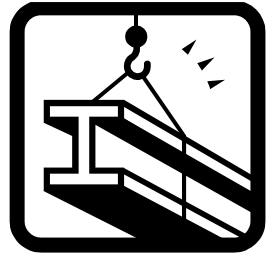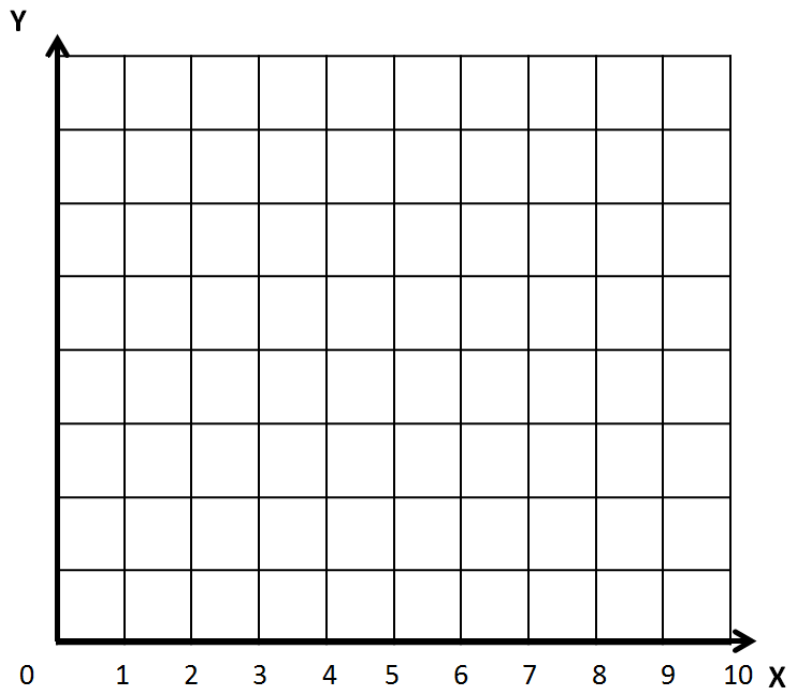# Test-A-Beam Worksheet

For each set of axes, plot the recorded data and connect each point in order. (NOTE: The units on the y-axis depend on calculated area moments of inertia values. The students are free to pencil mark the y-axis as they wish, as long as consistency in spacing and units is kept.)

Part 1: For different-sized wooden beams

Beam number	Area Moment of Inertia (Y) in cm^4	Deflection (X) in cm
1		
2		
3		

For Part 2: Wooden beam and steel beam

Material Type	Area Moment of Inertia in cm^4	Deflection in cm
Wood		
Steel		

Comment: How different are the area moment of inertia and deflection values for the two beams? Why do you think they are different?

_____

_____

_____

_____

_____

_____

_____

_____

REFLECTION QUESTIONS

1.) The formula:

$$I = \frac{w \times h^3}{12}$$

Is used for what kind of cross section? (Pick one.)

a) Square   b) Circular   c) Triangular

2.) What defines a beam from any other basic structure?

a) A beam must be strong, sturdy, and made of a hard material

b) A beam must be square in shape along its cross-section

c) The length of the beam must be several times longer than any of its cross-sectional dimensions.

3.) As the area moment of inertia of a beam increases, the amount of deflection that the beam will allow:

a) Decreases   b) Increases   c) Stays the same/Does not change

4.) What kind of cross-section are any beams allowed to have?

a) Square or rectangular cross-section

b) Any rounded cross-section

c) I-beam cross section

d) All of the above and more, depending on design