Name: _____   Date: _____

Chapter 4 Problems of the Week

1. A camera negative is the film in a camera that captures an image when you take a picture. Each negative measures 24 mm × 36 mm. From these negatives, pictures can be made in two sizes:

- 9 cm × 13 cm
- 10 cm × 15 cm

Does the entire image appear in each size of picture? Explain. Show your calculations.

2. Find two models of objects that have been built to scale. For each model, measure its dimensions and then find the dimensions of the actual object. Compare the two sets of measurements. What can you conclude?

3. In the north, animals need to be able to stay warm in cold temperatures in order to survive. There is a mathematical connection between surface area and volume that is related to an animal's chances of survival.

a) Use cubes with different side lengths to explore how the ratio between surface area and volume changes as the size of cube increases. Record your observations.

b) Use your observations to help explain why large animals find it easier to survive cold temperatures.

4. The diagram shows that at one unit of distance, an object receives one unit of light. How much light does an object receive that is twice as far from the light source? Explain.

object