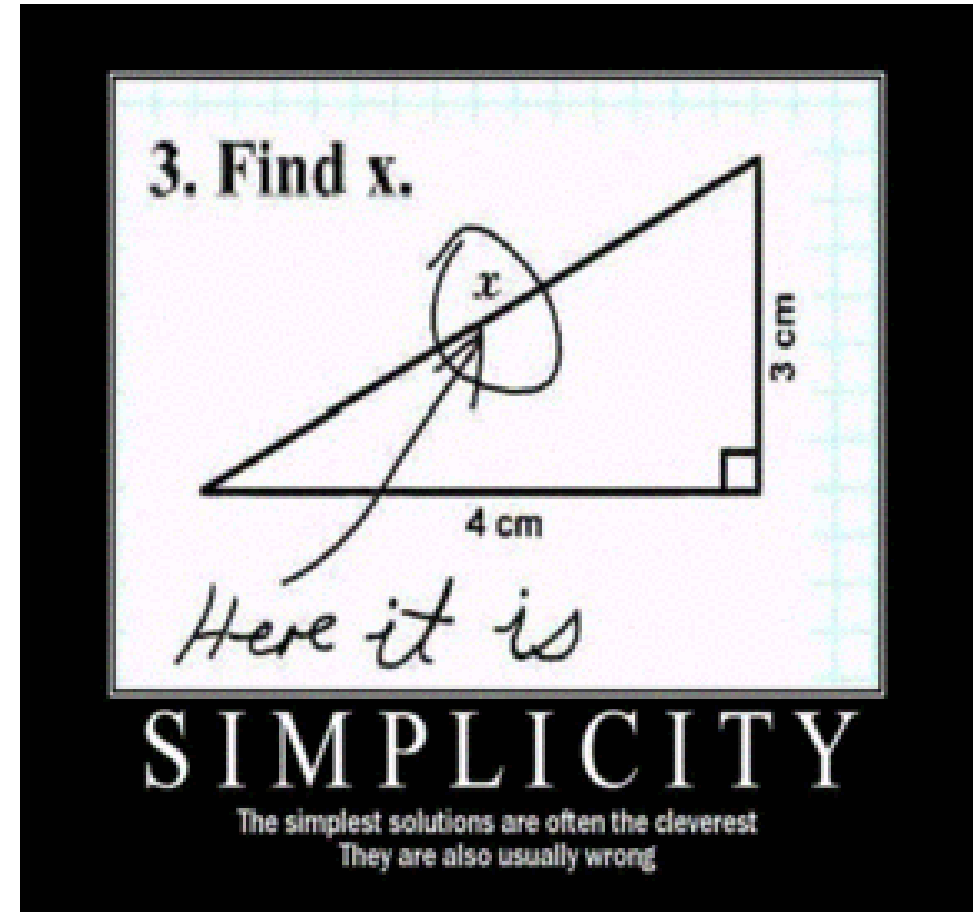
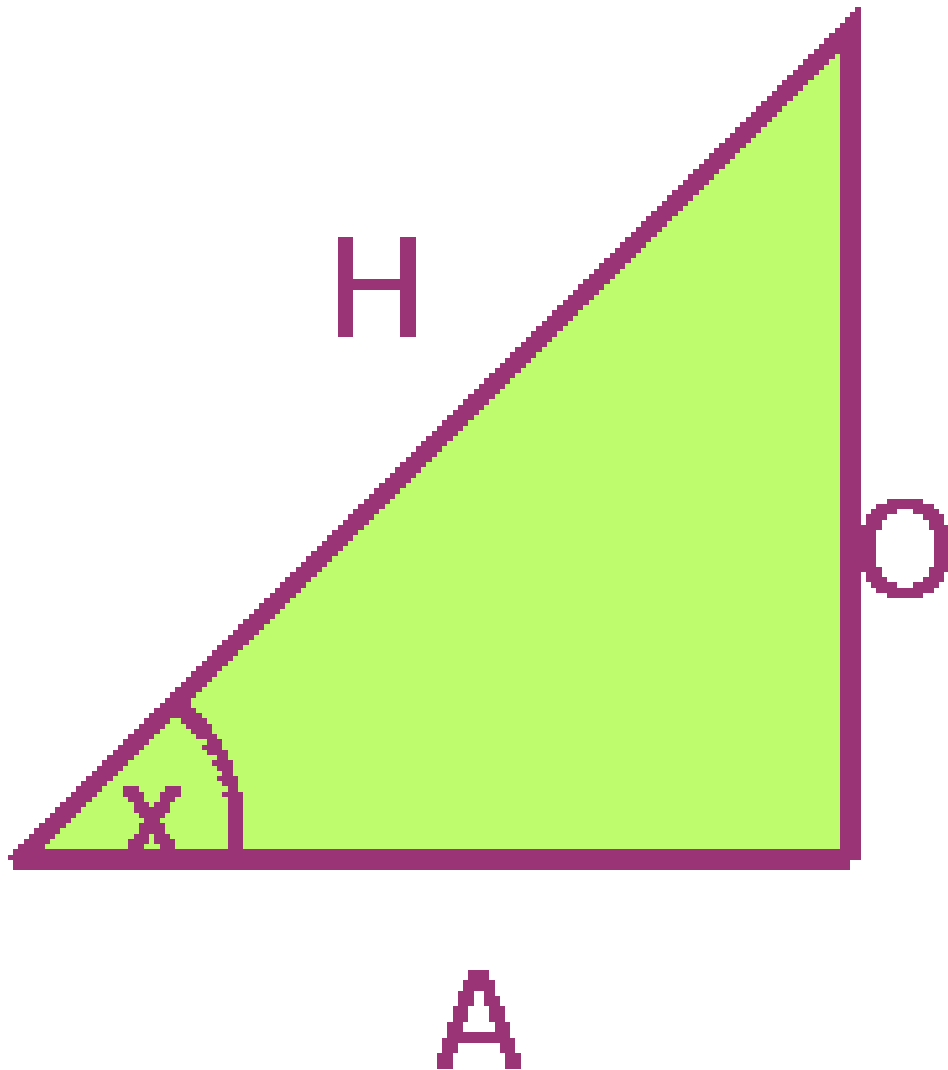


