Name: _____ Class: _____

Structural Efficiency

1. A structure has a mass of 75 kg and can support 825 kg. What is the structural efficiency of the structure?

2. At Rebecca's birthday party people piled their gifts on a table. During the party the table collapsed due to the mass of all the gifts. If the gifts had a total mass of 200 kg, and the table had a mass of 30 kg, what was the structural efficiency of the table?

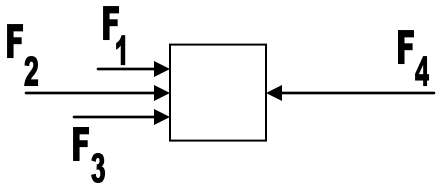
3. Knowing an average ant has a mass of 0.003 g (3 milligrams), and also that an ant can lift 30 times its own mass. What is the maximum mass that an ant can support?

Name: _____ Class: _____

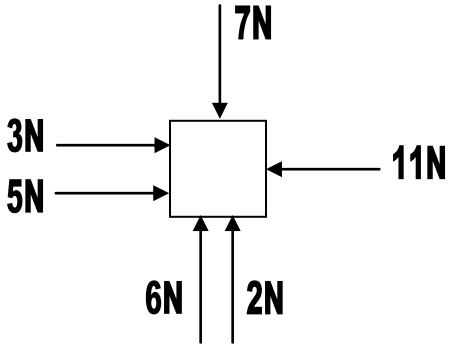
FORCE BALANCE

1. Re-draw the following force diagram to show one resultant force. Indicate the direction of motion on your new diagram.

[$F_1 = 3$ N, $F_2 = 4$ N, $F_3 = 6$ N, $F_4 = 8$ N]



2. Indicate the direction of movement for the following situation. Be sure to show why it would move that way.



3. A car driving on a road has many forces acting on it. Use the diagram below to draw and label the following forces: Force of Gravity = 10 000 N [↓], Wind Resistance = 500 N [←], Force of the Road pushing on the Tires (Friction) = 1000 N [→]. The road also applies another force on the car, what direction is that force and what is the value?