

Name \_\_\_\_\_

Homework # \_\_\_\_\_

## Relative Error

For each question find the relative error, to the nearest hundredth.

1. measured: 5.7 cm  
actual: 5.6 cm

2. measured: 1.95 mm  
actual: 2 mm

3. measured: 1.75 m  
actual: 1.85 m

Now suppose that each of the measures given in questions 1-3 represents the length of a side of a square, find the relative error to the nearest tenth.

1b.

2b.

3b.

Now suppose that each of the measures given in questions 1-3 represents the length of an edge of a cube, find the relative error to the nearest tenth.

1c.

2c.

3c.

4. Sally measured the height of the bean plant for her science experiment to be 6.5 centimeters. The actual height of bean plant is 6.85 centimeters. Find the relative error of Sally's measurement to the *nearest thousandth*.

5. A factory packs CD cases into cartons for a music company. Each carton is designed to hold 1,152 CD cases. The Quality Control Unit in the factory expects an error of less than 5% over or under the desired packing number. What is the *least* number and the *most* number of CD cases that could be packed in a carton and still be acceptable to the Quality Control Unit?

6. The groundskeeper is replacing the turf on a soccer field. His measurements of the field are 130 yards by 65 yards. The actual measurements are 122 yards by 50 yards. Which expression represents the relative error in the measurement?

(1)  $\frac{(130)(65) - (122)(50)}{(122)(50)}$

(3)  $\frac{(130)(65) - (122)(50)}{(130)(65)}$

(2)  $\frac{(122)(50)}{(130)(65) - (122)(50)}$

(4)  $\frac{(130)(65)}{(130)(65) - (122)(50)}$

7. Robert estimates the measurement of the volume of a candy box to be 122 cubic inches. The actual volume of the candy box is 131 cubic inches. What is the relative error of Robert's measurement to the *nearest thousandth*?

8. Lilly measured a piece of paper to be 19 cm by 27 cm. The piece of paper is actually 19.3 cm by 27.4 cm.

Determine the number of square centimeters in the area of the piece of paper using Sophie's measurements.

Determine the number of square centimeters in the actual area of the piece of paper.

Determine the relative error in calculating the area. Express your answer as a decimal to the *nearest thousandth*.