

Name: \_\_\_\_\_ Date: \_\_\_\_\_

## What is a Mechanical Engineer?

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



Explain your drawing of a mechanical engineer:

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Name: \_\_\_\_\_ Date: \_\_\_\_\_

## What is a Mechanical Engineer?

**B**

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



Name: \_\_\_\_\_ Date: \_\_\_\_\_



## What is a Mechanical Engineer?

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

- build robots
- know about energy
- install wiring in houses and factories
- repair machines when they break
- design the parts of a roller coaster that move
- improve machines so they work better
- fix car engines when they break
- design machines that make plastic water bottles
- think about the properties of materials

2. What other kinds of things would a mechanical engineer work on at his or her job?

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Name: \_\_\_\_\_ Date: \_\_\_\_\_

**B**

## What is a Mechanical Engineer?

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

- build robots
- know about energy
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- design machines that make plastic water bottles
- think about the properties of materials

Name: \_\_\_\_\_ Date: \_\_\_\_\_

A

B

Some technologies use the energy of the wind. Check **ALL** of the technologies below that use the energy of the wind.

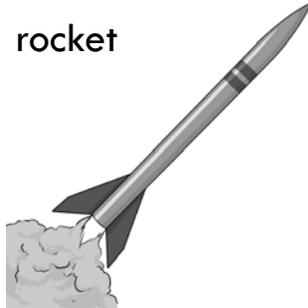
glider



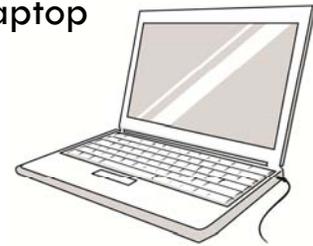
weather vane



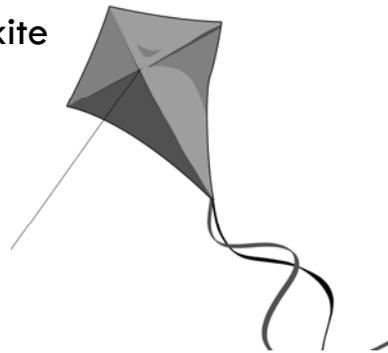
rocket



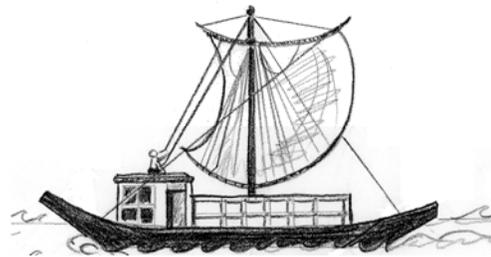
laptop



kite



sailing ship



Name: \_\_\_\_\_ Date: \_\_\_\_\_

*Directions: For each question below, circle the **BEST** answer.*

1. What is wind?

- A. solar energy
- B. air that is moving
- C. a force caused by fans
- D. weather that is moving

2. Does the wind have energy?

- A. No, the wind uses up energy.
- B. No, the wind can't have energy.
- C. Yes, the wind has solar energy.
- D. Yes, the wind has energy to move things.

3. How does the wind move things?

- A. An invisible cloud blows on things.
- B. Lots of air all pushes the same way.
- C. Energy from the Sun pushes and moves things.
- D. The Earth turns and pushes things through the air.

4. Which is an example of wind doing work?

- A. a fan cooling a room
- B. a bicyclist riding down a hill
- C. a sailboat sailing across a pond
- D. the wind cannot do work

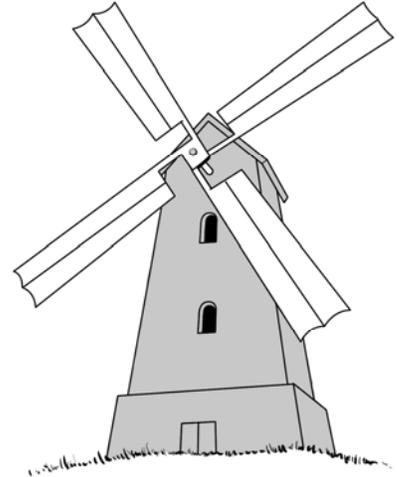
Name: \_\_\_\_\_ Date: \_\_\_\_\_

A

B

1. What can windmills do? Mark ALL that apply:

- grind grain into flour
- make wind
- use wind energy
- give energy to machines
- use solar energy
- move the parts of a water pump
- move without needing energy



