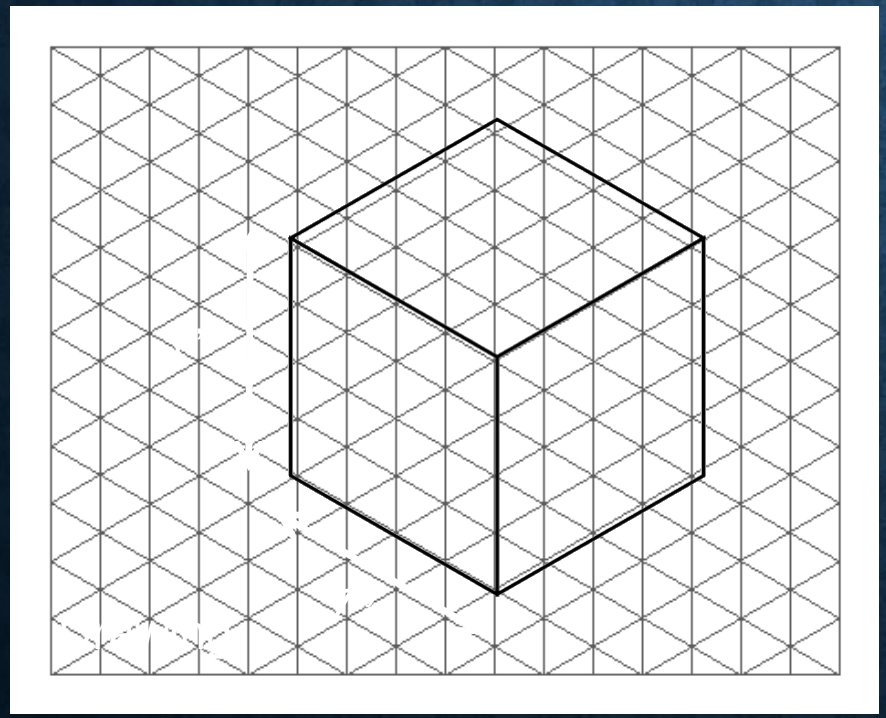
TAKING CARE TO PRECISION WITH SCALE

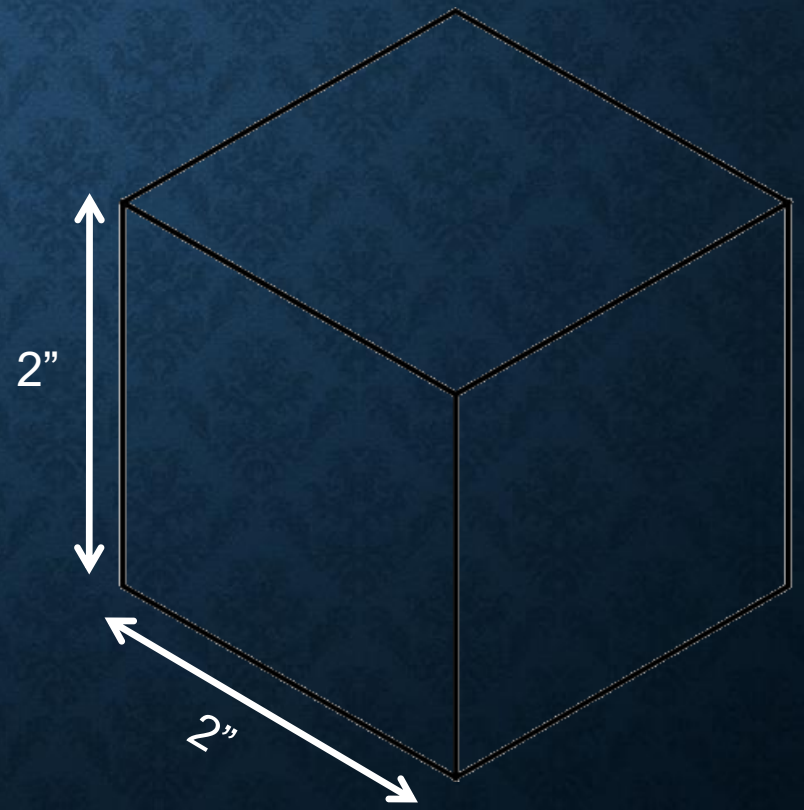
Foundations of Engineering and Technology

Wheeler HS Fall 2019

SCALE

- Scale is a ratio of a length used in a drawing to portray the actual length of the object.
- In the drawing below, 1 inch represents 2 inches on the actual box so the scale is 1/2 or 1:2.





