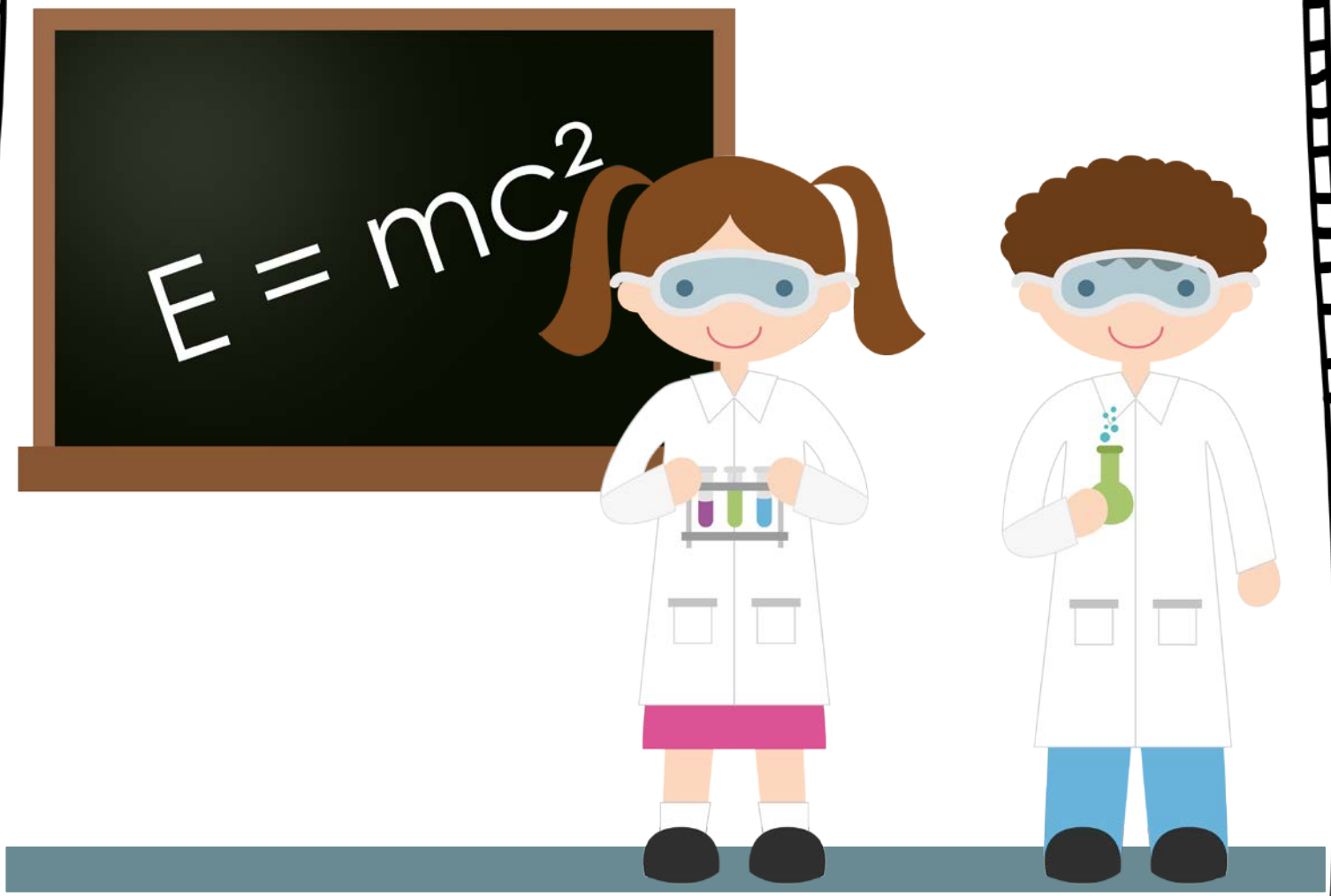
SUPER COOL

→ kids' science kit ←



THANK YOU!!

Thank you for your purchase! It is my hope that Playdough to Plato is a helpful source of fun, creative learning activities for your classroom or homeschool.

I hope you'll stop by to find more motivating activities for kids. During your visit, be sure to sign up for our free email list so that you're always the first to know about our printables, science activities, literacy centers and more.

If you have any questions, please send me an email. I always love hearing from readers.

Appreciatively,

Malia PLAYDOUGHTOPLATO@GMAIL.COM

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Directions

Hi friends,

I hope you love this science activity kit as much as I do!

This science journal and 30 printable activity cards make it easy to add hands-on, engaging science to your home or classroom.

To get started, print the cards on cardstock to give them extra durability. Cut them apart and, if you'll be using them in a classroom, laminate them. Attach the set to a book ring for easy storage and pull one out when you're ready for some science fun.

To help young scientists keep track of their observations, print a science journal for each child. I included several cover options for you to pick from – some in full color and some in black and white.

Most of the activities use common household supplies that you likely have lying around but, to help ensure you're ready for all 30 experiments, I also included a supply list you can check off and take with you to the store.

Enjoy!!

Malia {Playdough to Plato}
playdoughtoplato@gmail.com

SUPPLY LIST

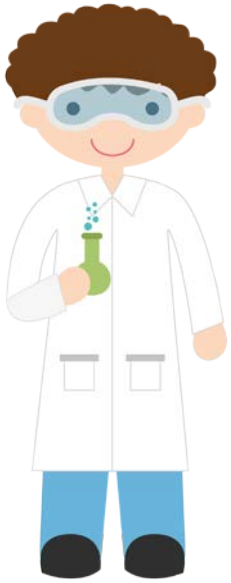
COMMON HOUSEHOLD SUPPLIES

- Bowl
- Plate
- Paper towel
- Cups
- Fork
- Spoon
- Measuring cups
- Dish soap
- Match or lighter (adult supervision required)
- Scissors
- Milk
- Ketchup
- Cotton balls
- Piece of string or yarn
- Wide rimmed jar with a lid
- Toothbrush*

FROM THE GROCERY STORE

- Vegetable oil*
- Raisins*
- Package of balloons*
- Coffee filters*
- Box of tea bags*
- Funnel*
- Pencil*
- Magnet*
- Skittles*
- Baking soda*
- Pipe cleaners*
- Dish soap*
- Food coloring
- Borax (available in the laundry aisle)
- Bar of ivory soap
- Pennies
- White flower or stalk of celery
- Alka Seltzer tablets
- Water bottle*
- Sparkling water*
- Ziploc bags*
- Vinegar*
- Corn syrup
- Lemon
- Raisins
- Optional: glitter*

NOTE: supplies marked with an asterisk* are available at the dollar store.



