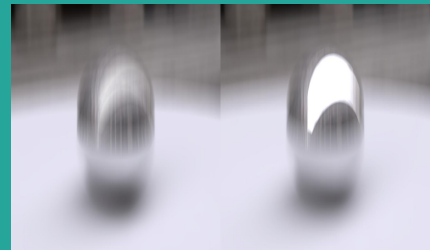


# Force and Motion: Direction and Speed

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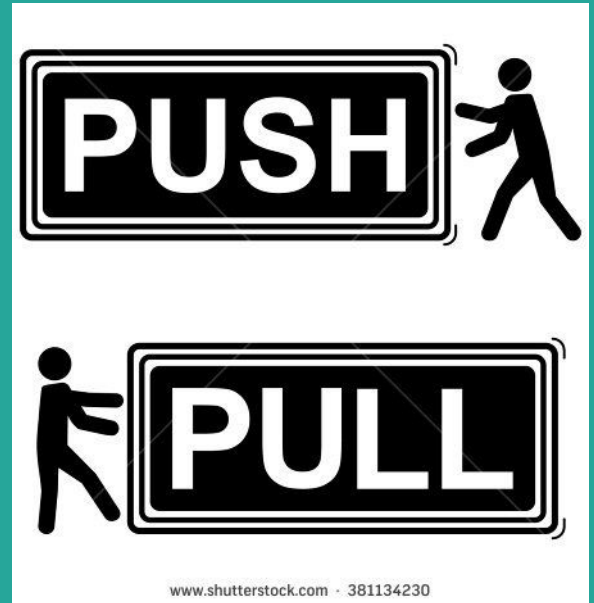
Third Grade Physical Science

Motion is when  
objects move from  
place to place.



Motion is when objects move as a result of forces (pushes or pulls).

**A force is a push or a pull.**



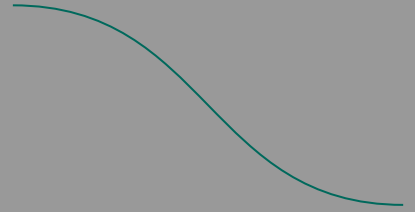
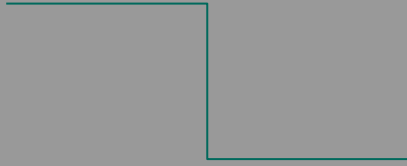
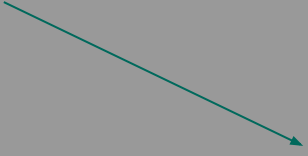
Gravity is a type  
of pull.



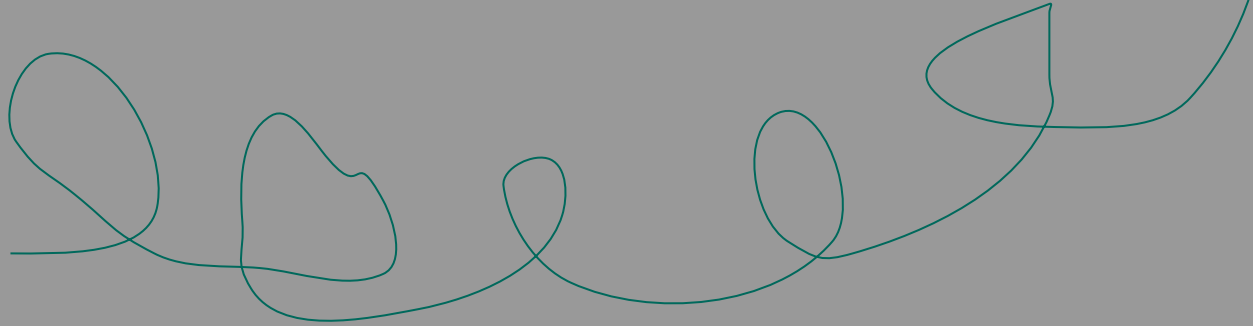
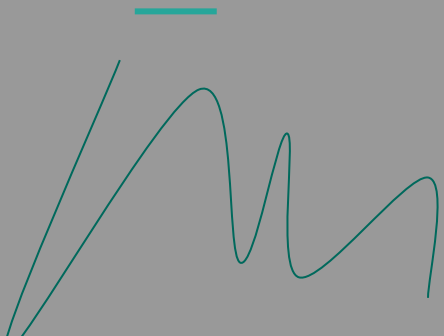
**DIRECTION** is the course or path to which something is moving or pointing.

