🚗 Lesson Plan: Forces and Motion

Grade Level: 3
Subject: Physical Science
Duration: 45–60 min
NGSS 3-PS2-1: Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.

🎯 Learning Objectives

By the end of this lesson, students will be able to:

- **Define** force, motion, speed, and friction.
- **Identify** different types of forces including gravity and magnetism.
- **Explain** how forces can cause objects to move, stop, or change direction.

- Printed copies of the Study Guide (https://newpathworksheets.com/api/guide/study-guide-science-grade-3-forces-and-motion-how-things-move.pdf)
- Vocabulary matching worksheets (https://newpathworksheets.com/api/vocabulary/vocabulary-science-grade-3-forces-and-motion-how-things-move-1.pdf)
- Forces and Motion Worksheets (https://newpathworksheets.com/api/worksheet/worksheet-science-grade-3-forces-and-motion-how-things-move-1.pdf)
- Magnets and metal objects (paper clips) for demonstration

- Toy car or ball

📝 Lesson Procedure

Step 1: Introduction (5 minutes)

- Engage students by asking: 'What happens when you push a toy car? What makes it stop?'
- Introduce the concept of motion and position using the Study Guide. (https://newpathworksheets.com/api/guide/study-guide-science-grade-3-forces-and-motion-how-things-move.pdf)

Step 2: Direct Instruction (10 minutes)

- Define 'force' as a push or a pull using the Study Guide definitions. (https://newpathworksheets.com/api/guide/study-guide-science-grade-3-forces-and-motion-how-things-move.pdf)

- Students complete Worksheet 2 to apply knowledge of magnetism and gravity. (https://newpathworksheets.com/api/worksheet/worksheet-science-grade-3-forces-and-motion-how-things-move-2.pdf)

Step 5: Assessment (5 minutes)

- Administer Worksheet 0 (Quiz) to assess student understanding of motion, speed, and types of forces. (https://newpathworksheets.com/api/worksheet/worksheet-science-grade-3-forces-and-motion-how-things-move-0.pdf)
- Review the answers as a class to clarify any misunderstandings.

Differentiation Strategies

For advanced learners:

- Challenge students to design a simple experiment to test how different surfaces (carpet vs. tile) affect the distance a toy car travels.

For learners needing support:

- Provide physical manipulatives (magnets, balls) to demonstrate 'push' and 'pull' actions before beginning the worksheets.

Extension Activities

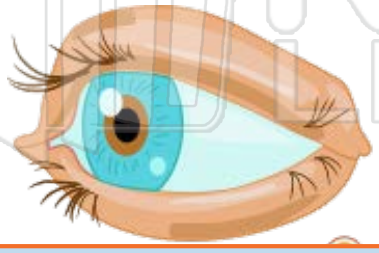
motion-how-things-move-1.pdf)

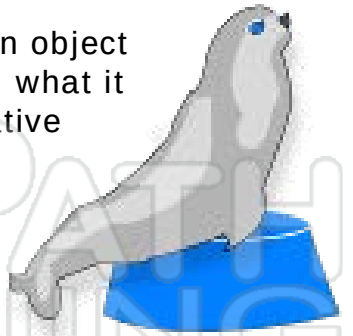
- Worksheet: Gravity and Magnetism (https://newpathworksheets.com/api/worksheet/worksheet-science-grade-3-forces-and-motion-how-things-move-2.pdf)

FORCES AND MOTION: HOW THINGS MOVE

Motion is the process of an object changing place or position.

Position refers to an object's location. The position of an object all depends on how a person is looking at the object and what it is being compared to, which is known as an object's relative position.

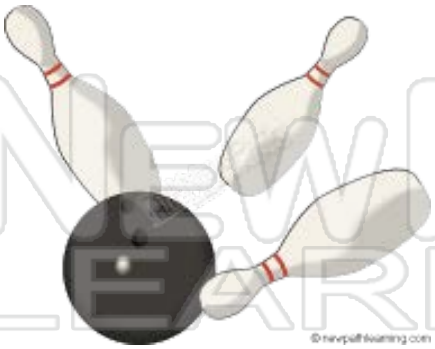




is moving.

Lesson Checkpoint: What is speed?

A **force** is a push or pull upon an object that causes it to change speed or direction. A **force** involves two or more object interacting with each other. **Contact forces** are forces that occur when you physically touch or make contact with another object.



