



# Model Design and Building Merit Badge Day One Homework: Rule It, Scale It !!

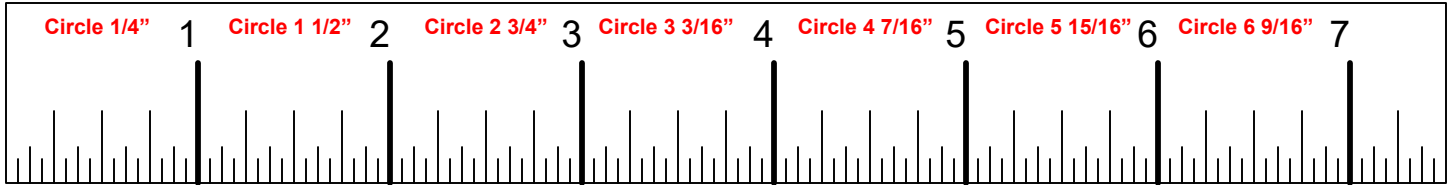
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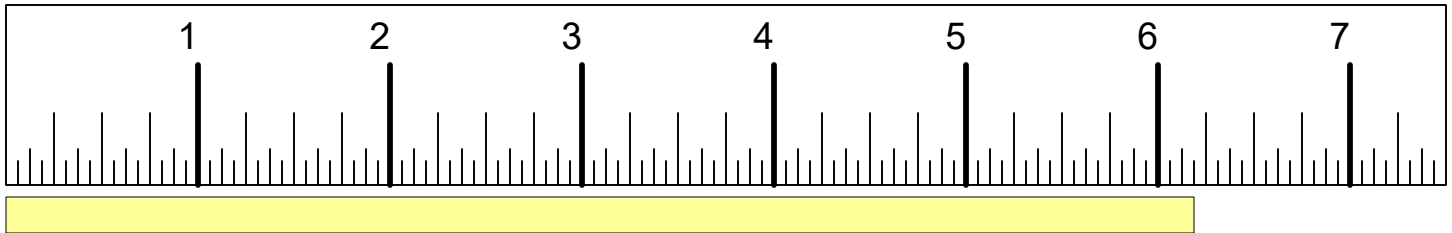
## Part 1 – Rule It !!

Complete the following practice exercises with using the provided ruler / tape measure which is labeled for quarters, eighths, and sixteenths

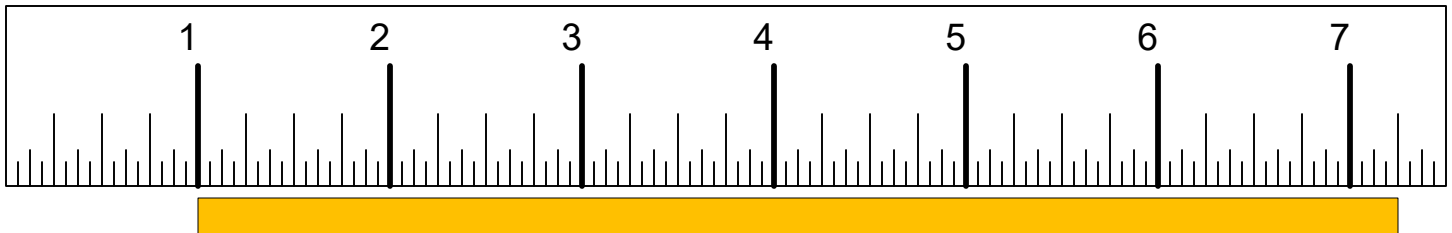
### 1. Circle the requested points shown in red



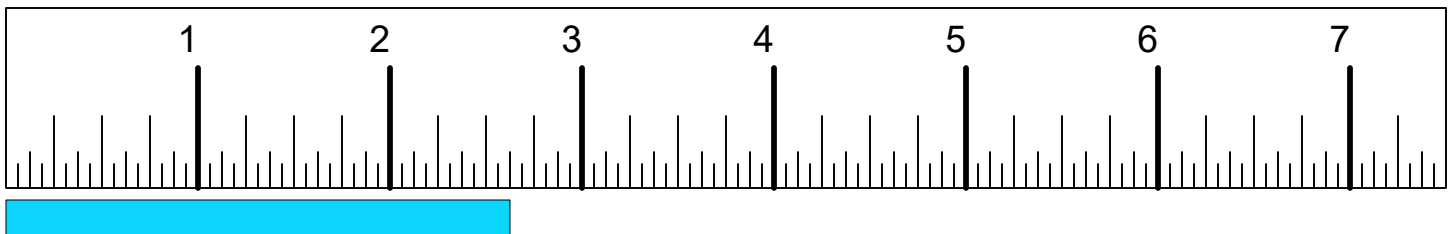
### 2. How long is the yellow box? \_\_\_\_\_ inches



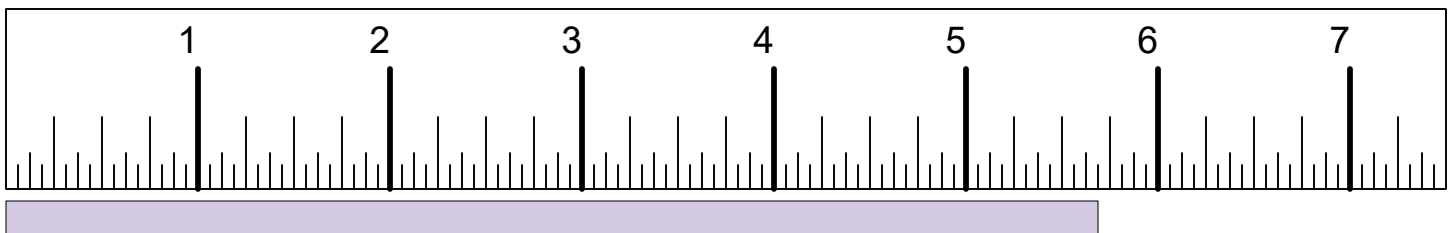
### 3. How long is the orange box? \_\_\_\_\_ inches



### 4. How long is the blue box? \_\_\_\_\_ inches



### 5. How long is the purple box? \_\_\_\_\_ inches



To get credit for this requirement, you must email Mr. Eric this completed sheet.