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Objects can move in  
different directions.



**FORCE** is the natural power or effect that is able to change the speed or direction of something.

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To PUSH is to use  
force to move  
something or  
someone forward  
or away from you.

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To PULL is to hold onto or move someone or something in a particular direction especially toward yourself.



Forces (pushes and pulls) act on objects and cause them to move or change direction.

- Throwing, catching, kicking a ball
- Blocking a basketball from going into the net
- Opening and closing a door
- Turning on and off a water faucet
- Tug of war
- Muscles pulling on bones
- Getting dressed
- Hitting brakes on a bicycle
- Pulling a shopping cart

Can you think of more examples?

# All about Friction...

1. Friction is the force that opposes motion between two surfaces that are in contact with each other.
2. Friction results in the release of heat energy.





Objects can move at different speeds.



SPEED is the rate at which something or someone moves or travels.

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Forces (pushes, pulls) act on objects and cause them to move at different speeds over the same distance.

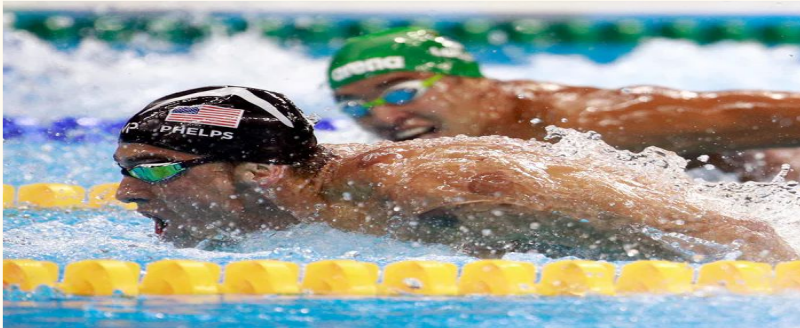


Who was faster?  
Who was slower?



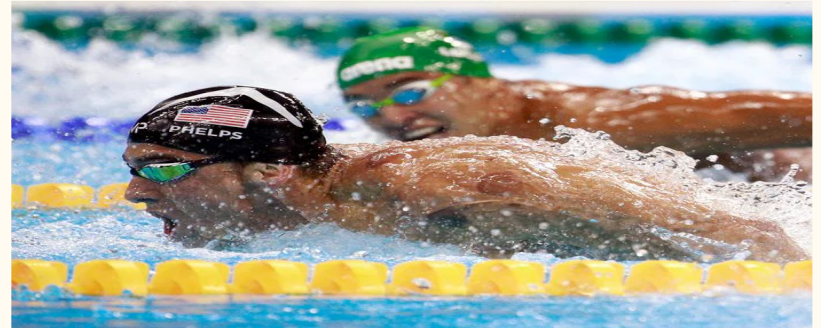
Forces (pushes,pulls) act on objects and cause them to move over the same distance in different amounts of time.

Michael Phelps swam 50 meters in **20 seconds**. His time was faster.



