

Station I: Cohesion



Materials:

Pennies
Droppers Beaker of water

Cohesion Description:

Cohesion is a property of water that describes how water "sticks" to itself. Water molecules are attracted to each other by hydrogen bonding.

Instructions:

1. Hypothesize on your lab sheet how many drops of water you think will fit on a penny.
2. Using the droppers, carefully drop just one drop of water on the penny. (Each person can do this!)
3. Draw what one drop looks like on the penny on your lab sheet.
4. Continue to add drops until the penny is just about to spill over. Draw your observation on your sheet.
5. Answer the questions that follow.
6. To clean up, please dry off all pennies. Wipe up any spills please!

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6. To clean up, please dry off all pennies. Wipe up any spills please!

Station 2: Heat Capacity

Materials:

Beaker of water Beaker of 91% isopropyl alcohol (rubbing alcohol)
Q-tips Timer (phone is okay)

Heat Capacity Description:

Water has a high heat capacity, meaning water holds on to heat longer and takes a longer time to heat up compared to other substances.

Instructions:

7. Have two people do this at the same time!
8. Streak on the black desk top with a q-tip dipped in water and with a q-tip dipped in rubbing alcohol.
9. Starter the timer immediately.
10. Note the time when one of the liquids has fully evaporated off the table. Note the time when the second liquid is fully evaporated off the table. (if this exceeds 5 minutes, stop the time and move on!)
11. Answer the questions that follow.
12. To clean up, please wipe up any spills and any remaining liquid on the bench tops!

****Note:** Evaporation is small scale boiling! The ambient air temperature is adding heat energy to the two liquids that are spread on the desk!**

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Q-tips Timer (phone is okay)



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****Note:** Evaporation is small scale boiling! The ambient air temperature is adding heat energy to the two liquids that are spread on the desk!**

Station 3: Universal Solvent



Materials:

- | | |
|--------------------------------|------------------------------------|
| 2 beakers of oil | Stirring rods (one in each beaker) |
| 2 beakers of denatured alcohol | Beaker of sugar |
| 2 beakers of water | Beaker of salt |

Universal Solvent Description:

Water is called a universal solvent because it can dissolve almost any substance. A solvent is a substance that dissolves other substances.

Instructions:

7. For the three beakers marked salt, put a pinch of salt in each (a pinch is a small amount!)
8. Gently stir the beakers and observe what happens to the salt in each
9. For the three beakers marked sugar, put a pinch of sugar in each
10. Gently stir the beakers and observe what happens to the sugar in each
11. Answer the questions that follow
12. To clean up, please make sure to wipe up any spills!

Station 3: Universal Solvent



Materials:

- | | |
|--------------------------------|------------------------------------|
| 2 beakers of oil | Stirring rods (one in each beaker) |
| 2 beakers of denatured alcohol | Beaker of sugar |
| 2 beakers of water | Beaker of salt |

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Water is called a universal solvent because it can dissolve almost any substance. A solvent is a substance that dissolves other substances.

Instructions:

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2. Gently stir the beakers and observe what happens to the salt in each
3. For the three beakers marked sugar, put a pinch of sugar in each
4. Gently stir the beakers and observe what happens to the sugar in each
5. Answer the questions that follow
6. To clean up, please make sure to wipe up any spills!

Station 4: Adhesion



Materials:

Beaker of water

Droppers

Wax paper

Adhesion Description:

Adhesion is a property of water that describes how water “sticks” to other substances. The water molecules are attracted to other substances through hydrogen bonding.

Instructions:

1. Put a very small drop of water on a piece of wax paper. (Everyone can do this!)
2. Carefully turn the wax paper upside down and observe the water droplet on the wax paper.
3. On your lab sheet, draw what the water droplet looks like on the upside-down wax paper.
4. Turn the wax paper back over, add another small drop to the water droplet. Turn the wax paper over again to see if it sticks to the wax paper.
5. Continue adding to the water until the large drop no longer sticks to the wax paper when it's turned over.
6. Note on your lab sheet how many small drops you added to the large drop! See how big you can make it!

Station 4: Adhesion



Materials:

Beaker of water

Droppers

Wax paper

Adhesion Description:

Adhesion is a property of water that describes how water “sticks” to other substances. The water molecules are attracted to other substances through hydrogen bonding.

Instructions:

1. Put a very small drop of water on a piece of wax paper. (Everyone can do this!)
2. Carefully turn the wax paper upside down and observe the water droplet on the wax paper.
3. On your lab sheet, draw what the water droplet looks like on the upside-down wax paper.
4. Turn the wax paper back over, add another small drop to the water droplet. Turn the wax paper over again to see if it sticks to the wax paper.
5. Continue adding to the water until the large drop no longer sticks to the wax paper when it's turned over.
6. Note on your lab sheet how many small drops you added to the large drop! See how big you can make it!