MY super cool SCIENCE KIT

MY super cool SCIENCE KIT

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NAKED *egg*

Supplies-raw brown egg, vinegar, corn syrup wide rimmed jar with a lid, observation chart

Experiment-touch and feel the egg. Write your observations on the chart. Place the egg in the jar. Cover it with vinegar and seal the lid tightly.

Watch what happens over the next 3 days, recording your observations on the chart.

On the third day, take out the egg and gently feel it. What do you notice?

Explanation-The acid in the vinegar breaks down the calcium carbonate egg shell creating carbon dioxide bubbles and making the shell disappear. The vinegar is made up of mostly water. It travels in and out of the egg membrane through a process called osmosis. This process causes the egg to expand and get bigger.

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WALKING *water*

Supplies-3 glasses, water, food coloring, paper towels, one of the color mixing record pages, crayons.

Experiment-Place the cups side by side in a line. Fill the first cup with water and food coloring.

Leave the second cup empty.

Fill the third cup with water and a different color of food coloring. For instance, one cup could be red, the next empty and the third blue.

Cut a paper towel in half and fold it lengthwise two times. Place one end in the first cup and the other end in the cup next to it. Fold a second paper towel the same way, placing one end in the second cup and the other end in the third cup.

Watch the colors mix. Write the color combination on your record sheet.

What other color combinations can you mix?

Can you add a 4TH or 5TH cup?

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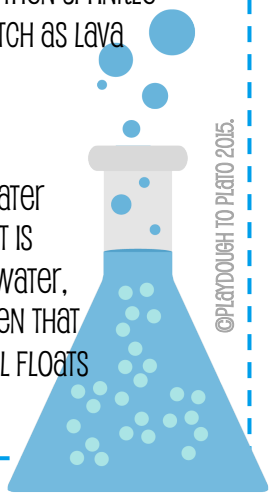
Lava *in a* Cup

Supplies-a clear glass, 1/4 cup of vegetable oil, 1 teaspoon of salt, water, food coloring

Experiment-fill the glass about 3/4 full of water and add 5 drops of your favorite food coloring.

Slowly pour in the vegetable oil. Then sprinkle the salt on top of the oil and watch as lava bubbles move in your glass.

Explanation-oil floats on top of water because it's lighter. Since the salt is heavier than oil, it sinks into the water, taking some of the oil with it. When that salt dissolves in the water, the oil floats back up the top again.



Running *pepper*

Supplies-a pie tin, a glass of water, pepper, a dropper, dishwashing soap

Experiment-pour the water into the pie tin, making sure that it covers the bottom.

Shake a little bit of pepper across the surface.

Add a drop or two of dish soap in the middle of the water.

Record your observations on your sheet.

Explanation-the water has surface tension that keeps everything in its spot. When you drop in the soap, it breaks up that surface tension, causing the water to pull the pepper away from the soap.

Sink *and* Float Oranges

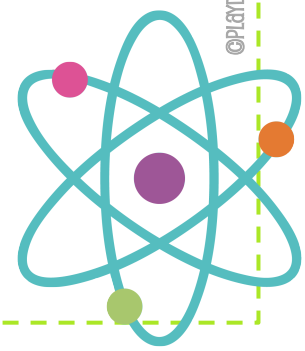
Supplies-one orange, a glass of water

Experiment- What do you think will happen when you drop a peeled orange and an unpeeled orange in a glass of water? Record your hypothesis on the sheet.

Drop the unpeeled orange in the water. Draw a picture of what happens and describe it with words in the "notes" section.

Take off the peel and drop it in the water again. Draw a picture and write notes describing what happened.

Explanation-an object floats when it pushes away the same or more water than it weighs. This is called being buoyant. When an orange has a peel on it, it displaces enough water to make it buoyant but when the peel is removed, it no longer pushes enough away and sinks.



Will *it* Melt?

Supplies-a muffin tin, one object for each compartment (candy works well)

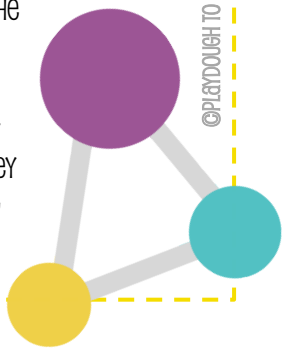
Experiment-place one object in each compartment of the tin.

Write down each object and your prediction about whether it will melt by marking it with an x on the record sheet.

Set the muffin tin in direct sun for several hours.

Return to the tin and record whether each object actually melted by circling it on the record sheet.

Explanation-when objects get hot enough, their molecules start moving around a lot and won't stay in one spot anymore so they melt. Each object has a different melting point so some objects melt sooner than others.



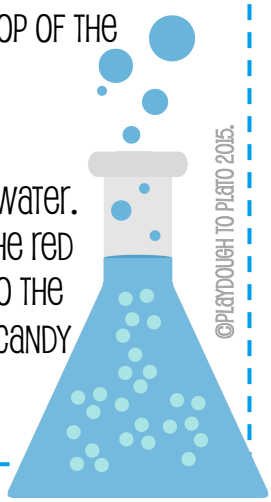
Peppermint *fireworks*

Supplies-a round peppermint candy, a flat plate (preferably white), a cup of water.

Experiment-Place your peppermint in the center of the plate.

Carefully pour the water on top of the mint. Watch what happens.

Explanation-Sugar dissolves in water. The candy is made of sugar. The red food coloring that's mixed into the sugar spreads away from the candy as it dissolves into the water.



– Sunscreen *science* –

Supplies-a bottle of sunscreen, a piece of dark construction paper, a white crayon.