SOLVING ALL SCALE PROBLEMS

- Both Sides must be the same unit of measure
  - Inches to Inches
  - Feet to Feet
  - Meters to Meters
- Set up equation –
  - Drawing ÷ Scale = Actual
  - Scale * Actual = Drawing
- Solve, reduce all fractions

$$Scale = \frac{Drawing\ size}{Actual\ size}$$

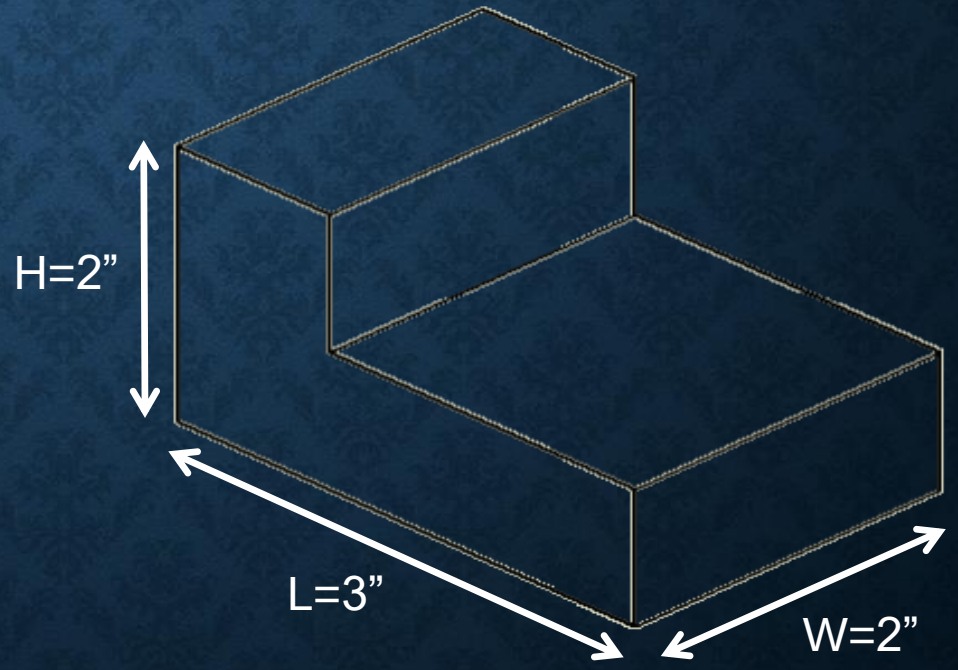
PRACTICING SCALE

- Keeping with the 1:2 scale from the last slide, what would the scaled dimensions be in a drawing of the actual block shown below? Sketch the drawing and record the 1:2 scale.

1:2 scale

H= ____ W= ____ L= ____

- What would the scale be if you wanted to make it 3 times bigger?



PRACTICING SCALE

- When writing scale as a ratio, use the same units on both sides of the colon. Do not mix units! For example:
  - 1:4 means 1 inch: 4 inches, or 1 foot: 4 feet – not 1inch: 4 feet

- What is the scale if a 4 inch length on a drawing corresponds to a 4-foot length on the actual object?

- A building has a wall of windows that is 12 feet across. If a scale of 1:24 is used, how wide is the wall of windows on the drawing in inches?

PRACTICING SCALE

- Car designers build models of new designs because, unlike a drawing, a model can be seen from all sides.

- If you build a 1:10 model of a car that is 15 feet long, how long would the model be? Give your answer in feet and inches.

SCALE: WHEN WRITTEN WITH UNITS

Unitless	vs.	Units
1:2	*vs.*	1-inch: 2-feet

- Converting from units to unitless:

Step 1. write the scale with units:	1-inch:2-feet
Step 2. convert both sides to have the same units	1-inch:24-inch
Step 3. Cancel out the units:	1:24

SCALE ASSIGNMENT

- Around the classroom there are FIVE (5) worksheets with scale problems on them. They is also a pdf link on my blog to them all. On a separate sheet of paper, complete as many of them as you wish, with the catch that the more you complete, the better your grade.
  - Complete 1: 40%
  - Complete 2: 70%
  - Complete 3: 85%
  - Complete 4: 95%
  - Complete 5: 100%