Lesson Checkpoint: What is a force?

moving. The type of surface you are pushing an object on has a lot to do with the amount a friction against the object. If you are pushing a box on grass, the grass would apply more friction than if you were pushing the box on a smooth surface.

Lesson Checkpoint: What is friction?

Forces, such as pushes, pulls, and friction, can change the motion and speed of an object.

Magnetism is a force that does not need direct contact with an object in order to make that object change its position. **Magnetism** is the property of attracting certain metals. Magnets attract metals such as iron and steel. A magnet can move a steel paper clip with its magnetic force that pulls the steel paper clip towards the magnet.

Lesson Checkpoint: What causes us to remain on the ground instead of floating away?

Forces and motion-how things move

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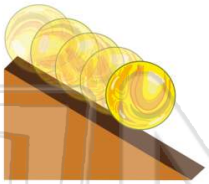
Name_____ Class_____ Date_____

1 _____ is the process of an object **changing place or position**.

A Pull
B Force
C Motion
D Speed



2 Which word refers to an object's **location**?

A position
B color
C shape
D size

3 The **position** of an object depends on how a person is looking at the object and what it is being compared to, which is known as an object's _____.

A objective position

4 How **fast an object is moving** or changing its position is known as its _____.

A position
B push

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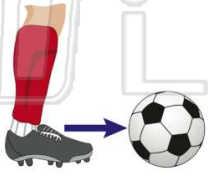
C when an object moves slower and slower
D when an object speeds up often

its speed
C changes its speed
D moves at a constant speed

9 _____ is a **push or pull** upon an object that causes it to change speed or direction.

A A force
B Friction
C Speed
D Pressure



10 What does a **force** involve?

A only one object
B no objects
C heavy objects
D two or more things interacting with each

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Sci C

Name_____ Class_____ Date_____

1 _____ is the process of an object **changing place or position**.

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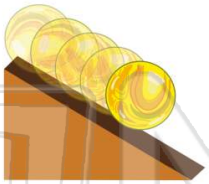

C

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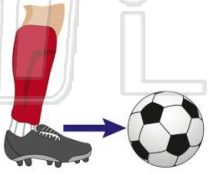

A

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A only one object
B no objects
C heavy objects
D two or more things interacting with each

D

Forces and motion-how things move

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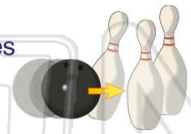
Name_____ Class_____ Date_____

1 _____ are **forces** that occur when you physically touch or make contact with another object.

A Contact forces
B Non-contact forces
C Indirect forces
D Non-touching

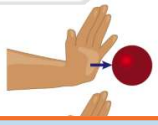


2 What does the **distance** an object is moved depend on?

A how much force is used to move it
B how much friction is used to move it
C how much speed is used to move it
D how much ice is used to move it

3 The _____ you **push** on an object, the **more** the object will be forced to move.

A easier
B harder



4 How difficult or easy it is to **move an object** depends on the object's _____.

A mass
B color

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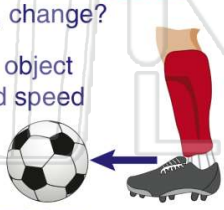
C friction
D pull

C little friction
D the same amount of friction

9 What can **forces**, such as pushes, pulls, and friction, change?

A the size of the object
B the motion and speed of an object
C the color of an object
D the mass of an object



10 If you were riding your bike **up a large hill**, you would need to apply _____ than if you were riding down a large hill.

A more force
B less force
C the same force
D a small amount of force

Forces and motion-how things move

Sci C

Name_____ Class_____ Date_____

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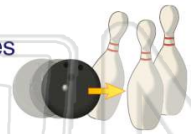

A

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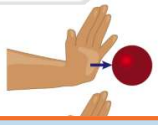

B

4 How difficult or easy it is to **move an object** depends on the object's _____.

A mass
B color

A

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B

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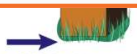
C friction
D pull

B

C little friction
D the same amount of friction



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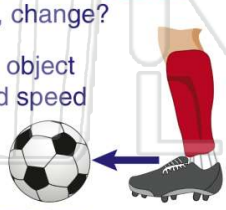

B

10 If you were riding your bike **up a large hill**, you would need to apply _____ than if you were riding down a large hill.

