Free Body Diagrams
&
Net Force

A Review

The Big 7 Forces

Gravity- always pulling down, acts on **every object.**

Friction Force- resists motion, opposite of the movement

Tension- holding up an object, only with strings, ropes, etc.

Normal Force- support force, object has to be resting on something else.

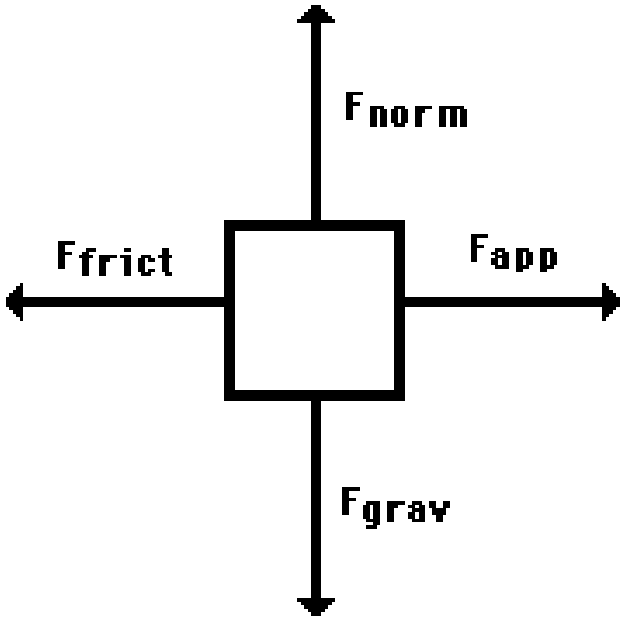
Applied Force- Force applied to an object by a person or another object

Air Resistance- Acts on objects traveling through air, opposite of the motion

Spring Force- exerted by a compressed/stretched spring on object attached to it

Free Body Diagram Instructions

1) Create a box for the object
2) Go through each of the Big 7 Forces
   - is it present?
   - (Gravity is always present, down)
1) If present, create an arrow and direction to represent.



What Questions do we have?

Write at least 1 question about something you are unsure of on your whiteboard.

Create a free body diagram for the following:

An egg is free-falling from a nest in a tree.

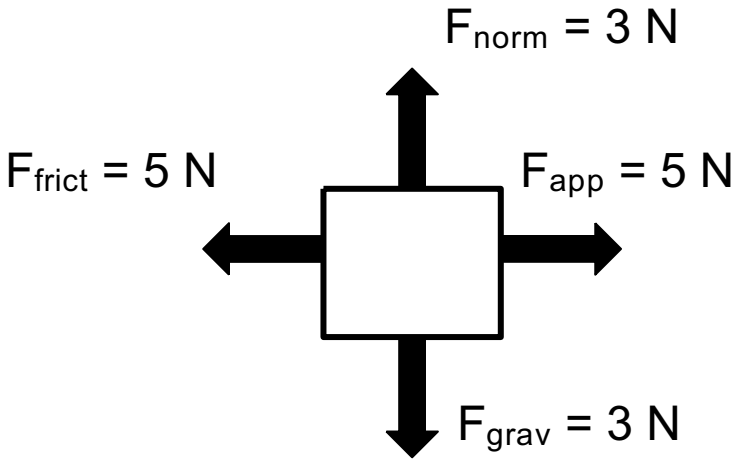
A student pushes a book across a desk to the right.

A girl is suspended motionless from a bar which hangs from the ceiling by two ropes.

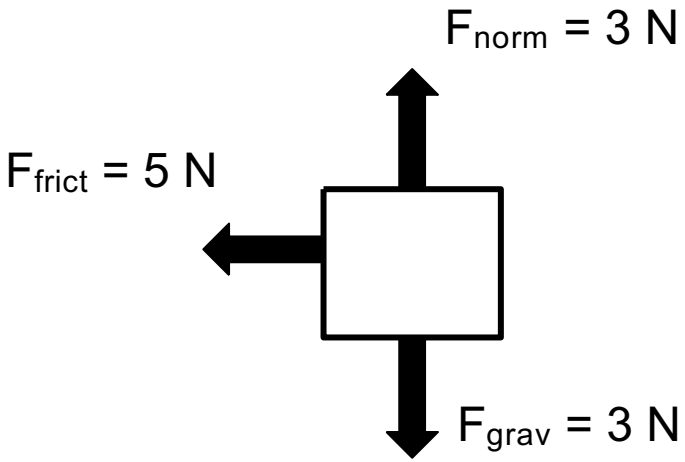
A trailer that is being towed by a car.

A child is sledding down a hill.

