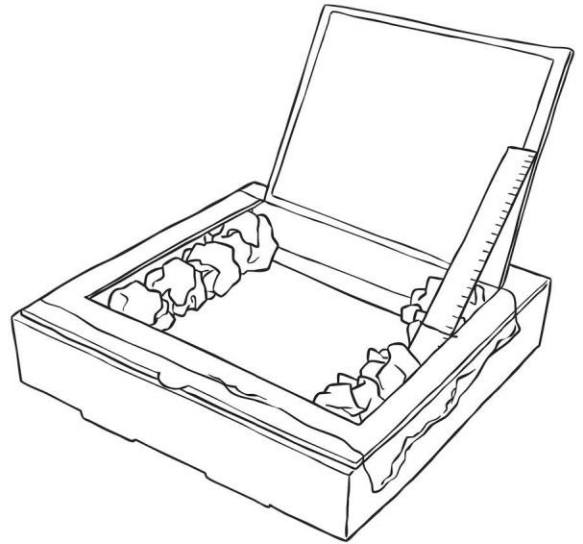


Making a Pizza Box Solar Oven



You will need:

- Cardboard pizza box (the kind delivered pizza comes in)
- Craft knife or sharp scissors
- Aluminium foil
- Clear tape
- Plastic food wrap
- Black paper
- Newspapers
- Ruler



What to do:

1. Use a craft knife or sharp scissors to cut a flap in the lid of the pizza box. Cut along three sides, leaving about 2cm between the sides of the flap and the edges of the lid. Fold this flap out so that it stands up when the box lid is closed.
2. Cover the inner side of the flap with aluminium foil so that it will reflect rays from the Sun.
3. Use clear plastic wrap to create an airtight window for sunlight to enter into the box. Do this by opening the box and taping a double layer of plastic wrap over the opening you made when you cut the flap in the lid. Leave about 2cm of plastic overlap around the sides and tape each side down securely.
4. Line the bottom of the box with black paper to absorb heat. The black surface is where your food will be cooked.
5. To insulate your oven so it holds in more heat, roll up balls of newspaper and place them on the bottom of the box. Tape them down so that they form a border around the cooking area.
6. The best hours to set up your solar oven are when the sun is high overhead, from 11 A.M. to 3 P.M. Take it outside to a sunny spot and adjust the flap until the most sunlight possible is reflecting off the aluminium foil and onto the plastic-covered window. Use a ruler to prop the flap at the best angle.

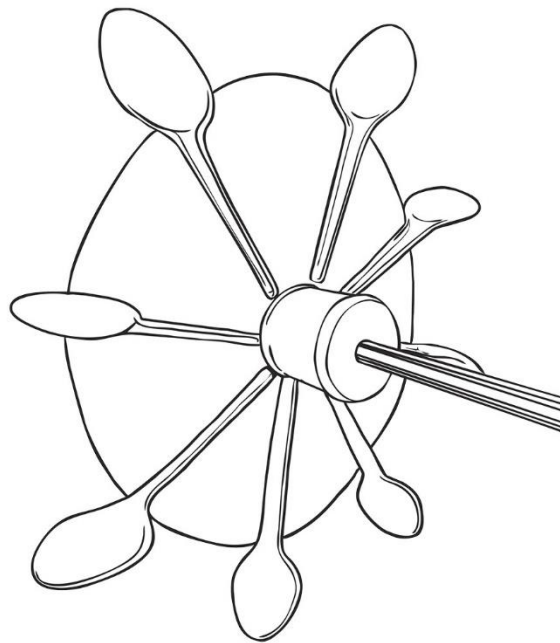


Investigating Hydro Power



You will need:

- Stiff cardboard
- Cotton reel
- 8 plastic teaspoons
- Marker pen
- Pencil
- Scissors
- Glue or sticky tape
- Milk or juice bottle
- Water
- A tray or bucket to catch the falling water
- A stopwatch



What to do:

1. Cut a circle from the stiff card with a diameter of 15cm. Stick the cotton reel in the middle of the circle.
2. Stick the handles of the spoons to the card circle. Make sure they are evenly spaced, and that all the spoons are facing in the same direction.
3. Use a marker pen to colour the top of one spoon.
4. Push the pencil through the centre of the cotton reel, ensuring the reel can spin freely.
5. Pierce a hole in one side of the milk bottle, about 2cm from the bottom.
6. Put your finger over the hole and then fill the bottle with water.
7. Hold the bottle 50cm above the water wheel and uncover the hole.
8. Count the number of times the wheel turns by counting how many times the coloured spoon passes over the top of the pencil.
 - How many times did your wheel turn?
9. Now, remove two of the teaspoons (make sure you leave the coloured one) and repeat steps 5 to 7.
 - How many times did your wheel turn?
10. Remove two more teaspoons and repeat steps 5 to 7.
 - How many times did your wheel turn this time?