Experiment-Draw a line down the center of your paper. Label one side "No sunscreen" and the other side "Has sunscreen".

Cover the palm of your hand with a thin layer of sunscreen and press your hand against the side of the paper labeled, "Has sunscreen".

Place the paper in direct sunlight for a couple of hours. Then look at the paper to see what happened to each side.

Explanation-The sun emits UV rays that bleach the color of the paper. Sunscreen blocks those rays, protecting the paper from discoloring when exposed to sun.

— Is it *magnetic?* —

Supplies-a magnet, 8 objects

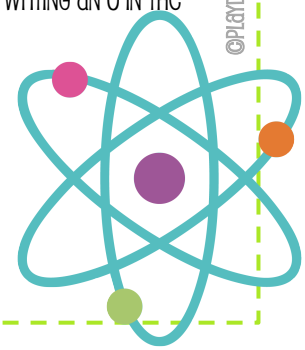
Experiment-Write down the names of the objects you will be testing on your sheet.

Then mark your predictions about whether or not they will be magnetic with an X.

Test each of the objects by waving the magnet about ½ inch above it. If the object sticks to the magnet, it is magnetic. If it does not stick, it is not magnetic.

Mark the results of the experiment by writing an O in the correct spots on your sheet.

Explanation-A magnet has an invisible magnetic field all around it. If an object is magnetic, the magnet will pull it closer using something called "magnetic force". It's almost like magic!



— Phases *of* the Moon —

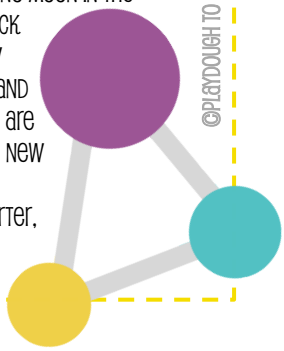
Supplies-Moon phases sheets, pencil or crayon

Experiment-Go outside for a few minutes each night and draw a picture of the moon.

Is it getting bigger? Smaller? Do you notice a dark part?

Explanation-Moonlight is really the sunlight reflecting off the moon's surface. The moon does not produce any light of its own.

It takes about 29.5 days for the moon to travel all the way around earth. As it moves, its position to the earth and the sun changes. During part of the trip, it's between the earth and the sun. That's when it looks like there's no moon in the sky because the sunlight is shining on the back side of the moon. That phase is called a "new moon". A few days later, it is off to one side and we can see half of the moon. These changes are called "phases" and there are eight of them: new moon, waxing crescent, first quarter, waxing gibbous, full moon, waning gibbous, third quarter, and waning crescent.



— Tornado *in* a Jar —

Supplies-empty bottle, tap water, dish soap, vinegar, glitter {optional}

Experiment-fill your bottle with water, leaving about an inch of space at the top.

Drop in 1 tsp. vinegar, 1 tsp. dish soap and a pinch of glitter.

Swirl the jar for about 5 seconds. Then set it down on a flat surface and watch the tornado.

Explanation- When you spin the water, it creates a vortex in the center, centripetal force causes the water to spin around that vortex making a tornado.

— Volcano *in* a Jar —

Supplies-empty bottle, dish soap, vinegar, baking soda

Experiment-add ¼ cup of baking soda to the bottom of your bottle.

Add several drops of dish soap on top.

Pour in 1 cup of vinegar. Then watch the volcano erupt!

Explanation- When you mix vinegar and baking soda together it causes an acid-base reaction that forms a gas called carbon dioxide. That gas bubbles and foams in the vinegar-baking soda mixture creating an "eruption". The dish soap makes the foam extra frothy and bubbly.

— Fireworks *in* a Jar —

Supplies-empty bottle, tap water, oil, food coloring, bowl, fork

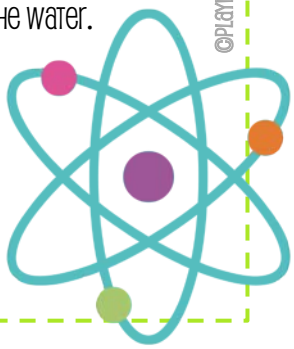
Experiment-fill your bottle with water, leaving about two inches of space at the top.

Pour about 2 tablespoons of oil on your bowl.

Add several drops of food coloring to the oil and stir with a fork.

Pour the oil into the bottle and watch the food coloring sink out of the oil and into the water.

Explanation- Food coloring and oil do not mix. Oil is less dense than water so it will sit at the top of the bottle. The food coloring is heavier than the oil so it drops out of the oil and begins dissolving in the water.



— Flying *tea bags* —

<u>adult supervision required</u>

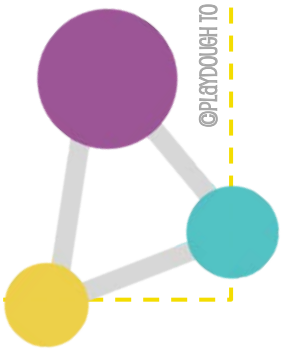
Supplies-tea bag, scissors, match or lighter

Experiment-cut off the top of the tea bag and dump out the tea leaves.

Flatten the tea bag and shape it into a cylinder. Stand the tea bag up on one end.

Have a grown up light the top of the tea bag with a match or lighter. Watch the bag fly into the air.

Explanation- The air inside the tea bag gets hot when the fire is lit and the air molecules begin moving around quickly inside the tea bag. The hotter, less dense air rises above the cooler, denser air outside the tea bag creating a convection current that causes it to lift into the air.



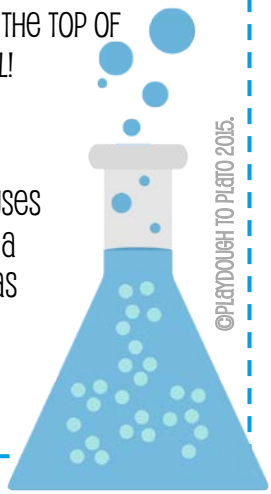
Magic *balloons*

Supplies-empty bottle, balloon, alka seltzer, water

Experiment-break 4 alka seltzer tablets into small pieces and drop them into the bottle.

Fill the bottle with about 1 cup of water and quickly stretch the balloon over the top of the bottle. Watch the balloon fill!