Determine the net force by the free body diagram

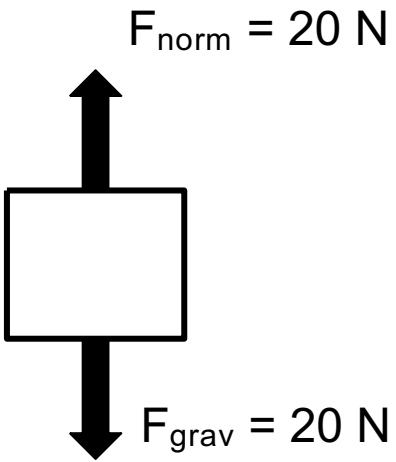


Determine the net force by the free body diagram

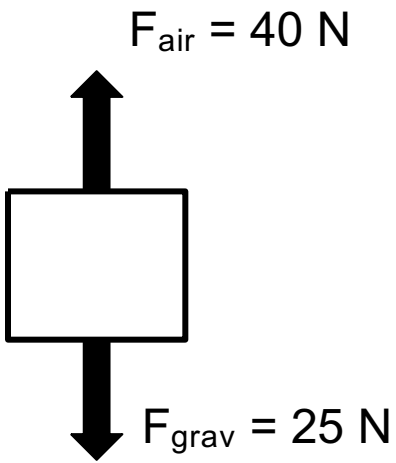


What Questions do we have?

Determine the net force by the free body diagram



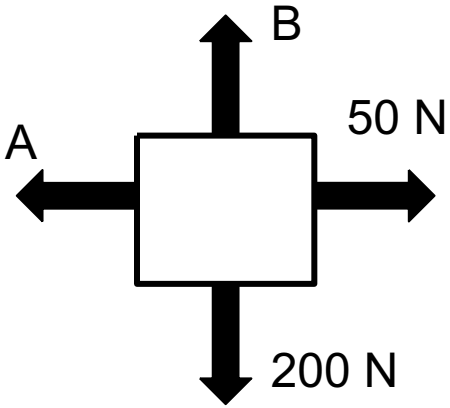
Determine the net force by the free body diagram



What Questions do we have?

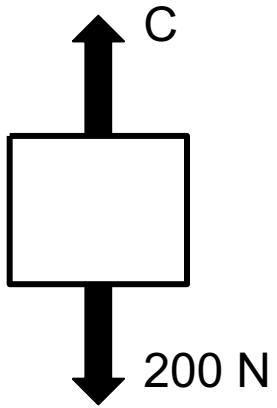
Now for some net force problems

Determine the magnitude of the unknown forces



$F_{net} = 0$ N

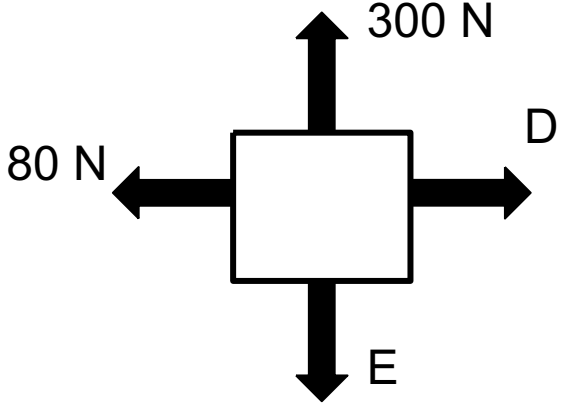
Determine the magnitude of the unknown forces



F_{net} = 900 N, up

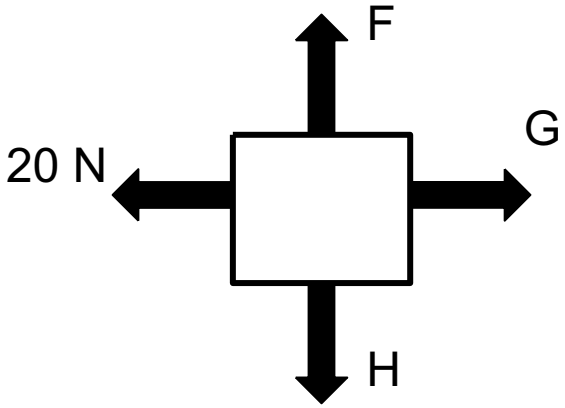
What Questions do we have?

Determine the magnitude of the unknown forces



F_{net} = 60 N, left

Determine the magnitude of the unknown forces



F_{net} = 30 N, RIGHT

What Questions do we have?

Write at least 1 question about something you are unsure of on your whiteboard.

Now, let's organize your binder

Forces Notes

Forces Challenges - FBD Diagrams

phET Forces Lab

Isaac Newton article

Net Force Challenges

Newton's Laws Notes

Newton's Laws Stations

Newton's Laws Challenges/Wrap up