

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?

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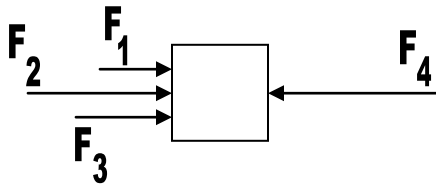
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FORCE BALANCE

1. Draw the diagram for the following forces, and indicate the movement that would occur (with an arrow). There is one vertical force of 60N and one horizontal force of -40 N.
*think about which direction positive and negative should be

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

[$F_1 = 3 \text{ N}$, $F_2 = 4 \text{ N}$, $F_3 = 6 \text{ N}$, $F_4 = 8 \text{ N}$]



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 [\downarrow], Wind Resistance = 500 N [\leftarrow], Force of the Road pushing on the Tires (Friction) = 1000 N [\rightarrow]. The road also applies another force on the car, what direction is that force and what is the value?

