## The Scientific Method

The Scientific Method is the process scientists go through as they ask and answer scientific questions. They do this by making observations and doing experiments.

<table>
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<th>Step 1: Ask a question</th>
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<td>The first step is to form a question that can be answered. Good questions start with question words: <em>How, What, When, Who, Which, Why,</em> or <em>Where?</em> For example: “Which simple machine is the best one to help with this task?” “How many objects can be moved with a particular kind of simple machine?”</td>
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<table>
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<th>Step 2: Form a hypothesis</th>
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<td>A hypothesis is an educated guess about the result of an experiment based on what you already know about a topic from reading and research. These can be worded like: “I think _______ will happen because _______..”</td>
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<table>
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<th>Step 3: Test your hypothesis by conducting an experiment</th>
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<td>Scientists need to be careful observers of what happens during the experiment. Think about/read the steps to the experiment. “First _______. Next _______. Then _______..”</td>
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<th>Step 4: Analyze the data and draw a conclusion</th>
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<td>This is where scientists look at the results of the experiment. What happened in the experiment? Look to see if the question developed in Step 1 was answered.</td>
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Written by Expeditionary Learning for Instructional Purposes

Source: [http://www.readingrockets.org/article/40493/](http://www.readingrockets.org/article/40493/)
**Learning Targets:**
I can effectively participate in a Science Talk about simple machines.
I can follow our class norms when I participate in a conversation.
I can prepare for the conversation by using evidence from simple machine texts.
I can ask questions so I am clear about what is being discussed.
I can ask questions on the topic being discussed.

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Mid-Unit 2 Assessment: 
Reading and Answering Questions about Screws

Name: ____________________________ 
Date: ____________________________ 

Directions: 
1. Read pages 18–19 in the text *Simple Machines: Forces in Action* for the gist. 
2. Reread the text and take notes using the graphic organizer below. 
3. Reread the text and answer the questions below the graphic organizer. 

Read and Record:

<table>
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<th>What a screw looks like:</th>
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Mid-Unit 2 Assessment:
Reading and Answering Questions about Screws

Read and Answer:

1. According to the text, a screw is:
   A. a type of lever.
   B. made of an inclined plane wrapped around a cylinder.
   C. a complex machine.
   D. the most common simple machine in everyday life.

2. How does the diagram on page 18 help the reader understand the screw?
   A. It gives the reader information on the different types of screws.
   B. It demonstrates how it affects force and effort.
   C. It shows the uses of a screw.
   D. It shows the parts of a screw.

3. What is the meaning of the word *threads* as it is used in this text on page 18?
   A. thin strands of cotton
   B. clothes
   C. long thin screws
   D. continuous ridges that spirals around a screw

4. Where in the text can you find the answer to Question 3?
   A. the glossary
   B. in a diagram
   C. in the paragraph on page 14
   D. it is not defined in this text
5. Which of the following words has a similar meaning to the word *increased* in this sentence on page 19: “Less effort is needed to cut into the wood because of the *increased* distance that the threads travel.”
   A. longer
   B. upward
   C. downward
   D. shorter

6. Which of the following lines from page 19 of the text best supports the answer to question 5?
   A. “Less effort is needed to cut into the wood ...”
   B. “You can demonstrate how turning a screw a long distance lessens the effort ...”
   C. “… the lid travels a short distance up or down”
   D. “… the threads of the screw cut down into a plank of wood”

7. According to this paragraph above, a screw works in a similar way to which simple machine?
   A. lever
   B. pulley
   C. inclined plane
   D. wheel and axle
8. How does a screw affect work? Use details from the text to support your explanation.
**Learning target:** I can document what I learn about a simple machine in my own words.

1. The target in my own words is:


2. How am I doing? Circle one.

   I need more help to learn this  
   I understand some of this  
   I am on my way!


3. The evidence to support my self-assessment is:
**Learning target:** I can find the meaning of scientific and academic words related to a simple machine.

1. The target in my own words is:

2. How am I doing? Circle one.

   - I need more help to learn this
   - I understand some of this
   - I am on my way!

3. The evidence to support my self-assessment is:

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Learning target: I can determine important information about a simple machine and how it helps people do work.

1. The target in my own words is:

2. How am I doing? Circle one.

   I need more help to learn this  I understand some of this  I am on my way!

3. The evidence to support my self-assessment is:

   [Blank lines for evidence]
1. Read the list of materials needed for the experiment.

2. Read through the entire procedure for conducting the experiment. Try to visualize what is being described in each step.

3. Reread the steps, pausing after each step to discuss with your partners what you are being asked to do.

4. If there are vocabulary words you don’t know, refer to the Vocabulary Strategies anchor chart. Focus on the first strategy “reading on in the text and infer” to figure out the meaning of the word(s).
## Science Talk Criteria Checklist

**Learning Targets:**
I can effectively participate in a Science Talk about simple machines.
I can follow our class norms when I participate in a conversation.
I can prepare for the conversation by using evidence from simple machine texts.
I can ask questions so I am clear about what is being discussed.
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End of Unit 2 Assessment, Part I:
Reading and Answering Questions about Wedges

Name:

Date:

Directions:
1. Read pages 12–13 in the text *Simple Machines: Forces in Action* for the gist.
2. Reread the text and take notes using the graphic organizer below.
3. Reread the text and answer the questions below the graphic organizer.