Explanation-When you mix alka seltzer and water together it causes an acid-base reaction that forms a gas called carbon dioxide. This gas floats to the top of the bottle, filling the balloon with carbon dioxide and make it expand.



States *of* Matter

Supplies-3 balloons, water, record sheet, pencil

Experiment-fill one balloon with water and place it in the freezer overnight.

The next morning, blow up a second balloon with air.

Fill a third balloon with tap water.

When the water in the first balloon has frozen completely, place the three balloons side by side. Squeeze, poke and explore with them. What is the same? What is different? Complete the record sheet.

Explanation- The three balloons are filled with three different states of matter: gas {air}, liquid {water} and solid {ice}.

Magic *rainbow* Milk

Supplies-plate, milk, food coloring, dish soap, q-tips

Experiment- pour milk onto the plate, covering it.

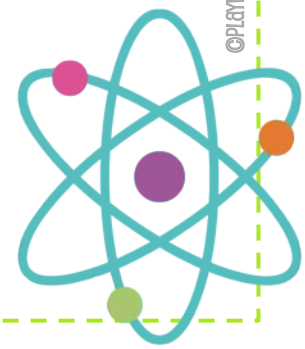
Randomly drop several different colors of food coloring on the milk.

Dip your clean q-tip in the milk. Does anything happen?

Now dip a new q-tip in dish soap.

Touch the q-tip to the surface of the milk in several spots and watch the colors swirl around.

Explanation- Milk is made of many things including water and fats that act like oil. Oil and water don't like each other. One part of soap likes fat and one part likes water so when the soap touches the milk, the soap molecules move through the milk searching for fat and water, mixing up the food coloring in its path.



Candy *chromatography*

Supplies-skittles, coffee filters, warm water

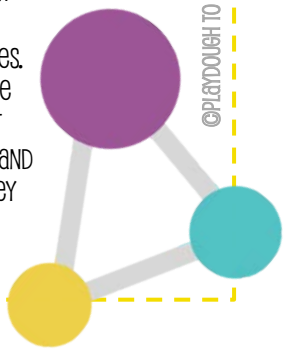
Experiment-flatten several coffee filters onto separate plates.

Dip one color skittle into the warm water and lay it on a coffee filter.

Repeat the steps with several different colored skittles.

Watch the colors separate into different components. For instance, green spreads into yellow and blue.

Explanation- Candy makers combine different colors of dye to color their candies. For instance, brown is made of red and blue dyes. Some dyes are more attracted to the coffee filter paper and move up higher while other dyes like red dissolve more easily in water and are less attracted to the filter paper so they don't move as far. This process is called chromatography.



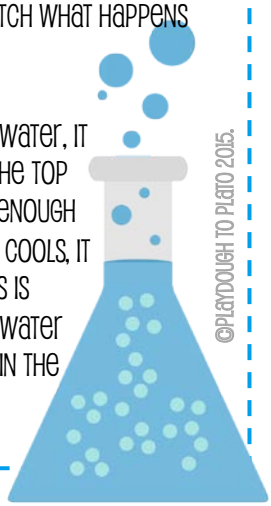
water cycle *in a bag*

Supplies-ziploc bag, water, blue food coloring, sharpie, tape

Experiment-draw a sun and cloud at the top of your bag. mix one cup of tap water with 4 drops of blue food coloring. pour it into the bag.

tape the bag to the window and watch what happens over the next 3-4 days.

Explanation-when the sun warms the water, it evaporates into vapor and rises to the top of the bag. a cloud is formed when enough of that vapor collects. as the vapor cools, it begins changing back into liquid. this is called condensation. when enough water condensates, the water falls down in the form of precipitation (rain).



crystal *names*

Supplies-tall clear glass cup or jar, borax, water, pipe cleaners, string, pencil, measuring cups

Experiment-bend each pipe cleaner into a letter of your name. tie one end of the string to your pipe cleaner and the other end around the middle of a pencil.

fill your cup with very warm water. pour ½ cup of borax into the water and stir until it dissolves. continue adding and stirring borax until it begins leaving residue at the bottom.

balance your pencil across the top of your cup. drop in your pipe cleaner so that it's submerged in the solution. wait several days and watch the crystals form.

Explanation- when the borax dissolves in the water, it creates a suspension. as the borax begins to settle, it begins settling on all the surfaces it comes in contact with including the pipe cleaners.

disappearing *letters*

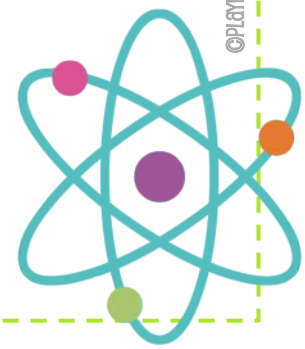
Supplies-skittles, warm water, clear glass cup

Experiment-fill your cup with warm water.

drop a skittle into the bottom.

watch the s melt off the skittle.

Explanation-skittles are made with sugar. when sugar is placed in water, it dissolves – changing from a solid to a liquid, making the s appear to disappear.



dancing *raisins*

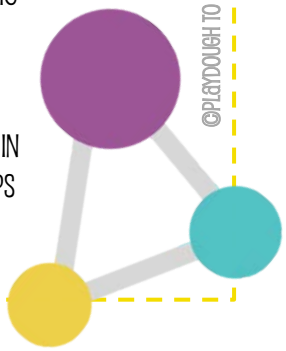
Supplies-raisins, glass cup, 4 alka seltzer tablets, sparkling water, measuring cups

Experiment-crush 4 alka seltzer tablets in the bottom of your glass.

drop 5-7 raisins on top.

then pour in 1 cup of carbonated water and watch the raisins start to dance.

Explanation-when you pour water on the alka seltzer tabs, it begins creating carbon dioxide bubbles. those gas bubbles start sticking to the raisins. when enough stick, the raisin rises up in the cup. when they pop, the raisin drops down.



