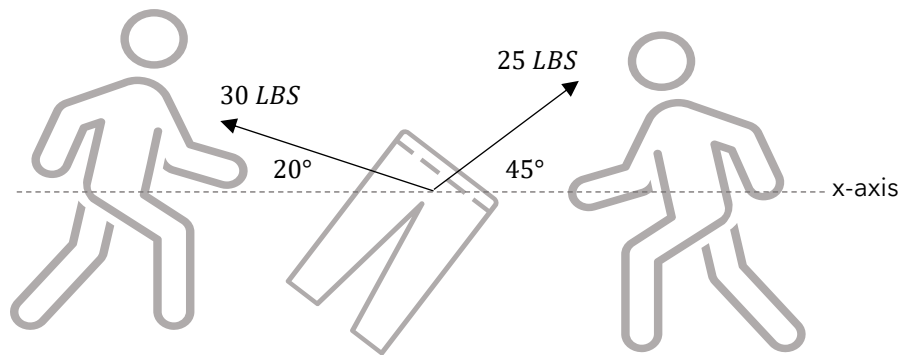


Statics Supplemental Instruction Worksheet 2

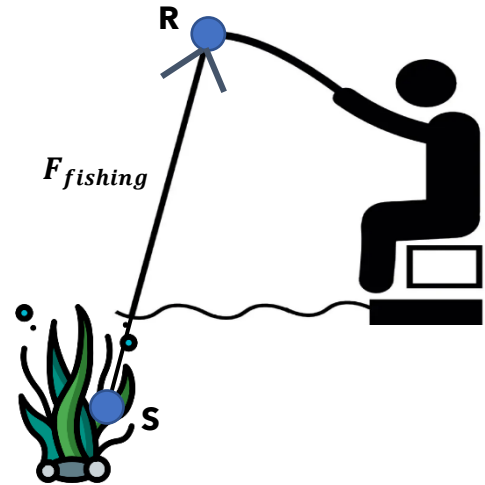
Topic: Resultant Forces, Component Forces, and Sum of Forces

1. Molly, my sister, and I are fighting over a cute pair of pants. Molly pulls the pants with a force of 30 LBS at an angle of 20 degrees above the x-axis. I pull the pants in the opposite direction with a force of 25 LBS at an angle of 45 degrees above the x-axis. Are we in static equilibrium?



Topics: Force Components, Unit Vectors, Relating Position and Force

2. I went fishing, thought I caught something, and started reeling it in. Turns out, it was just seaweed. If I am reeling with a force of 45 LBS, what is the force vector associated with my fishing line? The position vector from point S to R is given by $-13i + 6j + 9k$.



Topics: Force Projection, Dot Product, Force Vectors

3. If the magnitude of force A is 240LBS, the magnitude of force B is 60 LBS, and the dot product of the two forces is 6759.36, what is the angle between the two forces?

4. Vector G is given by $\langle 6i, 3j, 9k \rangle$ and vector U is given by $\langle 0i, -6j, 4k \rangle$. What is the dot product of these two vectors?

5. I'm on a backpacking trip in the Snowies and I set up my tent. The wind is crazy, and blows on my tent with a force vector that can be represented by $\langle 26i, 0j, -13k \rangle$. The position of my tent pole is given in the image below. Using the dot product and a unit vector, what is the effect (or projection) of the wind force on my tent pole? Represent your answer in magnitude and vector form.