2. Choose the BEST answer. A wind turbine:

- A. makes wind energy.
- B. uses electricity to run a motor.
- C. changes electrical energy into other forms of energy.
- D. changes the wind's energy into other forms of energy.

Name: \_\_\_\_\_ Date: \_\_\_\_\_

A

B

*Directions: For each question below, circle the **BEST** answer.*

1. When a girl is using a hammer, how does she put energy into the hammer?

- A. She eats food.
- B. She uses her muscles to put energy into the hammer.
- C. The hammer is made with energy inside it.
- D. She does not put energy into the hammer.

2. What happens to the energy a person puts into a stapler?

- A. It is stored for later use.
- B. Nothing happens to the energy.
- C. It is used to push a staple into paper.
- D. People don't put energy into staplers.

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

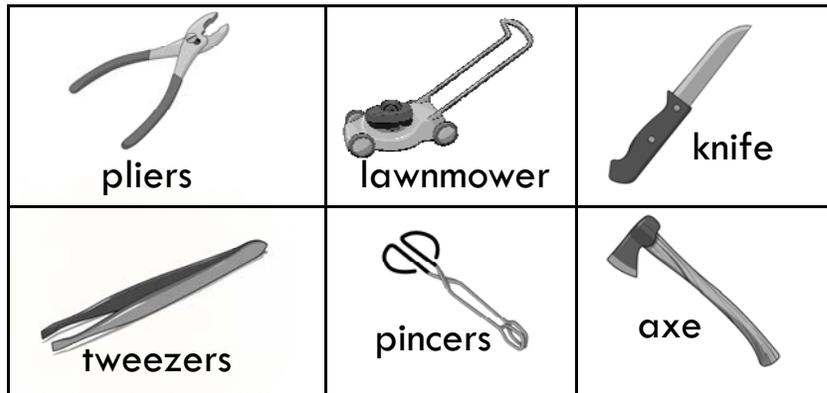
All machines have engines.	☺ T	☹ F
All machines have moving parts.	☺ T	☹ F
All machines use energy to do something.	☺ T	☹ F

