. A circle with a radius of 4 cm sits on the edge of a circle with a radius that is twice as large.

a) How many revolutions must the small circle make to get all the way around the larger circle?

b) If the small circle takes four revolutions to get around another circle, what is that circle's radius?

5. Consider two wind turbines. The ratio of the electricity they generate is the same as the ratio of the area the wind turbine blades sweep.

a) How much energy will a wind turbine with an 80-m diameter sweep generate compared to one with a 40-m diameter sweep?

b) How much energy will a wind turbine with a 20-m diameter sweep generate compared to one with a 40-m diameter sweep?

c) Write a rule that predicts the energy generated when diameter is halved.