# Happy Friday

- Solve for  $x$  and the angle at the bottom right of the triangle. Do not use Pythagorean Theorem.



# Today: SOH CAH TOA



$$\text{SIN}(x) = \frac{O}{H}$$

$$\text{COS}(x) = \frac{A}{H}$$

$$\text{TAN}(x) = \frac{O}{A}$$

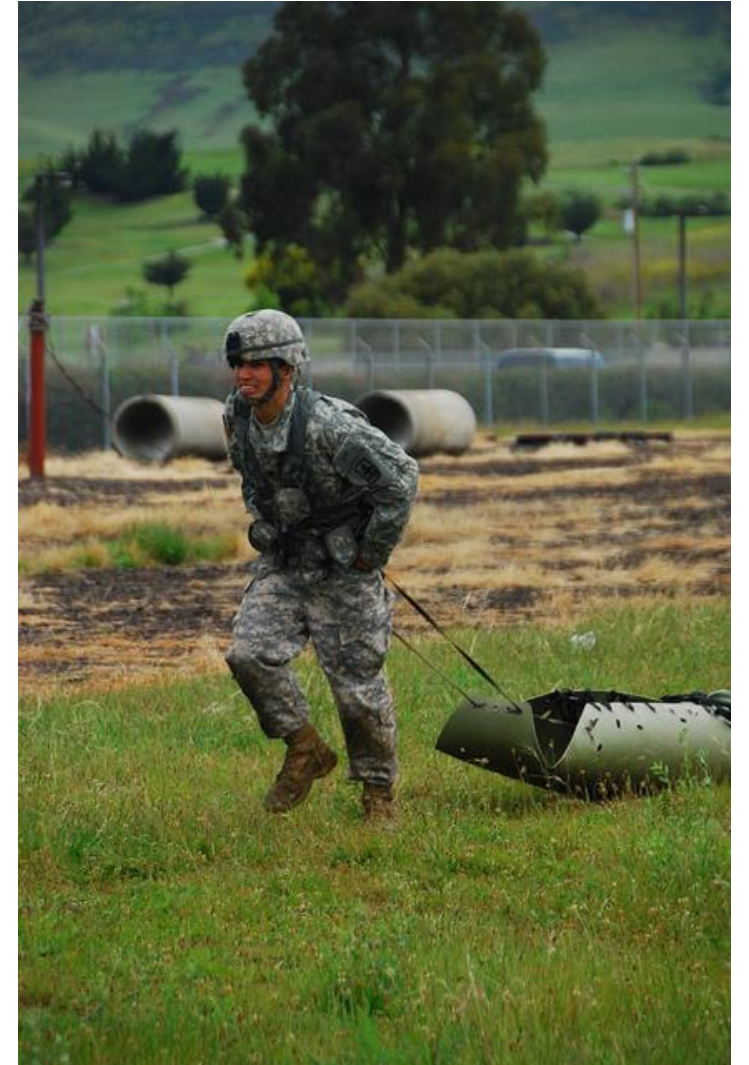
# Constant Velocity

- Sum of the forces equals zero.
- That means that the sum of the forces in the  $x$  direction is zero.
- Also, the sum of the forces in the  $y$  direction is zero.