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B less force
C the same force
D a small amount of force

A

Forces and motion-how things move

Sci C

Name_____ Class_____ Date_____

1 **Magnetism** is the property of attracting certain kinds of what material?

A metal
B plastic
C rubber
D wood

2 **Magnets** attract metals such as _____.

A cotton
B plastic
C iron and steel
D copper

3 Which do magnets **attract**?

A wood chips
B all metals
C certain metals
D plastic

4 Every magnet has an **invisible field** all around it called a _____. This field goes out in every direction from the magnet.

A metal field
B magnetic field

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5

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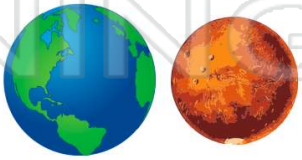
C up the hill
D down the hill

C go to the ceiling
D remain in the same position

9 **Gravity** is what pulls our bodies to the _____, which is why we do not float away when we are on earth.

A space
B sky
C earth
D moon

10 If you weighed yourself on Mars and on Earth, you would **weigh less on Mars** than you do on Earth.



A true
B false

Forces and motion-how things move

Sci C

Name_____ Class_____ Date_____

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B magnetic field

B

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A

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C up the hill
D down the hill

D remain in the same position

A

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B sky
C earth
D moon

C

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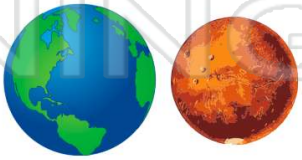
A true
B false



A

Forces and motion-how things move

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Name_____ Class_____ Date_____

Match each of the following terms to its definition:

Motion	Magnetism	Force	Gravity
Contact forces	Speed	Constant speed	Friction

1. - a push or pull upon an object that causes it to change speed or direction

2. - a force of attraction that pulls objects toward each other; the force of attraction between two objects

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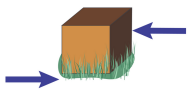
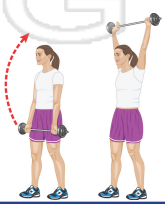


7. - the ability for a substance to attract iron or substances mixed with iron

8. - the process of an object changing place or position; the movement of one object away from another



Forces and motion-how things move

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Name_____ Class_____ Date_____

Match each of the following terms to its definition:

Motion	Magnetism	Force	Gravity
Contact forces	Speed	Constant speed	Friction

1. force - a push or pull upon an object that causes it to change speed or direction

2. gravity - a force of attraction that pulls objects toward each other; the force of attraction between two objects

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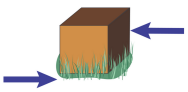
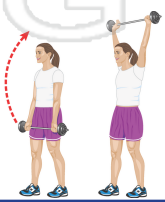


7. magnetism - the ability for a substance to attract iron or substances mixed with iron

8. motion - the process of an object changing place or position; the movement of one object away from another



Forces and motion-how things move

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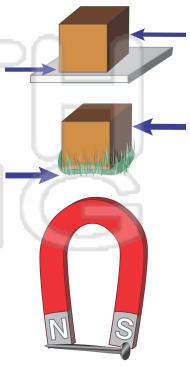
Name_____ Class_____ Date_____

Match each of the following terms to its definition:

Gravity	Friction	Force	Motion
Magnetism	Position	Relative position	Variable speed

1. - a force of resistance between two objects in contact with each other that works in the opposite direction of an object that is moving



2. - the ability for a substance to attract iron or substances mixed with iron

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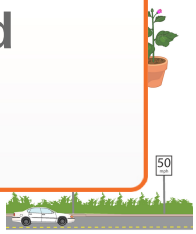


7. - a push or pull upon an object that causes it to change speed or direction

8. - a force of attraction that pulls objects toward each other; the force of attraction between two objects

Forces and motion-how things move

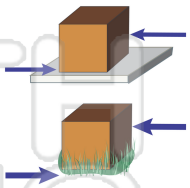
Sci C

Name_____ Class_____ Date_____

Match each of the following terms to its definition:

Gravity	Friction	Force	Motion
Magnetism	Position	Relative position	Variable speed

1. friction - a force of resistance between two objects in contact with each other that works in the opposite direction of an object that is moving



2. magnetism - the ability for a substance to attract iron or substances mixed with iron

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7. force - a push or pull upon an object that causes it to change speed or direction

8. gravity - a force of attraction that pulls objects toward each other; the force of attraction between two objects