Merit Badge Counselor: Eric Cutright, Troop 1028/1029, Charlottesville, VA – visit us at [www.troop1028.org](http://www.troop1028.org)



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## Part 2 – Scale It !!

Complete the following practice exercises with working with scales. We want to make an architectural model of the scale house plan shown in the picture.

Question 1:

If I use a scale of 1/4" (model) = 1 ft (real) what will the overall model dimensions be?

\_\_\_\_\_ inches x \_\_\_\_\_ inches

Question 2:

If I use a scale of 1/2" (model) = 1 ft (real), what will the overall model dimensions be?

\_\_\_\_\_ inches x \_\_\_\_\_ inches

Question 3:

If I use a scale of 1" (model) = 1 ft (real), what will the overall model dimensions be?

\_\_\_\_\_ inches x \_\_\_\_\_ inches

Question 4:

If I use a scale of 2" (model) = 1 ft (real), what will the overall model dimensions be?

\_\_\_\_\_ inches x \_\_\_\_\_ inches

Question 5:

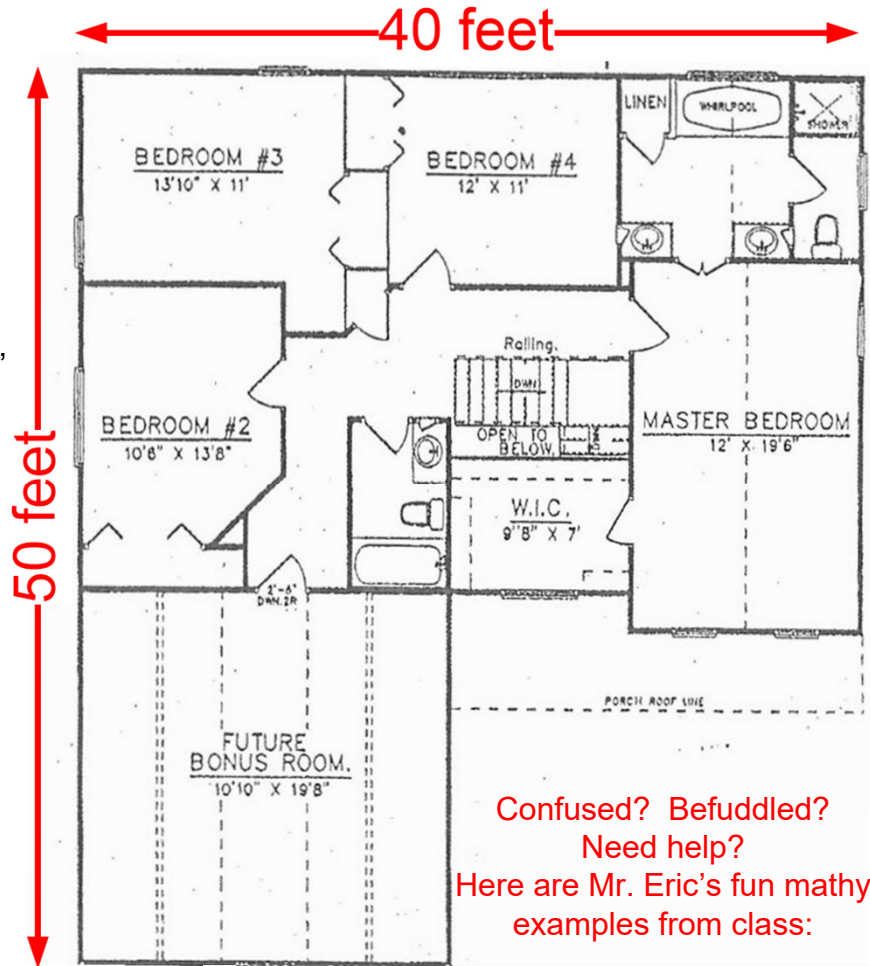
I'm going to make my model out of cardboard. I have an infinite supply, but the largest dimension of my cardboard is 26". If I make each outside wall from one piece of cardboard, what is the maximum scale I can use?

\_\_\_\_\_ inches (model) = \_\_\_\_\_ feet (reality)

Question 6:

The scale for question 5 might be challenging to use. What would be an easier scale where I could use almost the full width of my cardboard?

\_\_\_\_\_ inches (model) = \_\_\_\_\_ feet (reality)



– Model scale is 1/4 inch (model) = 10 feet (reality). If the model is 10 inches tall, how tall is the real thing?

- Height (reality) = 10 inches (model) \*  $\frac{10 \text{ feet (reality)}}{1/4 \text{ inch (model)}}$  =  $10 * \frac{10}{1} * \frac{4}{1}$  = 400 ft

– Model scale is 1/8 inch (model) = 5 feet (reality). If the real thing is 250 feet wide, how wide should my model be?

- Width (model) = 250 feet (reality) \*  $\frac{1/8 \text{ inch (model)}}{5 \text{ feet (reality)}}$  =  $250 * \frac{1}{8} * \frac{1}{5}$  = 6 1/4 in

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