

Name: _____ Date: _____

What is a Biomedical Engineer?

Draw and label a picture of a biomedical engineer at work.



Explain your drawing of a biomedical engineer:

Name: _____ Date: _____

What is a Biomedical Engineer?

B

Draw a picture of a biomedical engineer at work. Label your picture.



Name: _____ Date: _____



What is a Biomedical Engineer?

1. Which of the following would a biomedical engineer do for his or her job? Mark **ALL** that apply:

- fix ambulance engines
- study how the human body works
- study how people's feet work when they have trouble walking
- design a pair of eyeglasses
- study plants and animals
- fix machines in a hospital
- design a doctor's office
- collect data about the human body
- design an artificial arm
- design robots that can help people get work done when they are sick

2. What kinds of problems do biomedical engineers work on?

Name: _____ Date: _____

B

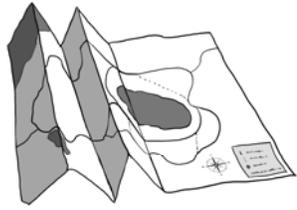
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Name: _____ Date: _____

Which of these things is a model? Circle **ALL** the models below.

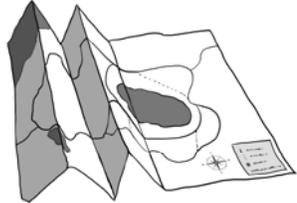
 <p>map of hiking trails</p>	 <p>battery</p>	 <p>suit of armor</p>
 <p>microscope</p>	 <p>miniature bridge</p>	 <p>bicycle</p>
 <p>guitar</p>	 <p>plastic globe</p>	 <p>doll house</p>

What is YOUR definition of the word “model”?

Name: _____ Date: _____

B

Which of these things is a model? Circle **ALL** the models below.

 <p>map of hiking trails</p>	 <p>battery</p>	 <p>suit of armor</p>
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Name: _____ Date: _____

A

B

Directions: Decide whether each statement below is TRUE (😊 T) or FALSE (☹ F) and circle your answer.

Models need to look like the real thing.	😊 T	☹ F
Models could help people test if a bridge will be strong enough.	😊 T	☹ F
Models help people learn how things work.	😊 T	☹ F
Models need to be smaller than the real thing.	😊 T	☹ F
Models can help people test different designs.	😊 T	☹ F
Models can help engineers skip the design process.	😊 T	☹ F
Models need to represent something about the real thing.	😊 T	☹ F
Models can help show people what a bridge will look like.	😊 T	☹ F

Name: _____ Date: _____

1. A girl is designing a new kind of brace to protect broken fingers. Which model would be MOST useful for her to use? Circle the **BEST** answer below.

- A. a model that bends like a real finger
- B. a model that looks exactly like a finger
- C. a model that feels soft like a real finger
- D. a model would not be useful here

2. A company is designing a new building. Describe 2 ways the workers at the company would use models. Write your answers below.

(1) _____

(2) _____

Name: _____ Date: _____

A

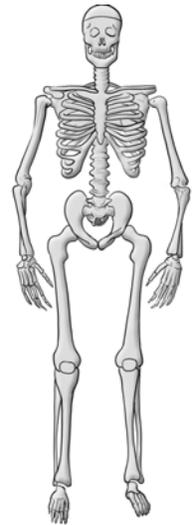
B

1. Decide whether each statement below is TRUE (😊 T) or FALSE (😞 F) and circle your answer.

A shoulder is a joint.	😊 T	😞 F
Joints and bones are the same thing.	😊 T	😞 F
Elbows can move in some ways but not others.	😊 T	😞 F
People need both joints and muscles to move.	😊 T	😞 F

2. The picture shows a human skeleton. What does the skeleton do? Mark all that apply.

- helps the human body move
- keeps the human body warm
- protects the organs in the human body
- supports the human body



3. What part or parts of your body do you use to turn your wrist in a circle? Mark all that apply.

- bones
- a joint
- skin
- muscles





Name: _____ Date: _____

1. Why are humans able to bend their legs? Circle the BEST answer.

- A. Because their skin is soft.
- B. Because their legs are strong.
- C. Because their bones are flexible.
- D. Because they have joints in their knees.

2. Where in their bodies do people have muscles? List 6 places below.

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

Name: _____ Date: _____

B

1. Why are humans able to bend their legs? Circle the BEST answer.

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1. _____

2. _____

3. _____

Name: _____ Date: _____

A company wants your help designing a brace for elbows to keep them from moving while they heal.

Elbow



1. List 2 questions you would need to ask.

(1) _____

(2) _____

2. List 2 properties that the material you choose for your brace should have.

(1) _____

(2) _____

3. Why are these properties important? _____

4. Sketch your design on the back of this page.



Sketch your elbow brace design in the box below. Label the parts.



Name: _____ Date: _____

A company wants your help designing a brace for elbows.

Directions: Design an elbow brace to keep an elbow from moving while it heals. You can sketch your ideas on the back of this page.

