

\* Show all work to get given answers.

Name \_\_\_\_\_

Date \_\_\_\_\_

**LESSON 7.3**

1. Your friend tells you that her finger is  $(4/3)^{-1}$  inch thick. Evaluate the expression that represents the thickness of your friend's finger.

$$\frac{3}{4}$$

2. The minimum recommended width of the space between 6-inch by 6-inch tiles is  $2^{-2}$  inch and the maximum recommended width is  $2^{-1}$  inch. Simplify the expressions for the minimum and maximum widths of the space between the 6-inch by 6-inch floor tiles.

$$\frac{1}{4}$$

$$\frac{1}{2}$$

3. A sheet of paper has a thickness of  $100^{-1}$  inch.

a. Write and evaluate an expression for the total thickness of 5 sheets of paper.

$$\frac{1}{20}$$

b. Write and evaluate an expression for the total thickness of  $2^3$  sheets of paper.

$$\frac{2}{25}$$

4. A frog egg currently has a radius of  $5^{-1}$  centimeter. Write an expression for the volume of the frog egg. Use the formula for the volume of a sphere  $V = \pi r^3$

$$\frac{\pi}{125}$$

5. The metric system has names for very small lengths.
- a. One micrometer is  $10^3$  times the length of one nanometer. One nanometer is  $10^{-9}$  meter. What is the length one micrometer in meters.

$$\frac{1}{10^6}$$

- b. One femtometer is  $10^3$  times the length of one attometer. One attometer is  $10^{-18}$  meter. What is the length of one femtometer in meters.

$$\frac{1}{10^{15}}$$

- c. One centimeter is  $10^{10}$  times the length of one picometer. One picometer is  $10^{-12}$  meter. What is the length of one centimeter in meters.

$$\frac{1}{10^2}$$

6. The mass of a grain of salt is about  $10^{-4}$  gram. About how many grains of salt are in a box containing 100 grams of salt?

$$10^6$$

7. The mass of a certain type of rice is  $10^{-2}$  gram. About how many grains of rice are in a box containing  $10^3$  grams of rice?

$$10^5$$

8. The average mass of the fruit of the wolffia plant is about  $10^{-4}$  gram. The largest pumpkin ever recorded is  $10^4$  kilograms. About how many times greater is the mass of the largest pumpkin than the mass of the fruit of the wolffia plant?

$$10^{11}$$