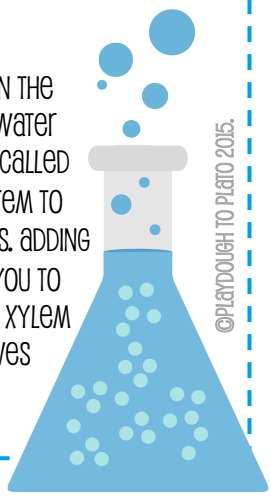
Flower *coloring*

Supplies-a white flower or celery stem, food coloring, glass cup, water

Experiment-add about 10 drops of food coloring to the bottom of your glass. Fill the cup with water, leaving about 1 inch at the top.

Snip the end of your flower and place it in the water. Watch what happens in 1-2 days.

Explanation-When a plant is growing in the ground, its roots "drink" water. That water travels up the roots, into tiny tubes called xylem that bring the water up the stem to the plant's leaves and flower petals. Adding food coloring to the water allows you to see the water traveling through the xylem and, consequently, coloring the leaves and flower petals.



Fluffy *soap*

Supplies-bar of ivory soap, microwave safe bowl, microwave

Experiment-hold the soap and talk about what it feels like. Is it hard? Soft? Squishy? Make predictions about what will happen when you place the soap in the microwave.

Drop the bar of soap in your microwave safe bowl and place it in the microwave for 90 seconds.

Wait until the soap cools, then play with the soap. What does it feel like now? Was your prediction correct?

Explanation-Inside of ivory soap are bubbles that contain tiny droplets of water. When that water gets hot, it vaporizes, forming bubbles of hot air. Those bubbles expand, making the bar turn into a fluffy soap cloud.

Shining *pennies*

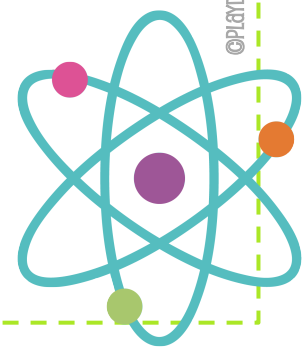
Supplies-10 dull pennies, pencil, ketchup, baking soda, lemon juice, water, vinegar, salt, toothbrush, record sheet, pencil

Experiment-scrubbing with a toothbrush, test different combinations of ingredients to clean each penny.

What cleans it the best? The worst? What other household supplies could you try? Record your results on the sheet.

- Ketchup and baking soda
- Vinegar and salt
- Rubbing it with a pencil eraser
- Lemon and salt

Explanation-Pennies get dull because the copper reacts with oxygen in the air, forming copper oxide. Some combinations of ingredients (like vinegar and salt) react together and remove it.



Flubber

Supplies-3/4 cup cold water, 1 cup Elmer's glue, food coloring, 1/2 cup hot water, 1 teaspoon of borax, 2 bowls, 1 spoon

Experiment-Mix together the cold water, glue and food coloring in a bowl.

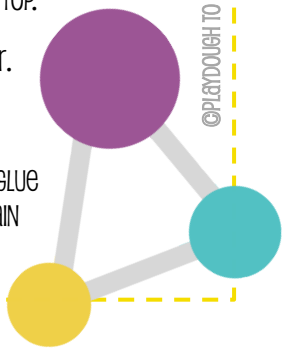
In the second bowl, mix the hot water and borax, stirring until it is completely dissolved.

Slowly add the glue mixture to the borax, stirring constantly.

Pour off any extra water that settles on top.

Squish, stretch and play with your flubber.

Explanation-When the glue and borax mix together, the borax hooks together the glue molecules making a polymer – a long chain of molecules like spaghetti.



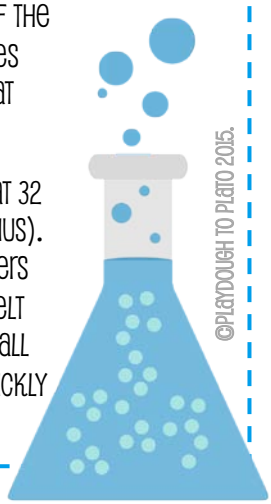
Fishing *for* Ice

Supplies-Ice cubes, water, cup, piece of string, salt

Experiment-Fill a cup ½ way with water. Place several ice cubes on top. Try sticking the string to the top of an ice cube. What happens?

Now place the string on top of an ice cube and sprinkle some salt on top. Count to 30 and lift the string out of the water. What happens to the ice cubes now? Can you catch two ice cubes at once?

Explanation-Water typically freezes at 32 degrees Fahrenheit (0 degrees Celsius). When salt is sprinkled on top, it lowers the freezing point, making the ice melt slightly. Since you sprinke such a small amount of salt, however, the ice quickly refreezes, trapping the string.



Sink *or* Float

Supplies-Large bowl or jar, water, chart, pencil, small items from around the room (Legos, coins, pom poms, etc.)

Experiment-Write down the name of each object on the chart.

Fill your bowl with water. Drop the first object in and see whether it sinks or floats. Add an X in the right spot on your chart. Continue testing and recording your results until you have used all of your objects.

Explanation-You figure out an object's density by seeing how much empty space it has compared to the amount of its mass. A Lego, for instance, has a lot of empty space inside and just a little mass in its shell on the outside. It is not very dense. When you drop an object in water, it will float if it is less dense than that water. This is called being buoyant.

Sprout *house*

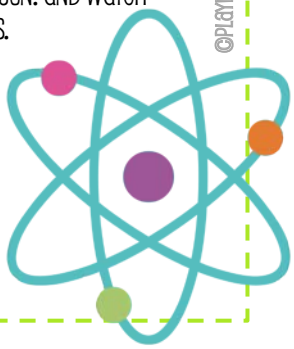
Supplies-Seeds, 6 cotton balls, cup, water, sprout house, scissors, ziploc, tape, observation sheet, pencil

Experiment-Place several seeds in the bottom of your ziploc.

Soak 6 cotton balls in water. Squeeze out the water so the balls are damp but not dripping. Place them in the bag on top of the seeds. Seal the top of the bag.

Cut out the sprout house and tape it on top of the bag so that the ziploc is showing in the middle. Tape the sprout house to a window that gets plenty of sun. And watch what happens over the next few weeks.

Explanation-A seed needs water and warmth to grow. The ziploc bag creates a mini green house that makes warm, moist air from the sunlight shining through the window and the water contained in the cotton balls. The happy seed sprouts.



