**Unit 4 - Quiz 2**

1. For each situation below, sketch a force diagram. Use the rock as your system. Make sure to use the notation discussed in class. Force vectors should be drawn to scale with a ruler.

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| * 1. The rock is sitting still. |  |
| * 1. Rock is suspended from a string as shown. |  |
| * 1. Rock is tied to a rope and pulled at constant velocity across a table. Friction is present. |  |
| * 1. Rock is held by a string and a table. |  |

1. A block is suspended between two strings as shown. The tension in the top string is 25 N. The action figure pulls down so that the tension in the bottom string is 12 N.
   1. Draw a force diagram showing all forces acting **on the block**.
   2. Find the weight of **the block**. Start with a general equation and show work.
   3. Find the mass of **the block**. Start with a general equation and show work.
   4. Find the mass of the **action figure**. Start with a general equation and show work.
2. A 75.0 kg water skier is towed at a constant velocity of 15.0 m/s to the north by a speedboat. The tension in the tow rope is 150 N.
   1. Draw a system schema and a force diagram for the water skier.
   2. Write the sum of force equations for both the horizontal and vertical directions.
   3. Determine the amount of the slowing force exerted on the skier by the water and the air?
   4. Determine the amount of the support force on the skis and skier from the water?