**Read and Record:**

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End of Unit 2 Assessment, Part I: Reading and Answering Questions about Wedges

Read and Answer:

1. According to the text, the main function of a wedge is to:
   A. lift heavy loads
   B. push things apart
   C. pull things together
   D. raise something higher

2. Which of the following lines from the text describes HOW a wedge works?
   A. “A doorstop is a wedge used to hold things.”
   B. “You can push a thin wedge a longer distance than a thick wedge …”
   C. “When the axe hits the log, the force is pushed from above to the sides and splits the log apart.”
   D. “You have a wedge inside you—your teeth!”

3. Which is an example of a wedge doing work?
   A. teeth biting into something
   B. your mouth opening and closing
   C. a closed door
   D. a knife sitting in the sink

4. What evidence from the text best supports the answer to Question 3 above?
   A. “A doorstop is a wedge …”
   B. “The wedge is a simple machine that is used to push things apart.”
   C. “You can split an apple using your jaw muscles.”
   D. “You can push a thin wedge a longer distance than a thick wedge …”
5. Which of the following words has a similar meaning to the word narrower as it is used in the text: “The sharper the point or narrower the edge of the wedge, the less effort it takes to push an object apart.”
   A. thinner
   B. limited
   C. taller
   D. stricter

6. Using the scientific meaning of the word work, which of the following describes work being done?
   A. a baby crawling
   B. reading a book
   C. a knife in the sink
   D. hammering a nail into wood

7. How is the wedge related to the inclined plane? Use evidence from the text to support your explanation.

   __________________________________________________________
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   __________________________________________________________
End of Unit 2 Assessment, Part I: Reading and Answering Questions about Wedges

8. How does a screw affect work? Use details from the text to support your explanation.
Tracking My Progress, End of Unit 2 Assessment, Part I

Name:

Date:

Learning target: I can answer questions about simple machines and how they work using details from a scientific text.

1. The target in my own words is:

2. How am I doing? Circle one.

   I need more help to learn this   I understand some of this   I am on my way!

3. The evidence to support my self-assessment is:


End of Unit 2 Assessment, Part II:
Reading and Answering Questions about Experiments

Name: 
Date: 

Directions:
2. Answer Questions 1 through 7 about the text. Then stop.
3. Conduct the experiment and record your observations for Question 8.
4. Write your conclusion for Question 9.
5. Uncover the “How Does It Work?” box of the text and answer the remaining Questions 10 and 11.

1. What is the best description of this text?
   A. It compares and contrasts different wedges.
   B. It presents a problem that can be solved using a wedge.
   C. It explains how a wedge effects work.
   D. It gives ordered steps for a procedure using different wedges.

2. Which of the following is NOT a characteristic of this text?
   A. diagrams
   B. dialogue
   C. numbered steps
   D. bulleted list

3. What is the purpose of the yellow box at the top of page 14?
4. The diagram at the bottom of page 14 helps the reader to visualize which step in the experiment?

5. How many times is the reader asked to record measurements?
   A. twice
   B. five times
   C. three times
   D. once

6. In Step 4, the reader is asked to:
   A. Record the distance.
   B. Use the skinny wedge.
   C. Use the fat wedge.
   D. Use a ruler.

7. Reread the text and write your hypothesis: What do you think is going to happen? Use evidence from the text to support your prediction.

STOP HERE: Conduct the experiment now. Then answer the remaining questions.
Use vocabulary from this word bank to help you answer the questions below.

- effort
- force
- experiment
- wedge
- simple machine
- work

8. **Observations:** As you conduct this experiment, what do you see happening?


10. Which explanation of how a wedge affects a force is supported by the text?
   A. Pushing down on a wedge increases the force.
   B. Pushing down on a wedge does not affect the force.
   C. Pushing down on a wedge changes the direction of the force to sideways.
   D. Pushing down on a wedge changes the direction of the force upwards.

11. According to the text, how is the distance between the blocks affected by using the thin versus the thick wedges?
   A. Thick wedges take more effort than thin wedges, but move the blocks a greater distance.
   B. Thin and thick wedges both move the blocks an equal distance.
   C. Thick wedges do not move the blocks.
   D. Thick wedges don’t work as well as thin wedges.
Learning target: I can explain what happens before, during, and after a scientific experiment.

1. The target in my own words is:

2. How am I doing? Circle one.

   I need more help to learn this   I understand some of this   I am on my way!

3. The evidence to support my self-assessment is:
Tracking My Progress, End of Unit 2 Assessment, Part II

Name: 
Date: 

Learning target: I can document what I observe during a scientific experiment.

1. The target in my own words is:

2. How am I doing? Circle one.

   I need more help to learn this   I understand some of this   I am on my way!

3. The evidence to support my self-assessment is:
Tracking My Progress, End of Unit 2 Assessment, Part II

Name: __________________________________________________________________________
Date: __________________________________________________________________________

**Learning target:** I can construct a conclusion statement that describes what I learned about wedges.

1. The target in my own words is:

   __________________________________________________________________________

2. How am I doing? Circle one.

   - I need more help to learn this
   - I understand some of this
   - I am on my way!

3. The evidence to support my self-assessment is:

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