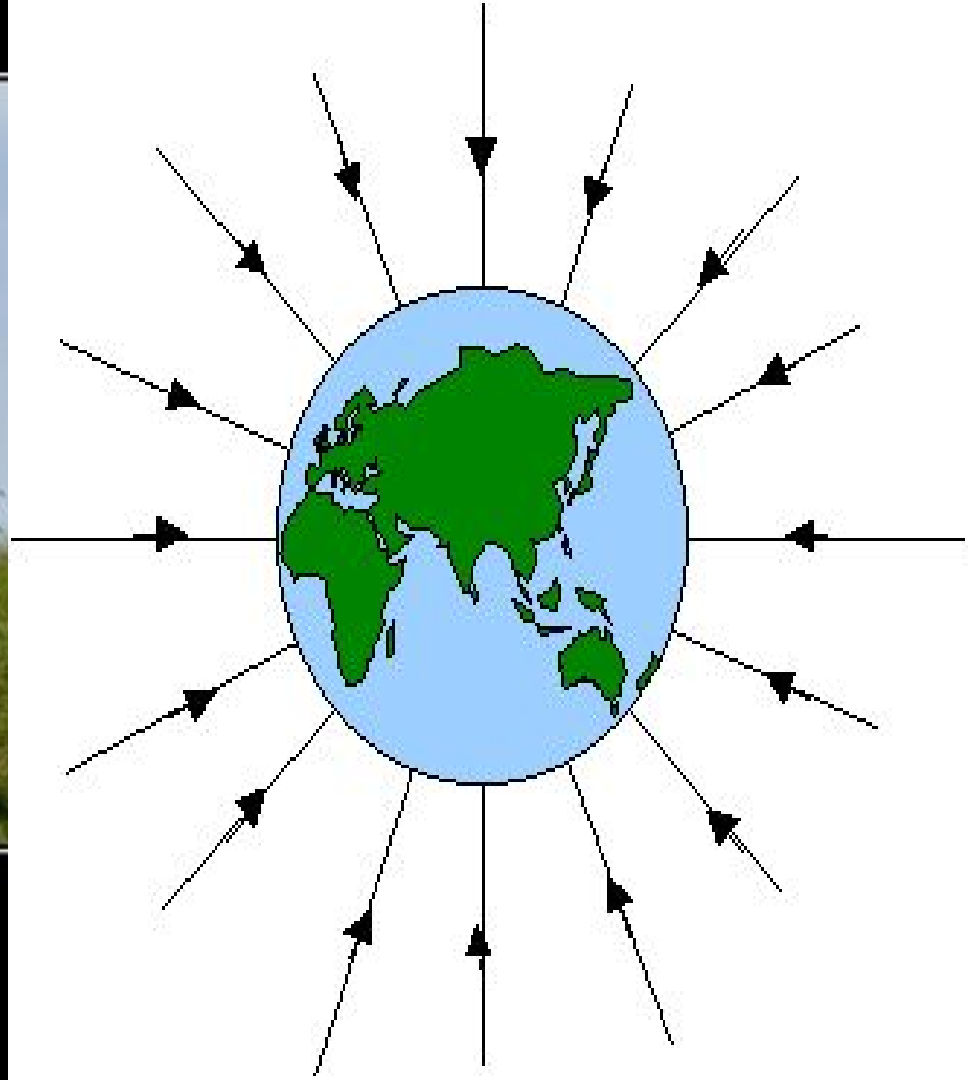
**Vs.**

His opponent swam 50 meters in **22 seconds**. His time was slower.





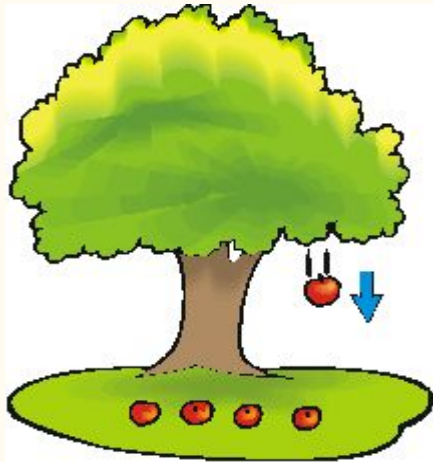
**Gravity is the natural force that tends to cause physical things to move towards each other or the force that causes things to fall towards the Earth.**





# Gravity

- Gravity is a force that causes motion.
- The effects of gravity on Earth or near Earth are the same. It causes motion without the touching of an object.



# Force & Motion: Speed and Direction Ideas

- Earth's gravity pulls any object on or near the Earth toward it without touching it. (patterns, cause and effect)
- A force is a push or pull (usually on an object)
- Forces can cause objects to start moving, stop moving, or change direction.
- Changes in speed or direction of motion are caused by forces.
- The relative speed of objects can be compared (faster or slower).
- Gravity is a force.
- Forces change the speed and direction of an object.
- Gravity is a force that pulls on all objects on or near the Earth.
- Speed can vary.