

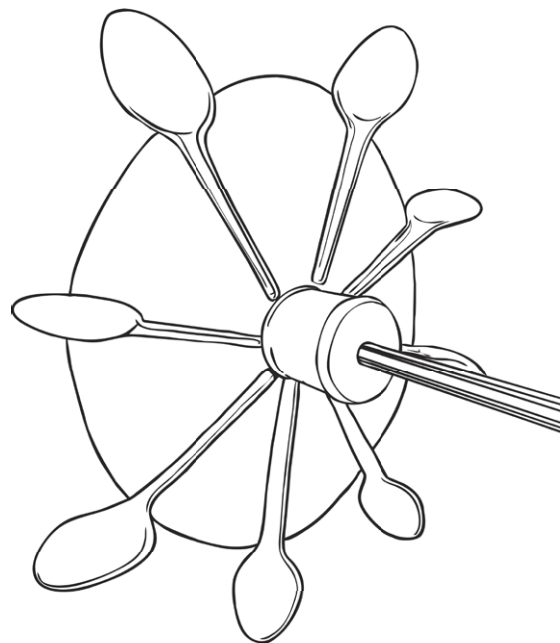


# Investigating Hydro Power



## 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?

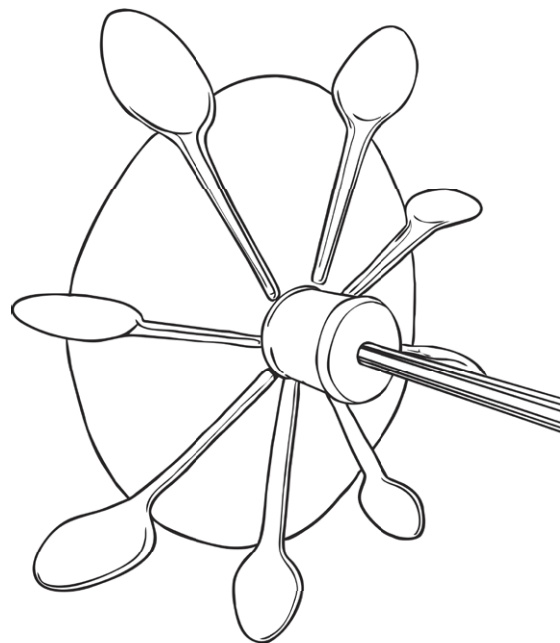


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## What to do:

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.

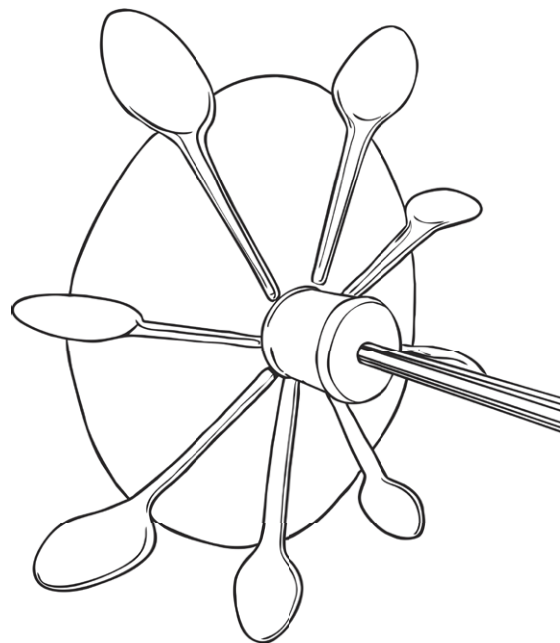


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- Marker pen
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## What to do:

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.