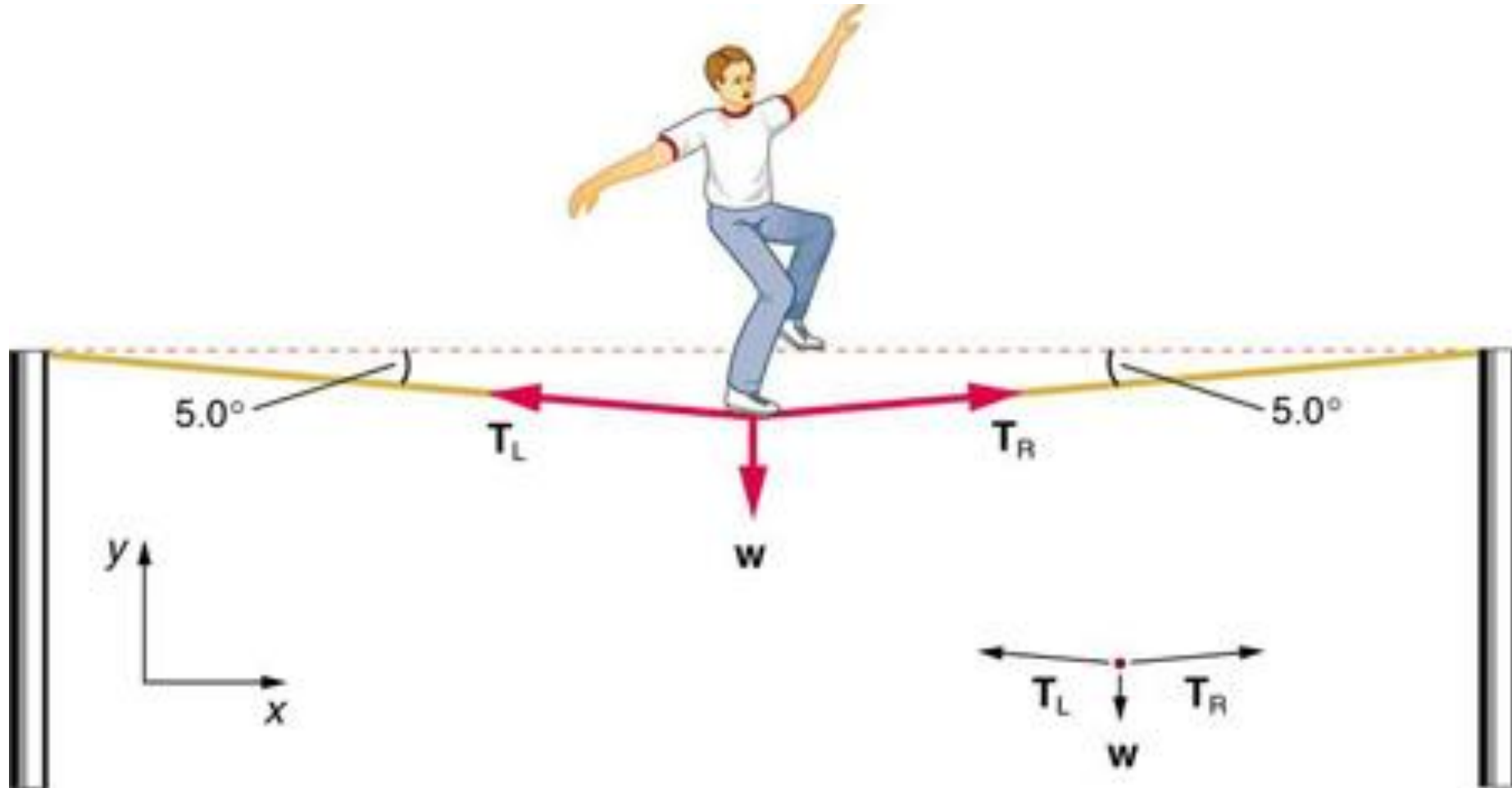
# Vector Components

- Every vector can be described in terms of its vertical and horizontal components.
- Use SOH CAN TOA to break them down.

An 37 kg object slides at a constant speed across a