Making *raisins*

Supplies-Grapes, sunlight, paper towel, plate, grape observation sheet, pencil

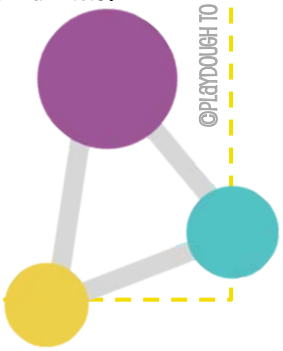
Experiment-Place a paper towel on top of your plate.

Wash your grapes and place them on top of the paper towel.

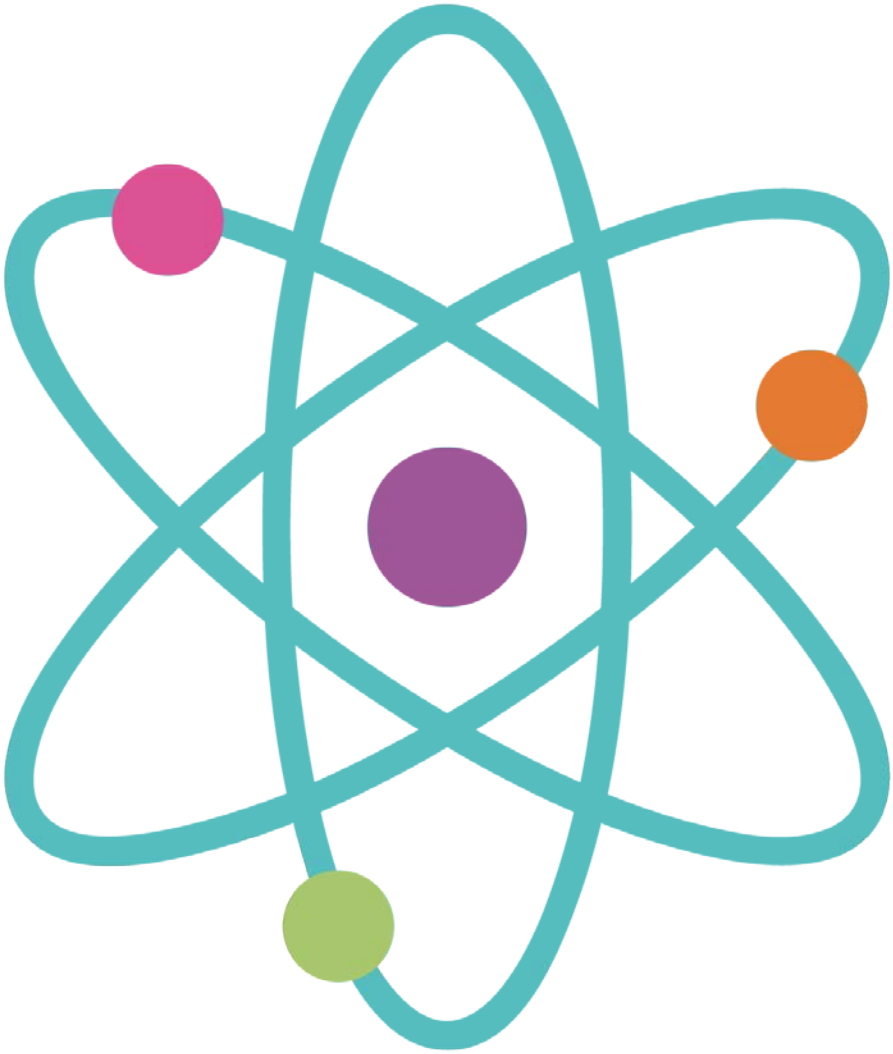
Place the plate in a sunny window or outdoors in a spot that can't be reached by any animals.

Watch the grapes for two weeks. What happens? Record your results in your journal.

Explanation-There is a lot of water inside grapes. When the grapes sit in the sunlight, that water heats up and evaporates into the air, shriveling the grape into a small, wrinkly raisin.