Station 5: Capillary Action



Materials:

- 2 plain glass slides 2 petri dishes containing colored water
2 glass slides with tape wrapped around one end 4 binder clips

Capillary Action Description:

Capillary action describes how water will "climb" or flow up narrow spaces against gravity.

Instructions:

1. This can be done two at a time! Two set ups for four people.
2. See the pictures for how to set this up. (Note, the rubber bands might need to go twice around the slides)
3. Carefully dip the end of the slide away from the paper clip in the colored water.
4. Observe how the colored water moves between the two slides.
5. Draw a diagram of what you observe and answer the questions that follow.
6. To clean up, please take apart the slides and dry them off. Wipe up any spills please!

Station 5: Capillary Action



Materials:

- 2 plain glass slides 2 petri dishes containing colored water
2 glass slides with tape wrapped around one end 4 binder clips

Capillary Action Description:

Capillary action describes how water will "climb" or flow up narrow spaces against gravity.

Instructions:

1. This can be done two at a time! Two set ups for four people.
2. See the pictures for how to set this up. (Note, the rubber bands might need to go twice around the slides)
3. Carefully dip the end of the slide away from the paper clip in the colored water.
4. Observe how the colored water moves between the two slides.
5. Draw a diagram of what you observe and answer the questions that follow.
6. To clean up, please take apart the slides and dry them off. Wipe up any spills please!

Station 6: Polarity



Materials:

Cup with a hole in the bottom Bucket to catch dropping water
A piece of plastic PVC pipe (to be used for good not evil) Beaker of water

Polarity Description:

Overall, water is a neutral (no charge) molecule. But it has one side that is more negatively charged and one side that is more positively charged. Because of this charge, water is attracted to other charged substances. This is because water is polar or has polarity.

Instructions:

1. Have one person hold the cup with a hole in the bottom over the bucket.
2. Fill the cup with water from the beaker so a steady stream flows into the bucket.
3. Have one person take the PVC pipe and rub it against their hair to create an electrical charge.
4. Hold the PVC pipe close to the stream of water as it is coming out from the cup. Observe what happens.
5. Draw what you observe and answer the questions that follow.

Station 6: Polarity



Materials:

Cup with a hole in the bottom Bucket to catch dropping water
A piece of plastic PVC pipe (to be used for good not evil) Beaker of water