Name: \_\_\_\_\_ Date: \_\_\_\_\_

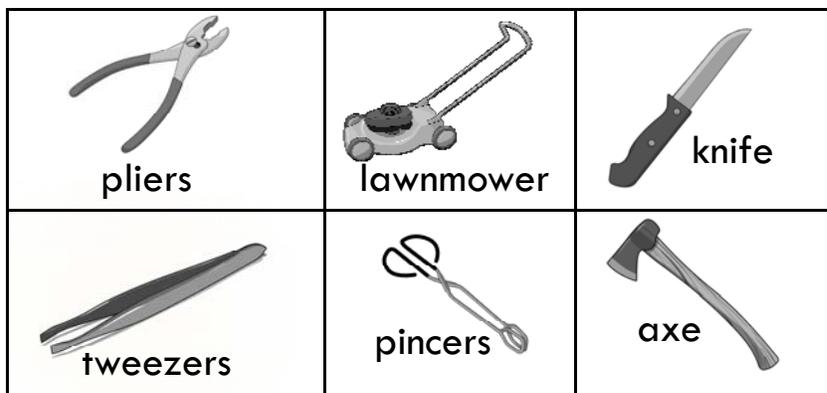
A

B

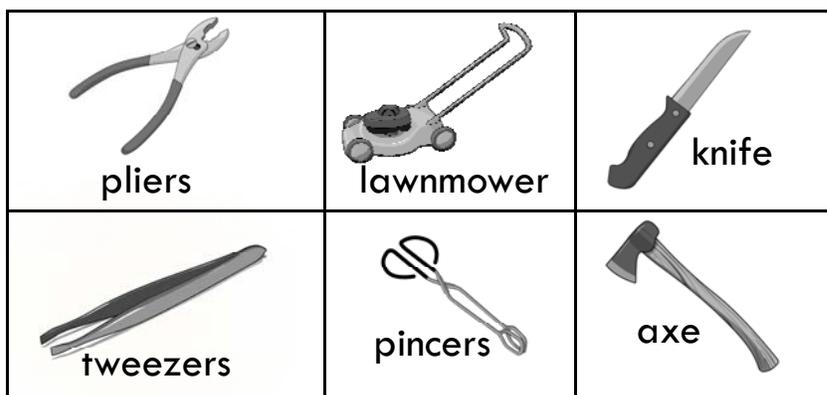
1. Circle ALL of the pictures below that show machines.



2. Scissors cut things. Circle ALL of the things below that also cut things.



3. Circle ALL of the things below that move in the same way as a pair of scissors.



Name: \_\_\_\_\_ Date: \_\_\_\_\_

A boy is making a toy sailboat to sail in his pool.

1. What is the MOST IMPORTANT thing to think about when making a sail to move the boat?

- A. how big the sail is
- B. how heavy the sail is
- C. what material the sail is made of
- D. how well the sail catches the wind



2. Describe something the boy can do to make sure his sail can move the boat.

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3. The boy makes a sail for the boat, but the boat keeps tipping over when a breeze blows on it. Describe something the boy can do to fix this problem.

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Name: \_\_\_\_\_ Date: \_\_\_\_\_

**B**

A boy is making a toy sailboat to sail in his pool.

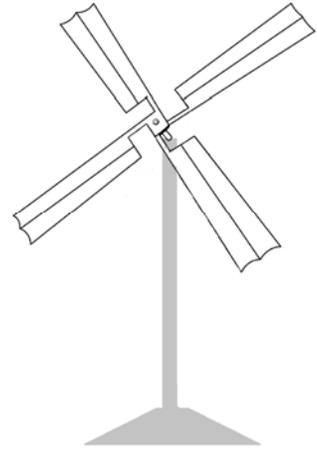
1. What is the **MOST IMPORTANT** thing to think about when making a sail to move the boat?
  - A. how big the sail is
  - B. how heavy the sail is
  - C. what material the sail is made of
  - D. how well the sail catches the wind



2. Design a toy sailboat that will move when a breeze blows on it. Draw your sail design in the box below. Label the parts. =

Name: \_\_\_\_\_ Date: \_\_\_\_\_

A girl is making a windmill, but it is not spinning when the wind hits it. She makes the blades bigger, but it still does not spin.



1. Describe something else she could do to try and improve her windmill.

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2. The girl improves her windmill so it can spin. Now she wants it to lift a toy. Describe a way she could improve her windmill so it can lift more weight.

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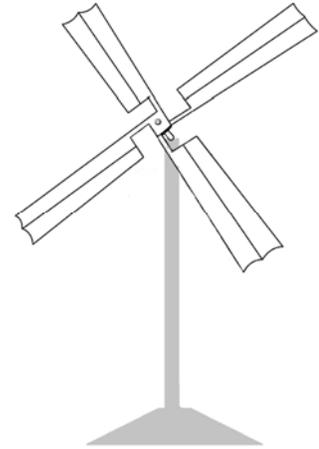
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Name: \_\_\_\_\_ Date: \_\_\_\_\_

A girl made this windmill. It can spin when the wind hits it. Now she wants it to lift a small toy, but it doesn't work.



**B**

*Directions: Design the blades for a windmill that will be able to lift a small toy.*

1. What materials will you use?

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

Name: \_\_\_\_\_ Date: \_\_\_\_\_

## What is a Mechanical Engineer?

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

*A good picture would show someone working to design or improve a machine. They may be drawing plans or testing designs.*

*Examples include: someone designing or improving a toaster, radio, rollercoaster, airplane, etc.*

Explain your drawing of a mechanical engineer:

*Answers will vary, but may include: Someone who uses what they know about science and math to design and improve machines.*

Name: \_\_\_\_\_ Date: \_\_\_\_\_

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- fix car engines when they break
- design machines that make plastic water bottles
- think about the properties of materials

2. What other kinds of things would a mechanical engineer work on at his or her job?

Answers will vary, but should include an activity that involves designing or improving machines. Examples include: designing better refrigerators, figuring out how to make car engines better, designing robots, etc.

