

Force and Motion

When force is applied to an object, it causes it to move. For example, when a baseball bat hits a baseball that was traveling toward the batter, it puts force on it, causing it to change direction and fly away from the bat.

Force can also change the speed of an object. For example, when a player's cleat connects with a football, it makes it through the field goal. The kick, the ball may make it or not, depending on how much more or less force is applied.

Force and Motion

What is Motion?

Motion is happening all around us. Try standing on the corner of a busy city street and observe what you see. Here are some things your eyes may hone in on: cars driving by honking their horns, people walking up to a bus stop to unload passengers, and people hurrying to work or school. All of these things involve motion. Motion is something from one place to another, and it often consists of an object moving from one place to another.

Force and Motion

Name: _____

6. What does the word applied mean?
- heard
 - put near
 - made
 - placed on

7. What is the main idea of paragraph 1?
- things are pushed or pulled to move
 - watching a busy city street can help you to understand motion
 - we can see motion happening all around us
 - buses unload passengers, which is a type of motion

8. Which of the following is NOT a way that force influences motion?
- change in shape
 - change in speed
 - ability to move
 - ability to rest

9. What is the logical connection between motion and force?
- both are used to help an object stop
 - motion and force both make an object move
 - both are used while objects are moving
 - There is no logical development.

Name: _____

1. Select the word or phrase from the paragraph that DOES NOT help the reader understand the meaning of the word observe.
- what you see
 - eyes may hone in
 - look what's happening
 - busy city street

2. What evidence does the author provide to support the main idea?
- force can also change the speed of an object
 - objects must be pushed or pulled to move
 - when force is applied to an object, it moves
 - objects can even change shape

3. Where in the text does the author show how speed influences the speed at which something moves?
- Paragraph 2
 - Paragraph 3
 - Paragraph 4
 - Paragraph 5

4. What is the main idea of paragraph 1?
- objects remain moving
 - the law of inertia is at work
 - the law of mass and motion
 - the law of gravity

Annotate the Text

1 Number the paragraphs

2 Underline important statements

3 Circle unknown words

This resource includes:

- Teacher Tips
- Questions to Ask Students
- Student Bookmarks:
 - Close Reading Steps
 - Annotate/Mark the Text
- Informational Text: Forces and Motion
- 10 Multiple Choice Questions
- 7 Graphic Organizers
- Answer Key

Force and Motion

When force is applied to an object, it causes it to move. For example, when a baseball bat hits a baseball that was traveling toward the batter, it puts force on it, causing it to change direction and fly away from the bat.

Force can also change the speed of an object. A player's cleat connects with a foot, making it through the field goal. Due to the kick, the ball may make it or not, depending on more or less force is applied.

Objects can even change shape. If you push your hand on a blown-up balloon, it shifts and no longer is round.

Fun Facts

- Isaac Newton presented his work in *Philosophiæ Naturalis Principia Mathematica*.
- Force exists even when an object is at rest. A table has force, as does a chair.
- To determine the amount of force, Newton's second law of motion is used.

Force and Motion

What is Motion?

Motion is happening all around us. Try standing on the corner of a busy city street and observe what you see. Here are some things your eyes may hone in on as they look at what's happening around them: cars driving by honking their horns, buses rolling up to a bus stop to unload passengers, and people hurrying quickly to their destinations. All of these things involve motion. Motion is defined as moving something from one place to another, and it often consists of things being pushed or pulled.

Laws of Motion

Sir Isaac Newton developed three laws of motion that help us to understand how objects move.

The first law of motion is also known as the law of inertia. It states that an object at rest stays at rest, and an object in motion stays in motion with the same speed and in the same direction unless acted upon by an unbalanced force. The only way to change an object's motion is to apply a force.

The second law of motion states that the acceleration of an object is directly proportional to the net force acting on it and inversely proportional to its mass. This can be expressed by the equation $F = ma$, where F is force, m is mass, and a is acceleration.

The third law of motion states that for every action, there is an equal and opposite reaction. This means that if one object exerts a force on a second object, the second object exerts an equal force in the opposite direction on the first object.

What is Force?

Force builds off of motion. It is a push or pull that can change an object's motion. These are referred to as contact forces. Force can make an object start moving, stop moving, or change its shape. Below are some examples of forces.

Close Reading Steps

- 1 Read the text
- 2 Annotate the text

Non-Fiction Passage

Force and Motion

Name:

6. What does the word applied mean?
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 - put near
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7. What is the main idea of paragraph 1?
- things are pushed or pulled to move
 - watching busy city streets can help you
 - we can see motion happening all around us
 - buses unload passengers, which is a type

8. Which of the following is NOT a way that force influences motion?
- change in shape
 - change in speed
 - ability to move
 - ability to rest

9. What is the logical connection between motion and force?
- both are used to help an object start moving
 - both are used to help an object stop moving
 - both are used to help an object change direction
 - both are used to help an object change speed

10. What does the word inertia mean?
- motion
 - force
 - resistance to change in motion
 - the law of mass and acceleration

Force and Motion

Name:

- Select the word or phrase from the paragraph that DOES NOT help the reader understand the meaning of the word observe.
 - what you see
 - eyes may hone in
 - look what's happening
 - busy city street
- What evidence does the author provide to support the idea that force creates motion?
 - force can also change the speed of an object
 - objects must be pushed or pulled to have motion
 - when force is applied to an object, it causes that object to move
 - objects can even change shape due to force
- Where in the text does the author show evidence to support the claim that weight and speed influence the speed at which something travels?
 - Paragraph 2
 - Paragraph 3
 - Paragraph 4
 - Paragraph 5
- What is the main idea of paragraph 3?
 - objects remain moving or not moving unless force is applied
 - the law of inertia is the first law of motion
 - the law of mass and acceleration is the second law of motion
 - Newton developed three laws of motion.
- Which of the following details is most important to the topic of how force can change the speed of an object?
 - depending on the amount of force put behind the kick, the ball may make it or may not
 - as more or less force is applied, an object's speed will change
 - when a football player's cleat connects with a football
 - it spirals through the air and hopefully makes it through the field goal

10 Multiple Choice Questions

Close Reading

Close Reading: A reading strategy that is used to comprehend and analyze a text closely. Students will typically read the text at least twice for comprehension, details, analysis, and deep questioning of the text's purpose and meaning.

