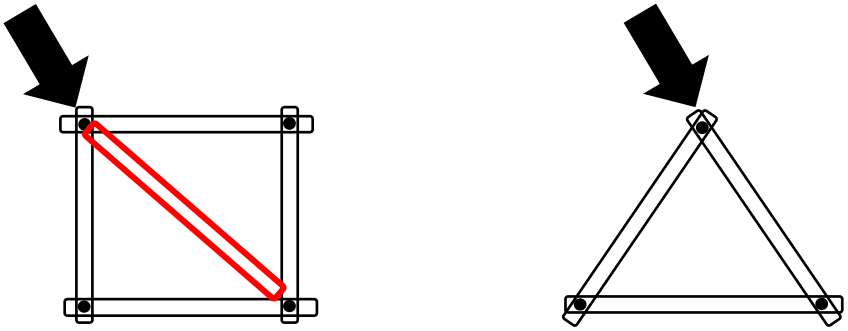
Name: _____ Date: _____ Class: _____

Pre-Activity Quiz Answer Key

1. Explain if and why the shapes below would either remain unchanged or collapse if you pressed down at the pin joints in the arrow directions. If the shape collapses, how might you strengthen it?

   Square: The square shape would collapse because nothing is in place to resist or stop the pushing force. Adding a diagonal stick (member), as shown, would keep it from collapsing since it would stop the push. (Note that two triangle shapes are formed by adding the stick.)

   Triangle: The triangle shape would remain unchanged because the stick (member) is present to resist or stop the pushing force. The triangle shape is already strong as it is and does not need any additional support.



2. Calculate the strength-to-weight ratio of the three objects in the table below:

Object	Mass (g)	Breaking Load (g)	Strength- to- Weight Ratio
1	6	102	17
2	4	76	19
3	6	114	19

Calculation steps:

Strength-to-weight ratio = breaking load / mass

Object 1: Strength-to-weight ratio = 102 g / 6 g= 17 (dimensionless)
Object 2: Strength-to-weight ratio = 76 g / 4 g= 19 (dimensionless)
Object 3: Strength-to-weight ratio = 114 g / 6 g= 19 (dimensionless)

Objects 2 and 3 have the same strength-to-weight ratio, both higher/better than object 1.