Name: \_\_\_\_\_ Date: \_\_\_\_\_

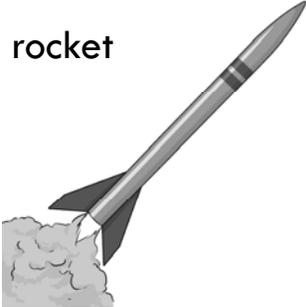
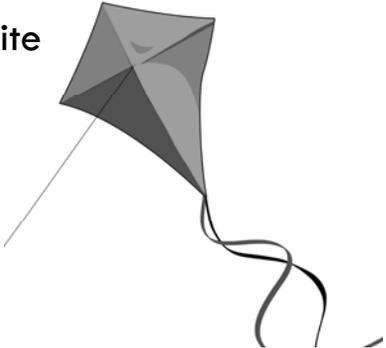
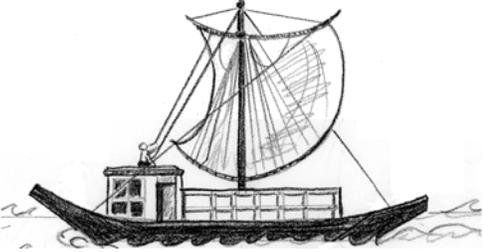
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Name: \_\_\_\_\_ Date: \_\_\_\_\_

Some technologies use the energy of the wind. Check **ALL** of the technologies below that use the energy of the wind.

<input checked="" type="checkbox"/> glider 	<input checked="" type="checkbox"/> weather vane 
<input type="checkbox"/> rocket 	<input type="checkbox"/> laptop 
<input checked="" type="checkbox"/> kite 	<input checked="" type="checkbox"/> sailing ship 

Name: \_\_\_\_\_ Date: \_\_\_\_\_

*Directions: For each question below, circle the **BEST** answer.*

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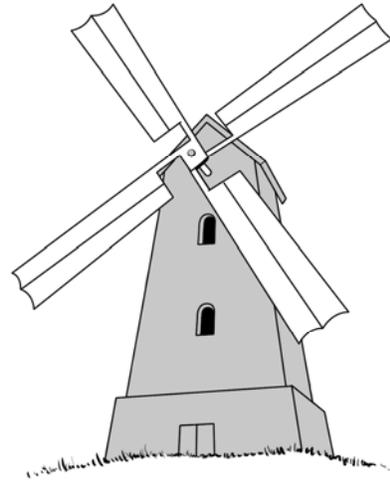
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Name: \_\_\_\_\_ Date: \_\_\_\_\_