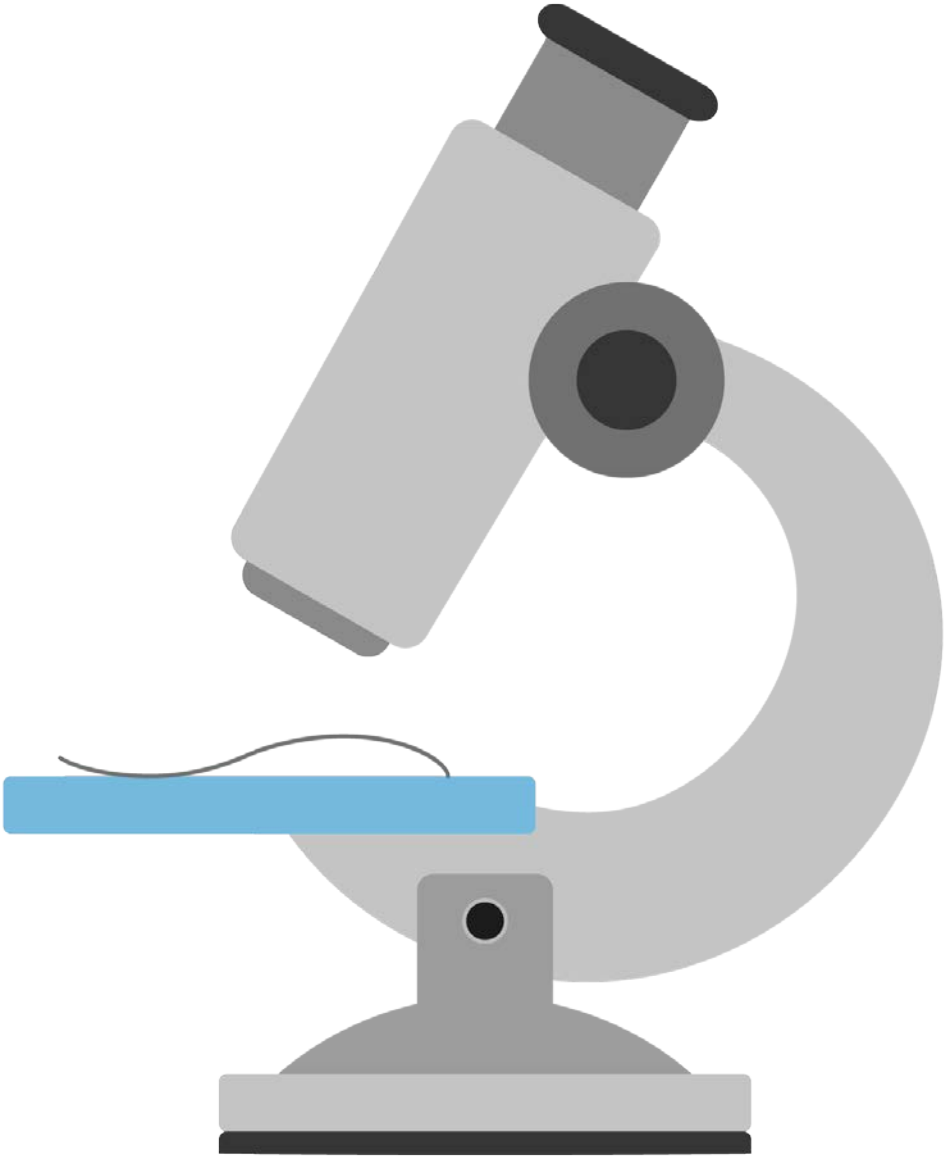


my science journal



Name _____

my science journal



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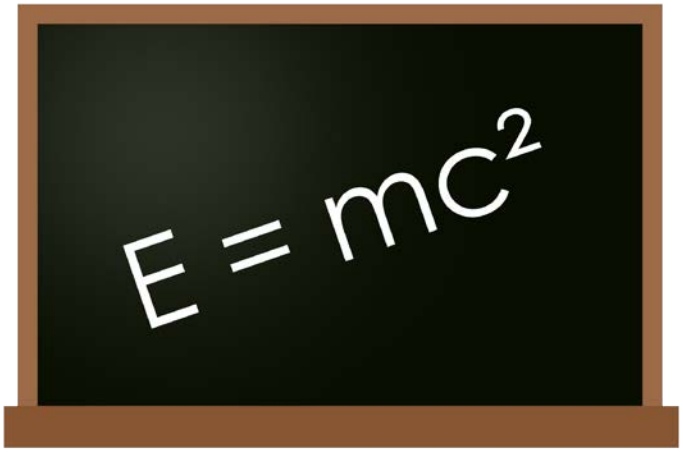
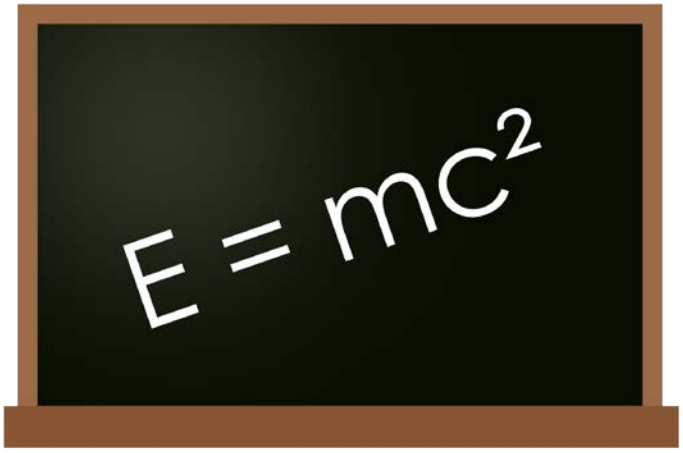
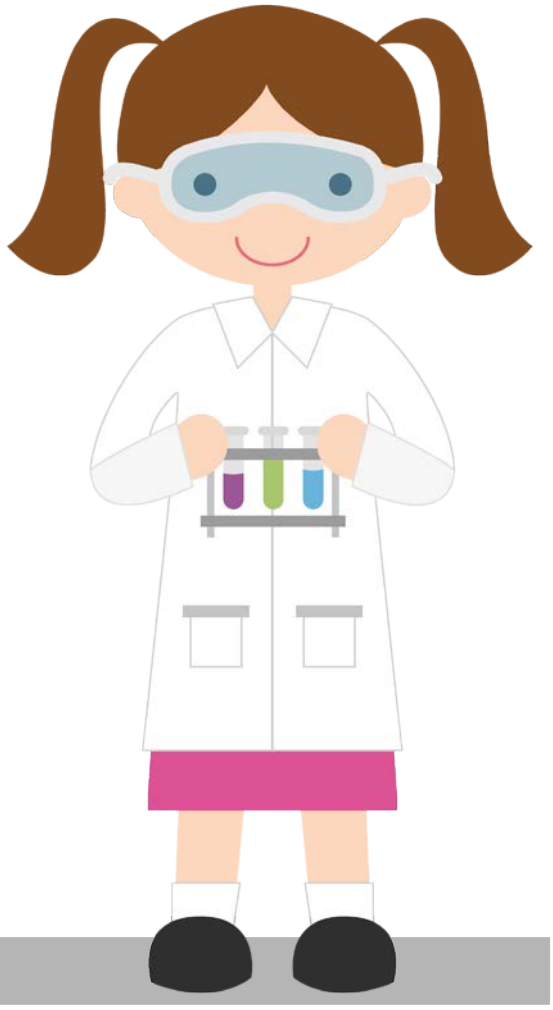
my science journal