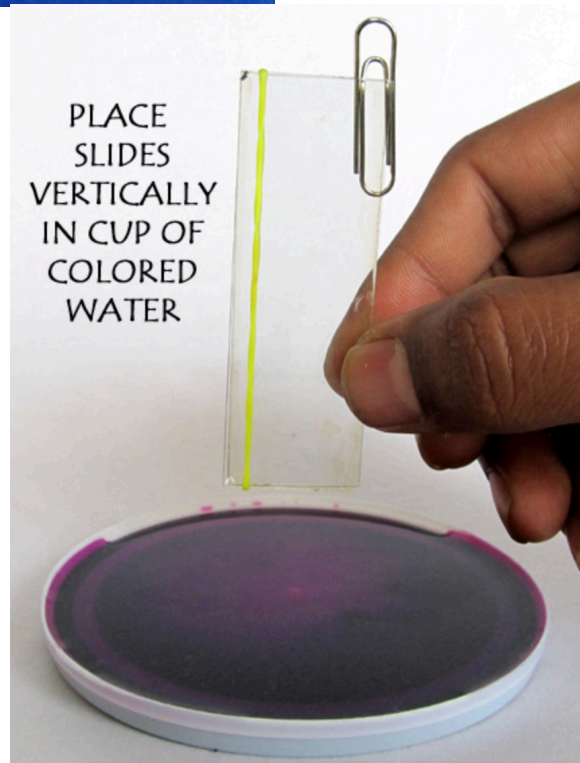
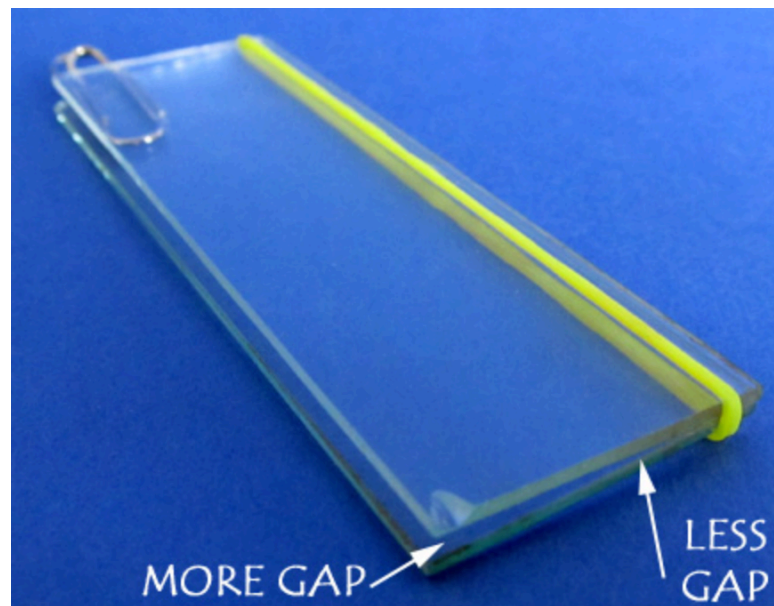
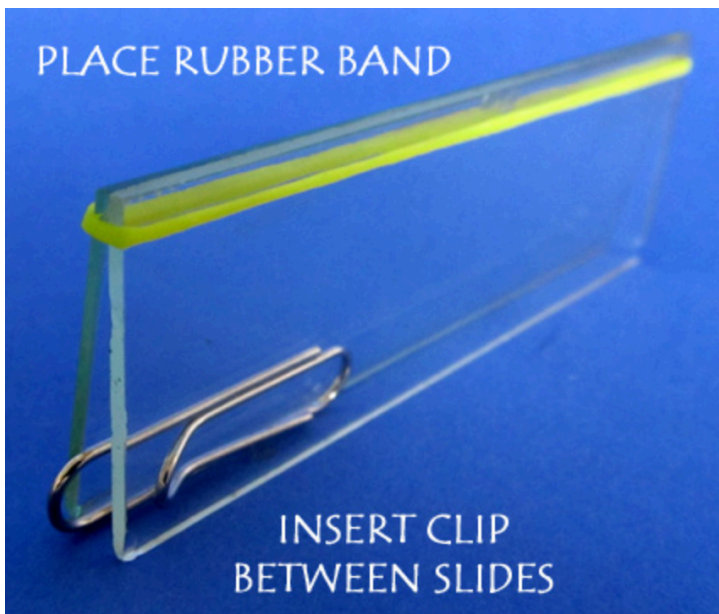
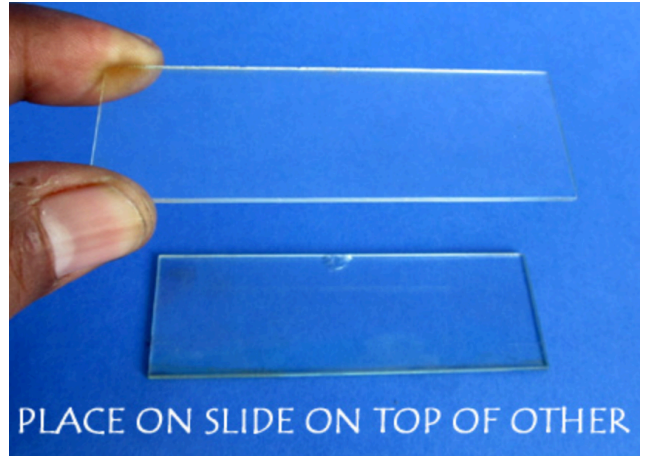
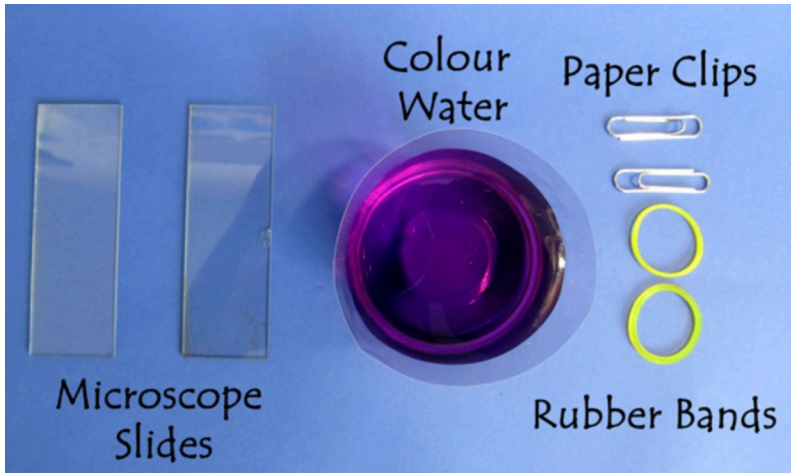
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Instructions:

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4. Hold the PVC pipe close to the stream of water as it is coming out from the cup. Observe what happens.
5. Draw what you observe and answer the questions that follow.

Station 5: Capillary Action



Station Supplies: (x2 for each station!)

Station 1:

Pennies (about 7)

Droppers (3)

Beaker of water

q-tips

Beaker of detergent

Station 2:

Beaker of water

Beaker of 91% isopropyl alcohol

Q-tips

Phone timer

Station 3:

2 beakers of oil

2 beakers of 91% isopropyl alcohol (premix in some salt to ensure salt does not dissolve during lab)

2 beakers of water

6 stirring rods

Beaker of sugar

Beaker of salt

Station 4:

2 graduated cylinders

2 beakers of colored water

Station 5:

4 glass slides (two wrapped on one end with electrical tape to create a gap)

4 binder clips

2 petri dishes with colored water

Station 6 and 7 are word problems on paper, no set up.