Steps for Close Reading:

1. Read the Text
2. Mark Up the Text or Annotate the Text
3. Read the Text Again
4. Define Unknown Words
5. Read the Text Again
6. Respond to Reading

Includes:

- Teacher Tips
- Questions to Ask Students
- Close Reading Steps - Bookmark
 - Version with "Mark the text"
 - Version with "Annotate the text"
- Steps to "Mark the Text" Bookmark
- Steps to "Annotate the Text" Bookmark
- Informational Text: The
- 10 Multiple Choice Questions
- 7 Graphic Organizers

Teacher Tips & Suggestions

Questions to Ask Students

- What is the text mostly about?
- Who is the audience for this text?
- What's is the writer's purpose of this text?
- What's your favorite part of the passage?
- What words are new to you? What do you think the words mean?
- What detail stands out to you?
- What questions do you now have about the topic?
- If you can ask the author 2 questions, what would you ask them?
- In this paragraph, what is the author saying?
- What is the structure of the text? How does it help

Teacher Tips

Close reading: A reading strategy that is used to comprehend and analyze a text closely. Students will typically read the text at least twice for comprehension, details, analysis, and deep questioning of the text's purpose and meaning.

1. Read the Text: When students read the text for the first time, they are reading just to identify what the passage is mostly about. The first read is surface level and allows the students to understand the gist of the text.
2. Mark Up the Text or Annotate the Text: Encourage students to use their annotation bookmarks (provided below) to make notes directly on the text. Students can write in the margins, use sticky notes to make notes, use color coding. You can even slip the text inside a dry-erase pocket and encourage students to use dry-erase markers to mark up the text.
3. Read the Text Again: If the teacher is working with the students for this, the teacher can read the text aloud this time. Model think-alouds and use expression while you read. If students are working with partners in a station, encourage them to each read a paragraph then switch readers.
4. Define Unknown Words: During this step, invite students to circle any unknown or unfamiliar words. Use the provided graphic organizer to select 4-5 unknown words and work to identify the meaning of each word.
5. Read the Text Again: With this third time reading the text, encourage the students to read the passage independently.
6. Respond to Reading: Students will now use the text to answer the 10

Graphic Organizers

- Main Ideas with Text Evidence
- Central Ideas with Text Evidence
- Central Ideas with Details
- Main Idea, Details, Conclusion
- KWL: What I Know, What I Want to Know, What I Learned
- Overview: Topic, Author's Purpose, Key Vocabulary, Most Important Thing, I Wonder, Important Facts, Illustration
- Context Clues (3 Versions: 3 words, 4 words, 5 words)
- Arthropods

Name: _____

Unknown Word

Context Clue

Word Meaning

Name: _____

What I Know

What I Want to Know

What I Learned

Name: _____

Topic

Author's Purpose

Key Vocabulary

Most Important Thing

I Wonder...

Important Facts

Illustration

Graphic
Organizers

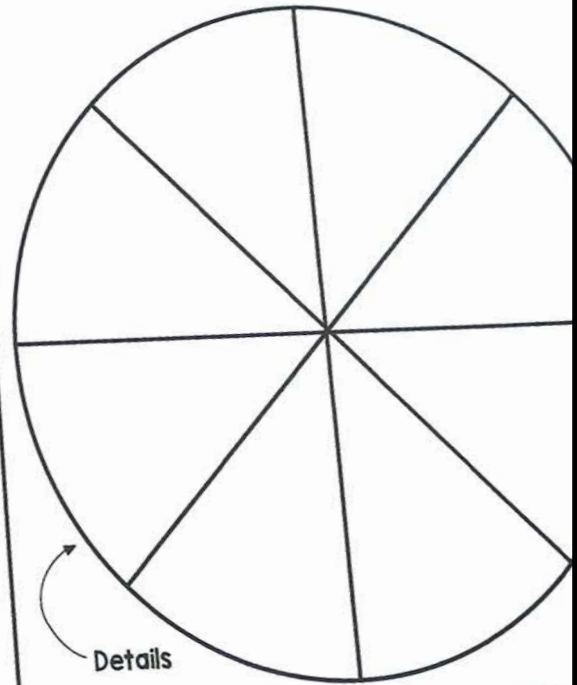
Ideas for Use

- Science or ELA Stations
- Whole Group Instruction
- Partner Practice
- Guided Reading Groups
- Substitute Plans
- Send home to practice
- ELA Work Stations or Centers
- Assessment

Unknown Word	Context Clue	Word

Name: _____

Central Idea



Details

Name: _____

Main Ideas

- 1
- 2
- 3

Text Evidence #1

Text Evidence #2

Text Evidence #3

Name: _____

Main Idea

Detail

Detail

Graphic Organizers

Purchase now to
connect science
and literacy
in your
classroom!