field. The soldier pulls with 100N at 30 degrees. Find all of the forces acting on the object.



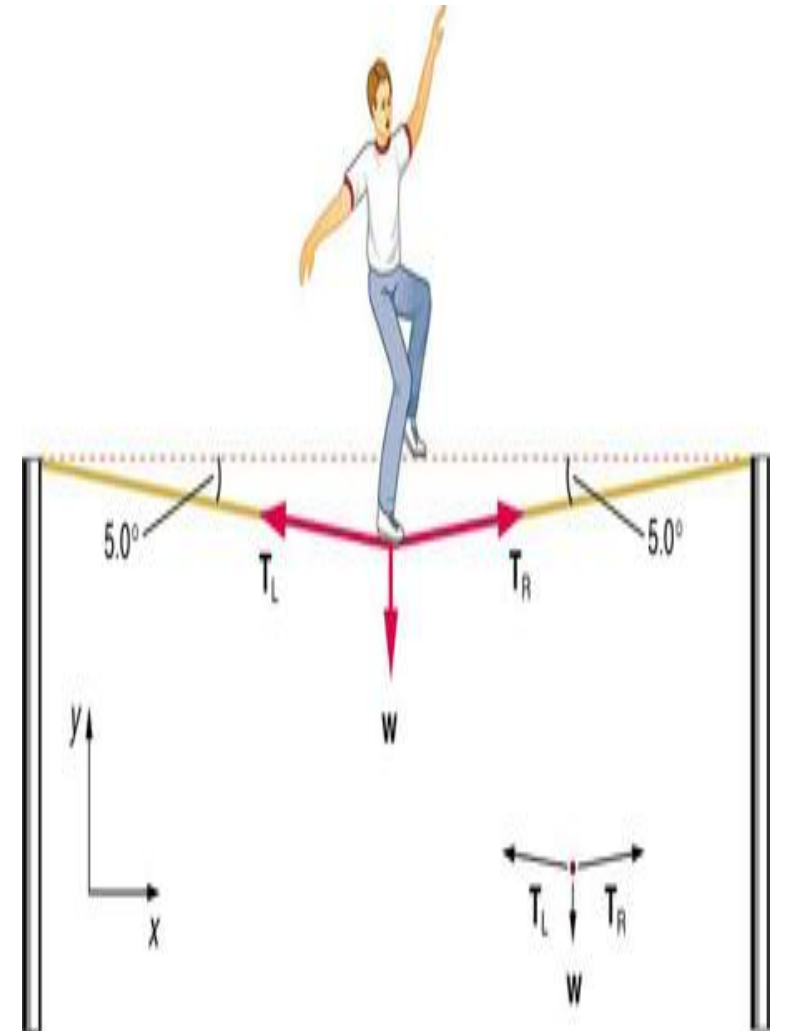
A 60 kg person balances on a slackline. What are the forces acting on **each** side of the line?