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- grind grain into flour
- make wind
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- give energy to machines
- use solar energy
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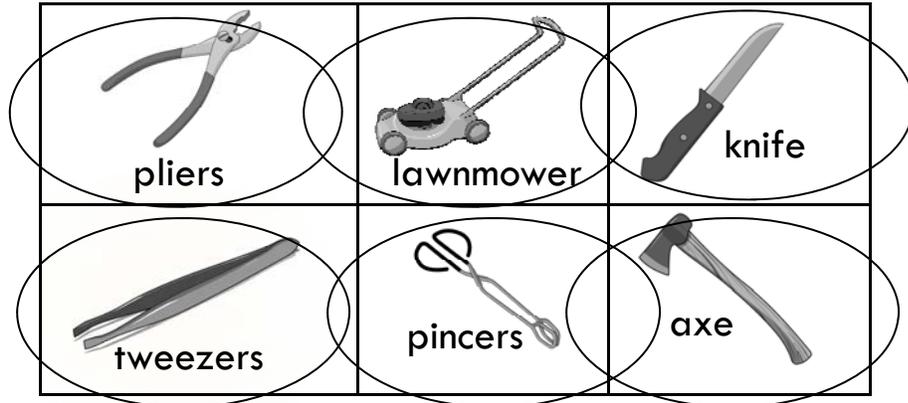
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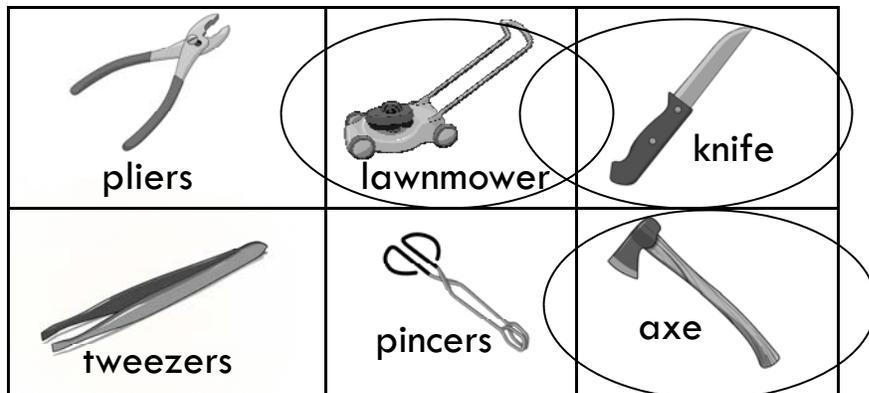
All machines have engines.	😊 T	<input checked="" type="radio"/> 😞 F
All machines have moving parts.	😊 T	<input checked="" type="radio"/> 😞 F
All machines use energy to do something.	<input checked="" type="radio"/> 😊 T	😞 F

Name: \_\_\_\_\_ Date: \_\_\_\_\_

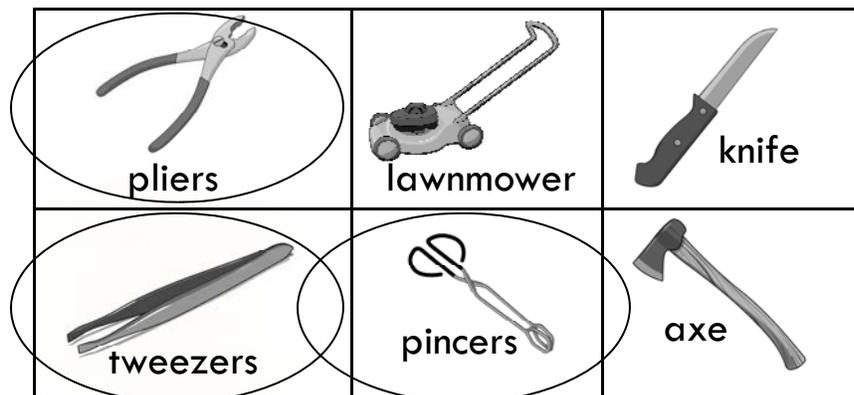
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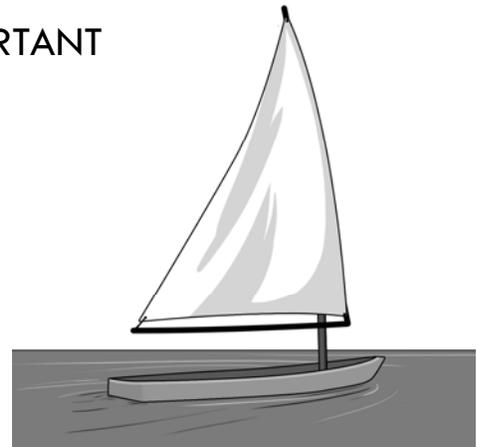


Name: \_\_\_\_\_ Date: \_\_\_\_\_

A boy is making a toy sailboat to sail in his pool.

