

Introduction to



WHAT IS A FORCE?

- ▶ Forces are pushes or pulls
- ▶ Force is measured in Newtons(N) – spring scale
- ▶ The total amount of force is called NET FORCE
- ▶ Force has a size (magnitude) and a direction
 - ▶ Example 5N →



WHAT CAN FORCES DO?

- ▶ A force can
 - ▶ Stop an object's motion
 - ▶ Change an object's speed
 - ▶ Change an object's direction
 - ▶ ALL OF THE ABOVE ARE FORMS OF ACCELERATION (an increase in speed, a decrease in speed or a change in direction)

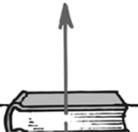


EXAMPLES OF FORCES:

- ▶ NORMAL FORCE
- ▶ GRAVITY
- ▶ FRICTION (KINETIC AND STATIC)
- ▶ CENTRIPETAL FORCE
- ▶ MAGNETIC FORCE
- ▶ ELECTRICAL FORCE

TERMS/VOCABULARY

- ▶ Normal Force-The normal force is the support force exerted upon an object that is in contact with another stable object.
 - ▶ For example, if a book is resting upon a surface, then the surface is exerting an upward force upon the book in order to support the weight of the book.



GRAVITY

- ▶ Gravity – a pulling force between 2 objects that depends on the mass of the 2 objects and the distance between them
- ▶ Gravity pulls towards the center of an object



FRICTION

- ▶ A force that exists between two surfaces contacting one another
- ▶ Causes objects to slow down
- ▶ Creates heat



CENTRIPETAL FORCE

- ▶ A net force that acts towards the center of a moving objects circular path
- ▶ Acceleration is always changing because the object always changes direction



MAGNETIC FORCE

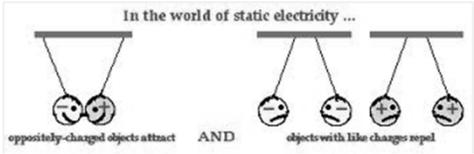
- ▶ The force of attraction or repulsion that exists between magnets, or a magnet and certain metals



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ELECTRICAL FORCE

- ▶ The force that exists between electrically charged particles.



NET FORCE, BALANCED AND UNBALANCED FORCES

- ▶ Forces can be in the same direction or different directions
- ▶ Forces can be balanced ($= 0$) or unbalanced ($\neq 0$)
- ▶ Balanced forces will cause objects to be at rest or to keep moving the way they are moving
- ▶ Unbalanced forces will cause a change in motion