Elbow



B

Draw your design plan in the box below. Label the parts.

Name: _____ Date: _____

What is a Biomedical Engineer?

Draw and label a picture of a biomedical engineer at work.

A good picture would show someone working to solve problems related to biology or medicine.

Examples include: someone using or gathering data about the human body to design or improve technologies such as knee braces, prosthetic limbs, or pacemakers.

Explain your drawing of a biomedical engineer:

Answers will vary, but may include: Someone who uses what he or she knows about science, math, and the human body to solve problems related to biology or medicine.

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2. What kinds of problems do biomedical engineers work on?

Biomedical engineers work on problems related to biology, the human body or medicine. Some examples include: developing artificial skin to help burn victims, developing instrumentation (such as MRIs and X-ray machines) to aid in the diagnosis of patient illness, etc.

Name: _____ Date: _____

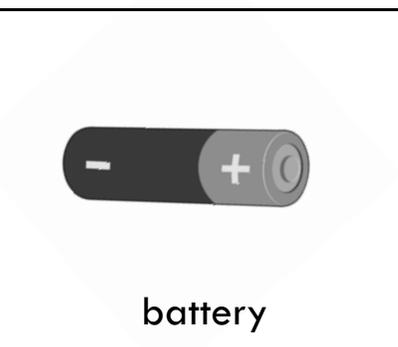
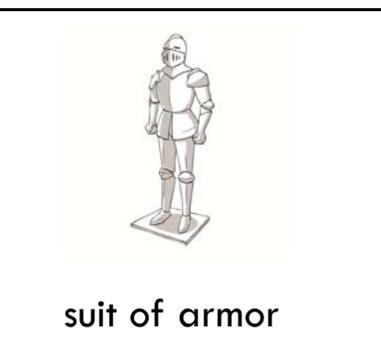
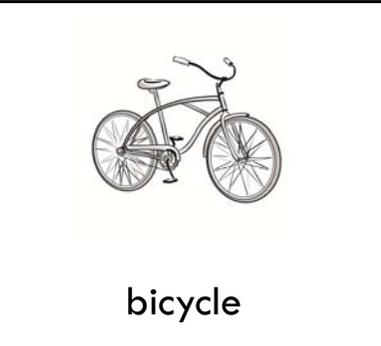
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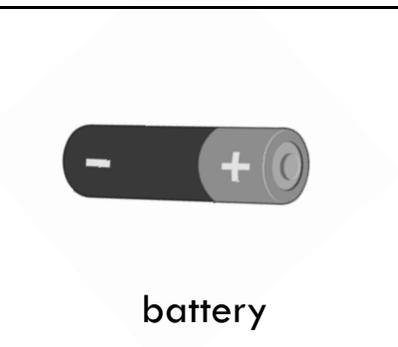
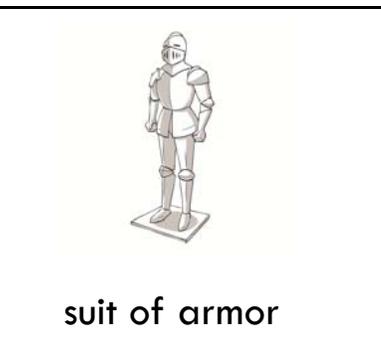
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What is YOUR definition of the word “model”?

A model is a representation of an object, system, or phenomenon.

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Answer Key

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2. A company is designing a new building. Describe 2 ways the workers at the company would use models. Write your answers below.

Answers will vary, but may include: to test the strength of their building design, to show other people how the building will look, to figure out what will happen to the building in an earthquake, etc.

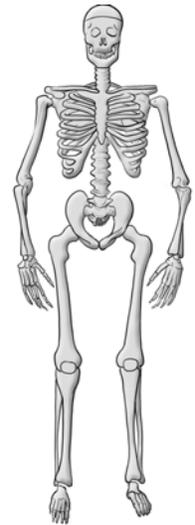
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A company wants your help designing a brace for elbows to keep them from moving while they heal.

Elbow



1. List 2 questions you would need to ask.

Answers will vary, but may include: how does a healthy elbow function? Will the person have to put the brace on and remove it often? How long will the person need to wear the brace?

2. List 2 properties that the material you choose for your brace should have.

Answers will vary, but may include: it should be strong/hard, not easy to bend, there should be a fastener that is easy to use (e.g. Velcro), etc.

3. Why are these properties important?

Answers will vary, but may include: it needs to be hard enough that it will protect the elbow if something bumps into it, it should not be flexible because you want to keep the elbow from moving, it should be easy to put on and take off (e.g. Velcro), etc.

4. Sketch your design on the back of this page.

Sketch your design on the back.

Sketch your elbow brace design in the box below. Label the parts.

A good picture would show a brace that is shaped like a human elbow. Students should note that the brace keeps the elbow from moving. This may include indicating that the brace is hard or inflexible. Students may also show a method for putting on and taking off the brace (e.g. a Velcro fastener).

Name: _____ Date: _____

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