

Problemas Sobre Fuerza

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Trabajo Humberto Misael Hernandez Ureña Y Jessica Gomes Cervantez

Problem 1. The diagram below depicts a force that makes an angle to the horizontal. This force will have horizontal and vertical components.

Which one of the choices below best depicts the direction of the horizontal and vertical components of this force?

mount

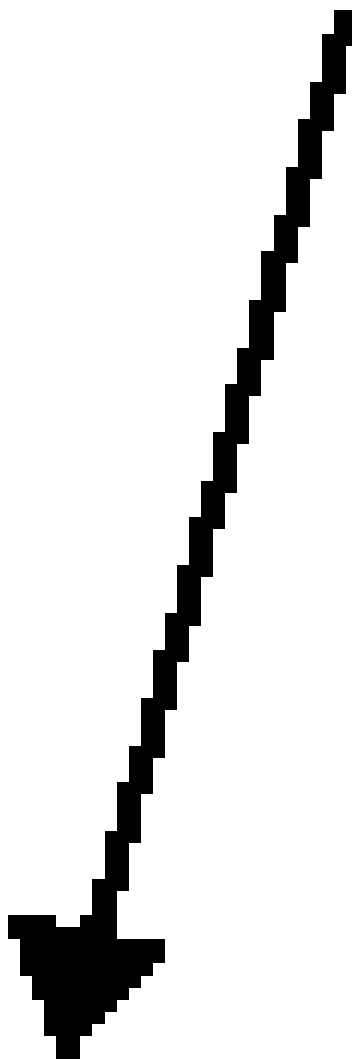


Figure 1: This is a caption

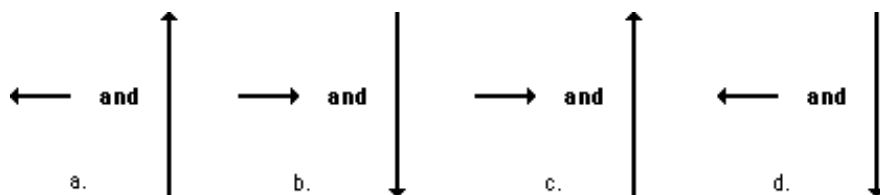


Figure 2: This is a caption

Solucion

D

Problem 2. Three sailboats are shown below. Each sailboat experiences the same amount of force, yet has different sail orientations .

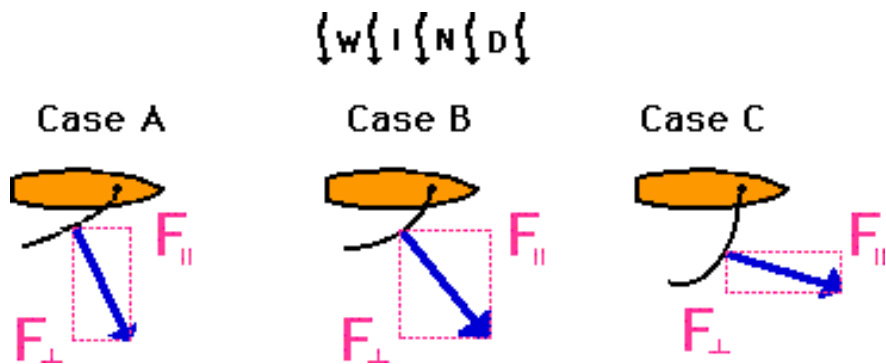


Figure 3: This is a caption

In which case (A, B or C) is the sailboat most likely to tip over sideways? Explain.

Solución

Case A

Problem 3. Consider the tow truck below. If the tensional force in the cable is 1000 N and if the cable makes a 60-degree angle with the horizontal, then what is the vertical component of force that lifts the car off the ground?

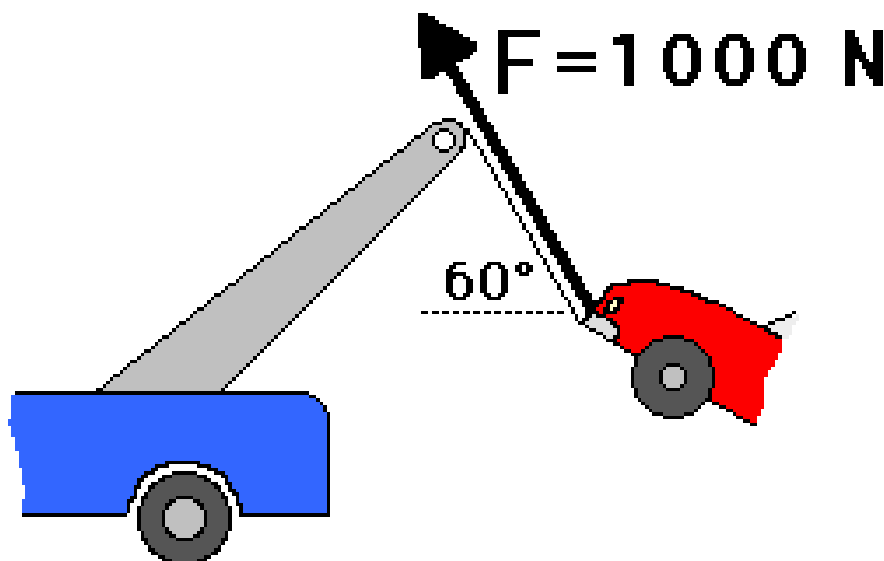


Figure 4: This is a caption

Solución

$$\sin(60 \text{ degrees}) = \frac{(F_{\text{vert}})}{(1000N)} = 866N$$

Problem 4. After its most recent delivery, the infamous stork announces the good news. If the sign has a mass of 10 kg, then what is the tensional force in each cable? Use trigonometric functions and a sketch to assist in the solution.

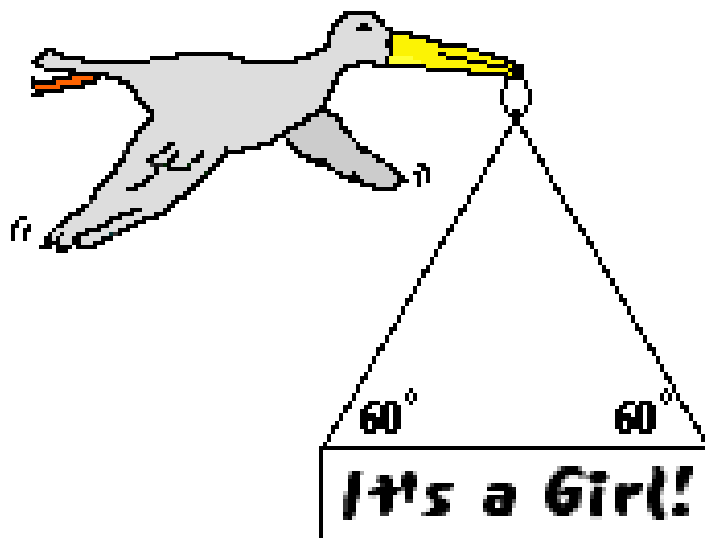


Figure 5: This is a caption

Solución

$$\sin \theta = \frac{T_y}{T} T_y = T \sin \theta$$

$$T_y + T_y - W = 0$$

$$2T_y = W$$

$$T_y = \frac{W}{2}$$

$$T \sin \theta = \frac{W}{2}$$

$$T = \frac{W}{\sin 60} = \frac{mg}{2 \sin 60} = \frac{90TN}{173} = 56.70$$

