Date _____

7.4 3-D Scale Models

Focus: measuring, rounding, proportional reasoning, problem solving

Chapter 7

Warm Up

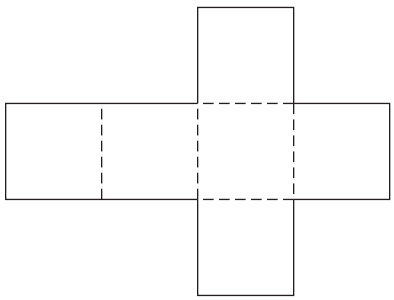
1. What is the highest number that can be rolled with 1 die?

2. Explain why your answer to #1 is correct.

3. A die has side lengths of 1.5 cm. What is the area of 1 face of the die?

4. What is the total area of all of the faces of the die?

5. What object can be made if you fold along the dotted lines? _____



6. Make a sketch of the object in #5.

Nets

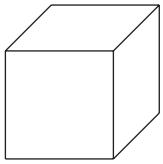
- A **net** is a flat, 2-dimensional model representing a 3-dimensional object.
- A net is what an object would look like if it were *unfolded*.
- In #5 above, the drawing is a net of a cube.

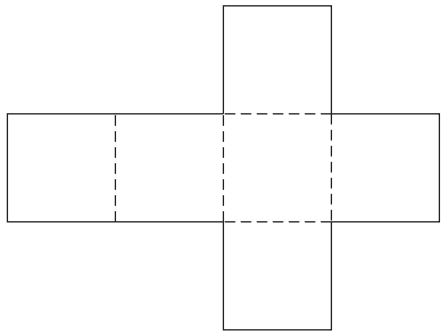
Go to pages 187–188 to write the definition for **net** in your own words.

Date _____

Chapter 7

1. a) Get a die. Draw the dots of 3 faces you can see at a time on the cube below.

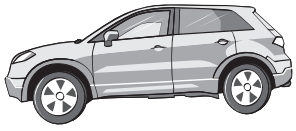




b) Pick up the die. Identify the number of dots on 1 face, and then the number on the opposite face. Draw the same dots on the net above.

c) Choose a 2nd face. How many dots are on the opposite face? Draw the dots on the net above.

d) What do you notice about the numbers of dots on opposite sides of a die?



2. a) The bottom of a toy car says, "1 : 70." What does this mean?

b) The toy has a length of approximately 6.5 cm. What is the approximate length of an actual vehicle of that make? Give your answer in metres.

c) The toy has a width of approximately 2.6 cm. What is the approximate width of an actual vehicle of that make? Give your answer in metres.

d) The toy has a height of approximately 2.4 cm. What is the approximate height of an actual vehicle of that make? Give your answer in metres.

e) If modelling clay or a similar material is available, create a 3-D model of the toy car. Otherwise, use paper or cardboard to create a box that the toy car could fit in. You may wish to sketch the net of your box below.

3. a) Find a rectangular, 3-dimensional object in your classroom.

Object: _____

b) Measure the 3 dimensions of the object.

length = _____ width = _____ height = _____

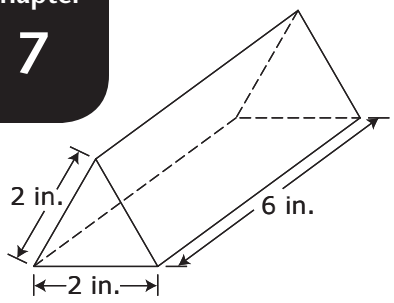
c) Select a scale for making a model. 1 : _____

d) Calculate the dimensions of the model.

length = _____ width = _____ height = _____

e) Create the model.

4. The company you work with makes candies. For the holidays, they are making mini mints with a diameter of 1". The container is a tube in the shape of a triangular prism. The dimensions are shown in the diagram.



a) Your job is to design a 1-piece wrapper that will cover only the rectangular sides. What are the dimensions of the wrapper? length = _____ width = _____

b) Design a wrapper, to scale, for the candy box.

c) How many candies will fit in the box? _____
Explain your answer.

_____

5. A type of chip used for card playing is 3 cm in diameter and 3 mm thick.

a) Make a reasonably accurate sketch of 1 chip.

b) Work in groups to build cylindrical tubes that will hold 20, 50, or 100 chips.

c) Calculate the total surface area of any 1 tube.

2-D Shape	Area	Number Needed	Total Area
		Total Surface Area	

d) What would be the length of a tube that held 75 chips?

6. A golf ball has a diameter of approximately 43 mm. Imagine that you have been hired to design a cardboard container that will hold 4 balls.

a) What shape will you choose for the container?

b) Make a sketch of the container. Include dimensions on your sketch.

c) Calculate the total surface area of the container.

2-D Shape	Area	Number Needed	Total Area
		Total Surface Area	

d) Create an accurate 3-D model of your container.

☑ Check Your Understanding

1. Create a 3-D scale model of something of personal interest to you. It could be
- a guitar or a skateboard
- a piece of furniture like your favourite chair or a bookcase
- a package that holds a cell phone or an item of clothing
- something larger, like your bedroom or a planter box