# Slacklining

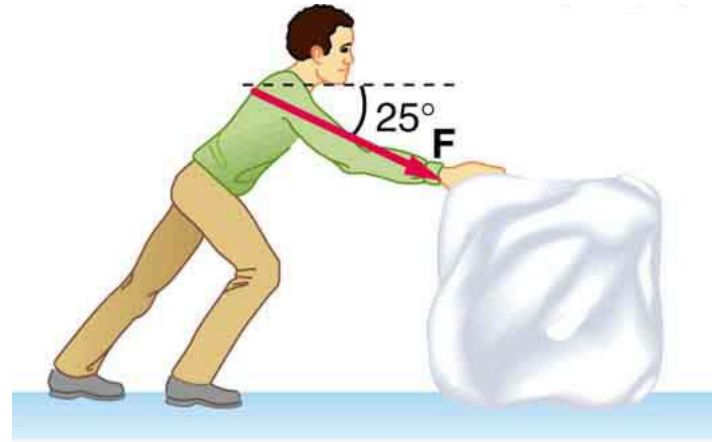
- “Springy” tight rope.
- Balance requires a sum of the forces in the horizontal to be zero.

A 60 kg person balances on a slackline. What are the forces acting on **each** side of the line?

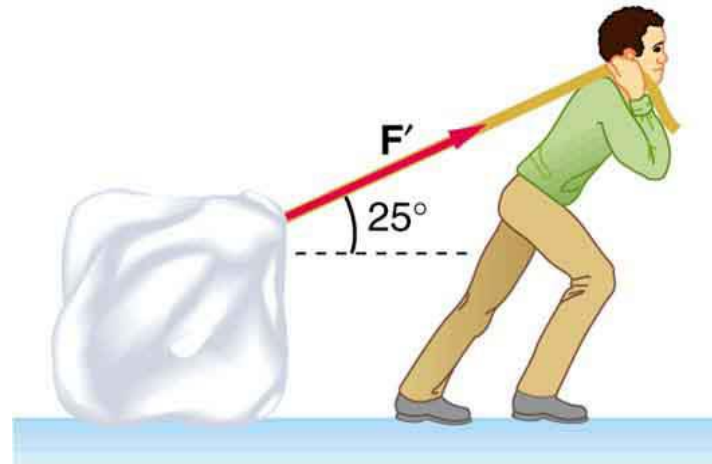




Use your words. Write down what requires more force: pushing the object at an angle or pulling it. Why?

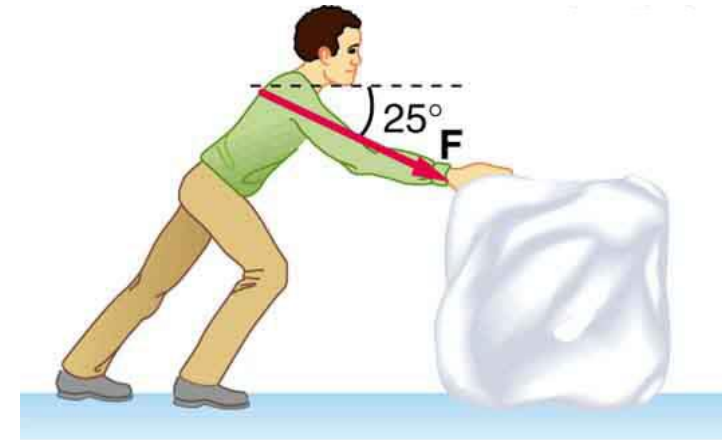


(a)