1. What property of the sail is MOST IMPORTANT for making a sail to move the boat?

- A. how big the sail is
- B. how heavy the sail is
- C. what material the sail is made of
- D. how well the sail catches the wind



2. Describe something the boy can do to make sure his sail can move the boat.

*Answers will vary, but may include: Make the edges of the sail stiff, use a cup or bowl shape, make sure the sail is facing in the right direction, use a non-porous material, make the surface area larger, etc.*

3. The boy makes a sail for the boat, but the boat keeps tipping over when a breeze blows on it. Describe something the boy can do to fix this problem.

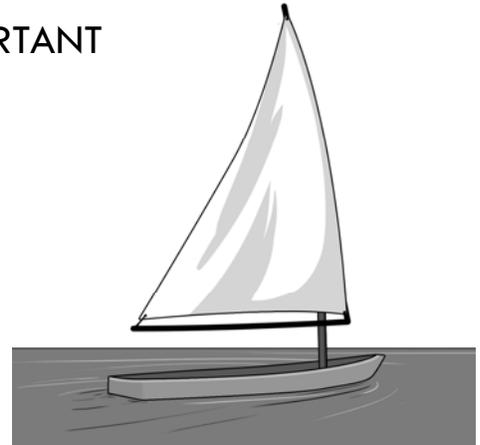
*Answers will vary, but may include: Make the sail shorter/smaller, use a lighter material, make sure the sail is even/balanced, etc.*

Name: \_\_\_\_\_ Date: \_\_\_\_\_

A boy is making a toy sailboat to sail in his pool.

1. What property of the sail is MOST IMPORTANT for making a sail to move the boat?

- A. how big the sail is
- B. how heavy the sail is
- C. what material the sail is made of
- D. how well the sail catches the wind



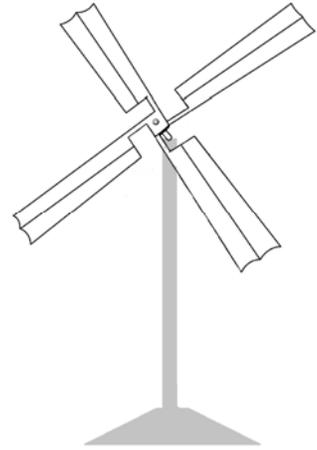
2. Design a toy sailboat that will move when a breeze blows on it. Draw your sail design in the box below. Label the parts.

*A good drawing will show a sail that is able to catch the wind. This may include a sail that is stiff, uses a cup or bowl shape, is made from a non-porous material, has a large surface area, etc. Students may also mention that the sail needs to be facing the correct direction so that it can catch the wind.*

Name: \_\_\_\_\_ Date: \_\_\_\_\_

Answer Key

1. A girl is making a windmill, but cannot make it spin. She makes the blades bigger, but it still does not spin. Describe something else she could do to improve her windmill.



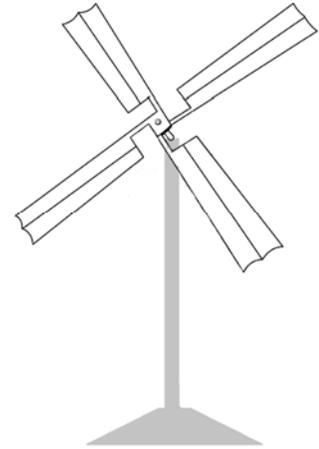
*Answers will vary, but may include: make the blades of a different material, change the angle of the blades, etc.*

2. The girl improves her windmill so it can spin. Now she wants it to lift a toy. Describe a way she could improve her windmill so it can lift more weight.

*Answers will vary, but may include: use more blades, use larger blades, use a stronger material, use a stiffer material, etc.*

Name: \_\_\_\_\_ Date: \_\_\_\_\_

A girl made this windmill. It can spin when the wind hits it. Now she wants it to lift a small toy, but it doesn't work.



*Directions: Design the blades for a windmill that will be able to lift a small toy.*

1. What materials will you use?

*Answers will vary, but may include: paper cups, cardboard, aluminum foil etc.*

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

*A good picture may show a windmill with more blades, a windmill with larger blades, blades made from a strong material, blades made from a stiff material, etc.*