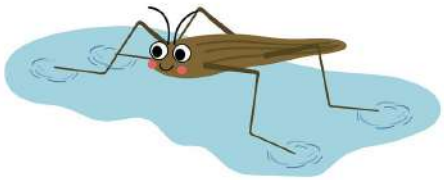

A Penny for your Drops

Leading questions:

- How are bugs able to walk on water? Why don't they sink?
- How many drops of water do you think you could place on a penny?

What to do:

1. Place a penny on a tray.
2. Holding an eyedropper just above the surface of a penny, drop one drop of water at a time to the surface of the penny.
3. Record the number of drops that stay on the penny (don't include the final drop that spills).
4. Repeat two more times, recording the number of drops each time.
   - Why do you think the water to stays on the penny?
   - What causes the water to eventually spill off the penny?
5. Try to repeat your experiment holding the eyedropper higher or at an angle.
   - Explain what you think is happening.
6. Try floating a paper clip on the surface of water.
   - Why do you think the paper clip can float on the surface.?

Summary:

Water molecules attracting to one another is called cohesion. This creates a surface tension, a skin-like property occurring at the surface of the liquid.

- Try to float a paper clip on water that has a drop of soap in it.
- What do you think the soap is doing?

A Penny for your Drops

Leading questions:

- How are bugs able to walk on water? Why don't they sink?
  Listen: Let students make predictions.
- How many drops of water do you think you could place on a penny?
  Listen: Let students make predictions. Ask them what kinds of things might affect the result (e.g., how far away the dropper is or the angle they hold it).

What to do:

1. Place a penny on a tray.
2. Holding an eyedropper just above the surface of a penny, drop one drop of water at a time to the surface of the penny.
3. Record the number of drops that stay on the penny (don't include the final drop that spills).
4. Repeat two more times, recording the number of drops each time.
   - Why do you think the water to stays on the penny?
     Explain: Use the diagram to show that the water molecules are strongly attracted to each other, more than they are attracted to the penny. Therefore they form a dome.
   - What causes the water to eventually spill off the penny?
     Explain: Eventually gravity wins. The more water, the greater the effect of gravity.
5. Try to repeat your experiment holding the eyedropper higher or at an angle.
   - Explain what you think is happening.
6. Try floating a paper clip on the surface of water.
   - Why do you think the paper clip can float on the surface?
     Explain: The surface tension of the water forms a barrier that is difficult to penetrate. This is how bugs can walk on water.

Summary:

Water molecules attracting to one another is called cohesion. This creates a surface tension, a skin-like property occurring at the surface of the liquid.

- Try to float a paper clip on water that has a drop of soap in it.
- What do you think the soap is doing?
  Explain: soap decreases the attraction between water molecules, decreasing the surface tension.

A Penny for your Drops

Dropping **plain water** on a penny – count the drops

Number of drops

_____ Trial 1 _____ Trial 2 _____ Trial 3

Dropping **soapy water** on a penny – count the drops

Number of drops

_____ Trial 1 _____ Trial 2 _____ Trial 3

A Penny for your Drops

Paper Clip on Water

A Penny for your Drops

Paper Clip on Water with Soap