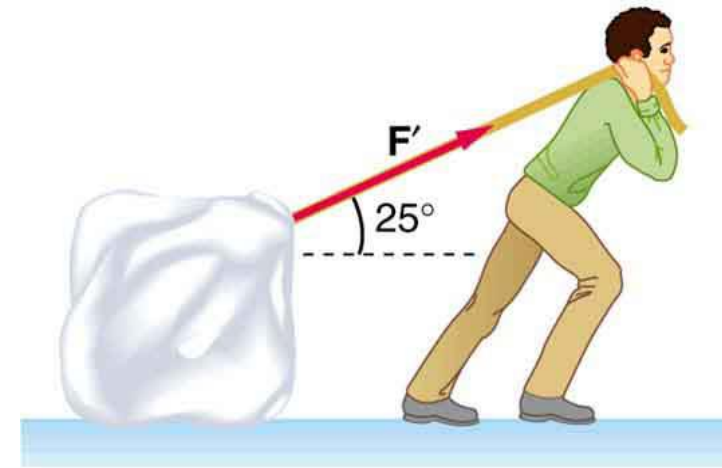


(b)

a) The man pushes a 50kg ice block with a force of 100N at an angle of 25 degrees below horizontal. What is the force of friction?

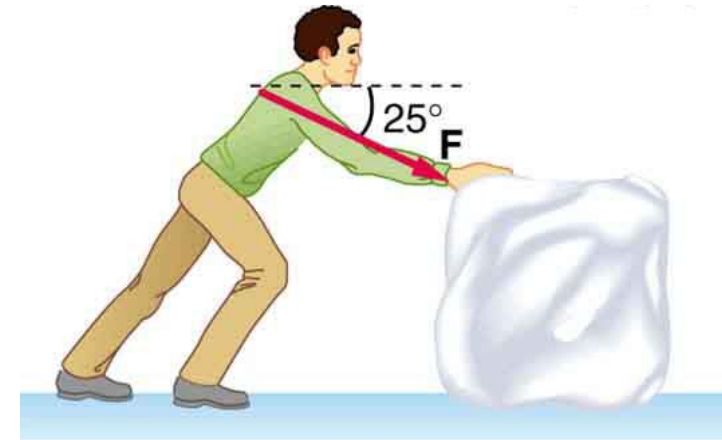


(a)

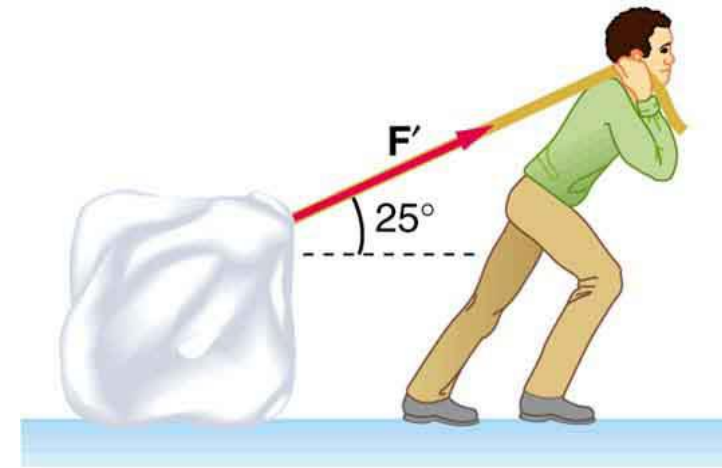


(b)

b) The man pulls a 50kg ice block with a force of 100N at an angle of 25 degrees above the horizontal. What is the force of friction?



(a)



(b)

# Friction: The Force that Resists Motion

- Friction is a unit of force.
- Friction is directly proportional to the normal force.
- The more mass, the higher the normal force, the more friction.

# Find the Force

- There is an object hanging from the ceiling.
- Get up and examine it. Please do not touch.
- Gather a plan to determine the tension on the two lines.

Ideas

Data

# Calculation



