

**Make A Scale Drawing Homework**  
**Given Monday 1/6 due Wednesday 1/8**

1. Decide what sort of structure you want to design/build. \_\_\_\_\_
2. Recall that the footprint can NOT exceed 14" (36 cm). Please use cm for this scale drawing. I only gave you the dimension in inches to help you visualize the structure.
3. My structure will be \_\_\_\_\_ cm x \_\_\_\_\_ cm in size.

Now, to **make a scale drawing**, you will need to make your drawing smaller than your structure. The word "scale" here means that it will be shrunken proportionately to your structure. Imagine a real building that has a footprint of 50 x 40m.

4. In a scale drawing, the architect will express the dimensions **drawing length : actual length**

$$1 \text{ cm on a drawing} = 1 \text{ m in real life}$$

This could be expressed as

$$1 \text{ cm} : 1 \text{ m}$$

Recall that 1 m = 100 cm, so it could also be shown as

$$1 : 100$$

That means that the drawing would be 100 times smaller, so a building with the largest dimension of 50 m would show up as 50 cm on a drawing. This is still REALLY BIG, since graph paper is about 27 cm long-wise, so this drawing would take 2 pieces or more of graph paper....

Tell me: What scale could we use to fit on one piece of paper without being too tiny? THINK!

6. Did you suggest something like 10 m in real life = 5 cm on the drawing? Remember that if 1 m = 100 cm, then 10 m = 1000 cm

$$\text{This would be a scale of } 5 : 1000$$

Now, reduce it to make better sense. 1 : \_\_\_\_\_

Did you get 200 : 1 ? Good!

That would result in 2 m in real life showing up as 1 cm on the drawing. Therefore, a 50 m wide building would show as 25 cm wide on paper. This would fit on the graph paper!

7. Now, think about your structure again and review step 3 above. Since the longest dimension of graph paper is 27 cm, your scale drawing needs to be smaller than that. What scale will you use?

My scale will be \_\_\_\_\_ : \_\_\_\_\_

Now you will need to do your design. Think about the OBJECTIVE of the project, to construct a realistic structure and see how it holds up to seismic waves. It will be interesting to see if and how it breaks, so construction materials and methods are important.

Do a QUICK sketch here, just to get your ideas started...

Please list your MATERIALS here. Remember that you should try to use materials sitting around the house, the garage, or the back yard. This should not cost you a single penny, although of course you are allowed to buy materials, such as crackers, marshmallows, glue, or sugar cubes if you like 😊