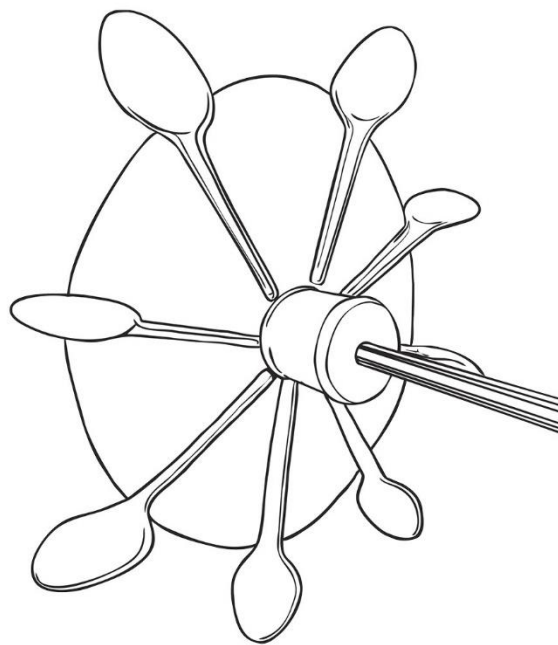


Investigating Hydro Power



You will need:

- Stiff cardboard
- Cotton reel
- 8 plastic teaspoons
- Marker pen
- Pencil
- Scissors
- Glue or sticky tape
- Milk or juice bottle
- Water
- A tray or bucket to catch the falling water
- A stopwatch



What to do:

1. Cut a circle from the stiff card with a diameter of 15cm. Stick the cotton reel in the middle of the circle.
2. Stick the handles of the spoons to the card circle. Make sure they are evenly spaced, and that all the spoons are facing in the same direction.
3. Use a marker pen to colour the top of one spoon.
4. Push the pencil through the centre of the cotton reel, ensuring the reel can spin freely.
5. Pierce a hole in one side of the milk bottle, about 2cm from the bottom.
6. Put your finger over the hole and then fill the bottle with water.
7. Hold the bottle 50cm above the water wheel and uncover the hole.
8. Count the number of times the wheel turns by counting how many times the coloured spoon passes over the top of
 - How many times did your wheel turn?
 - Multiply this answer by four to work out your wheel's speed in revolutions per minute.
9. Fill the bottle to $\frac{3}{4}$ full, and repeat steps 5 to 7.
 - How many times did your wheel turn?
 - Multiply this answer by four to work out your wheel's speed in revolutions per minute.
10. Fill the bottle to $\frac{1}{2}$ full, and repeat steps 5 to 7.
 - How many times did your wheel turn this time?
 - Multiply this answer by four to work out your wheel's speed in revolutions per minute.

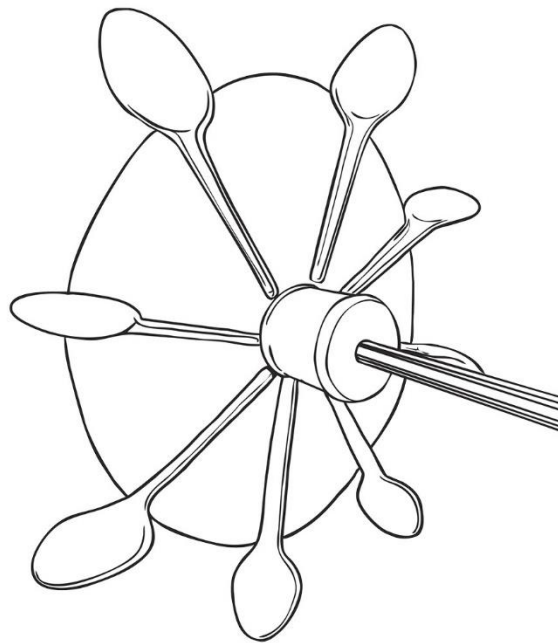


Investigating Hydro Power



You will need:

- Stiff cardboard
- Cotton reel
- 8 plastic teaspoons
- Marker pen
- Pencil
- Scissors
- Glue or sticky tape
- Milk or juice bottle
- Water
- A tray or bucket to catch the falling water
- A stopwatch



What to do:

1. Cut a circle from the stiff card with a diameter of 15cm. Stick the cotton reel in the middle of the circle.
2. Stick the handles of the spoons to the card circle. Make sure they are evenly spaced, and that all the spoons are facing in the same direction.
3. Use a marker pen to colour the top of one spoon.
4. Push the pencil through the centre of the cotton reel, ensuring the reel can spin freely.
5. Pierce a hole in one side of the milk bottle, about 2cm from the bottom.
6. Put your finger over the hole and then fill the bottle with water.
7. Hold the bottle 50cm above the water wheel and uncover the hole.
8. Count the number of times the wheel turns in 20 seconds by counting how many times the coloured spoon passes over the top of the pencil.
 - How many times did your wheel turn?
 - Multiply this number by three to work out the number of revolutions your wheel makes every minute.
9. Repeat steps 5 to 7, holding the bottle 1m above the wheel.
 - How many times did your wheel turn?
 - Multiply this number by three to work out the number of revolutions your wheel makes every minute.
10. Repeat steps 5 to 7, holding the bottle 25cm above the wheel.
 - How many times did your wheel turn this time?
 - Multiply this number by three to work out the number of revolutions your wheel makes every minute.