Name _____

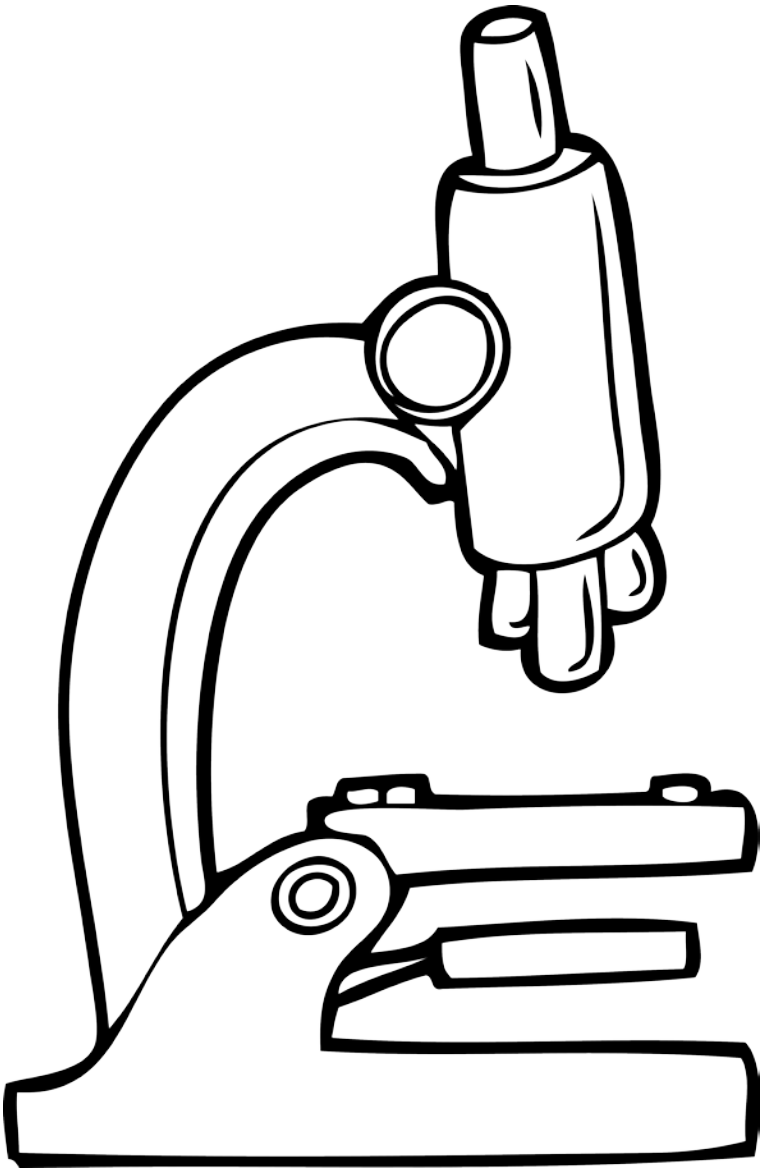
my science journal





Name _____

my science journal



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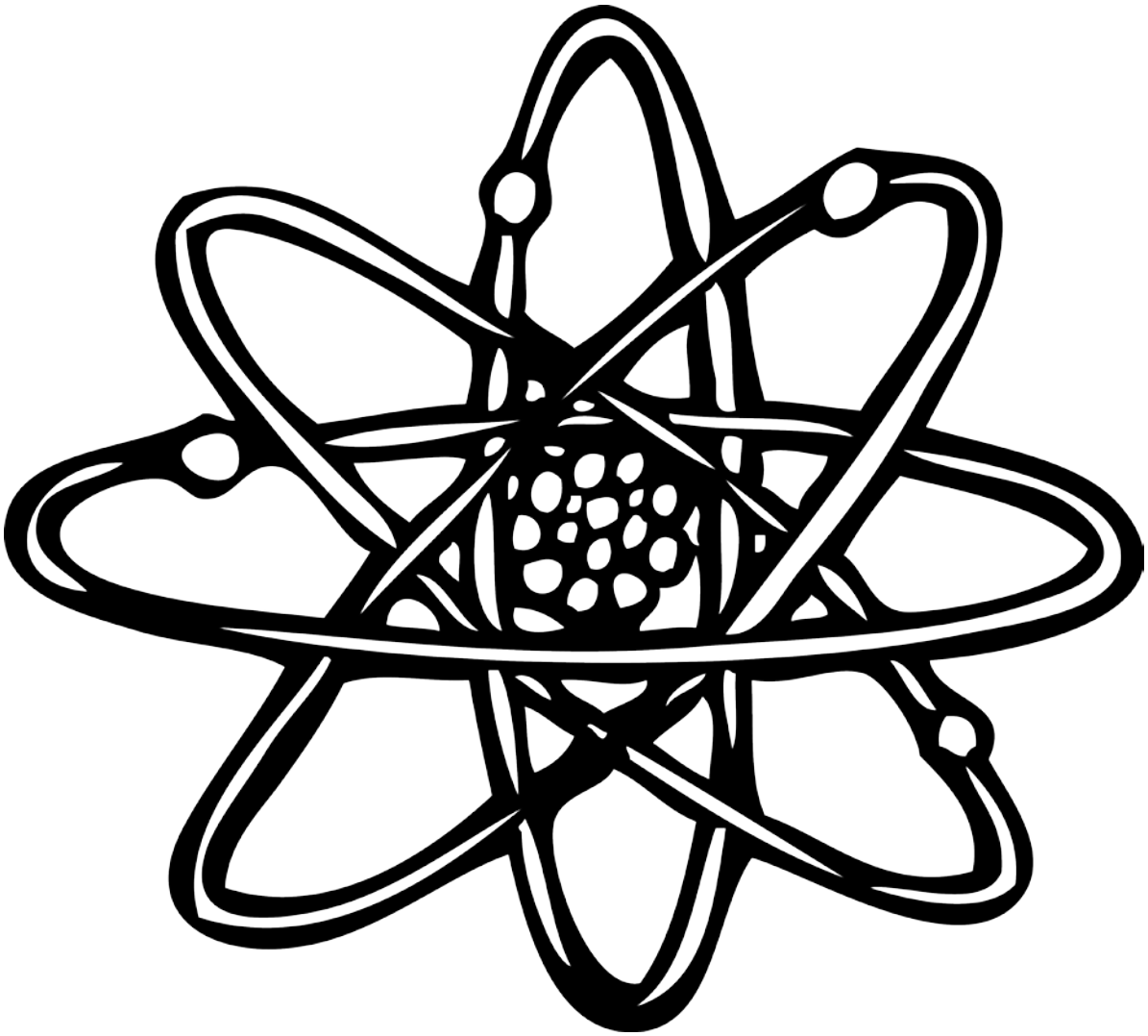
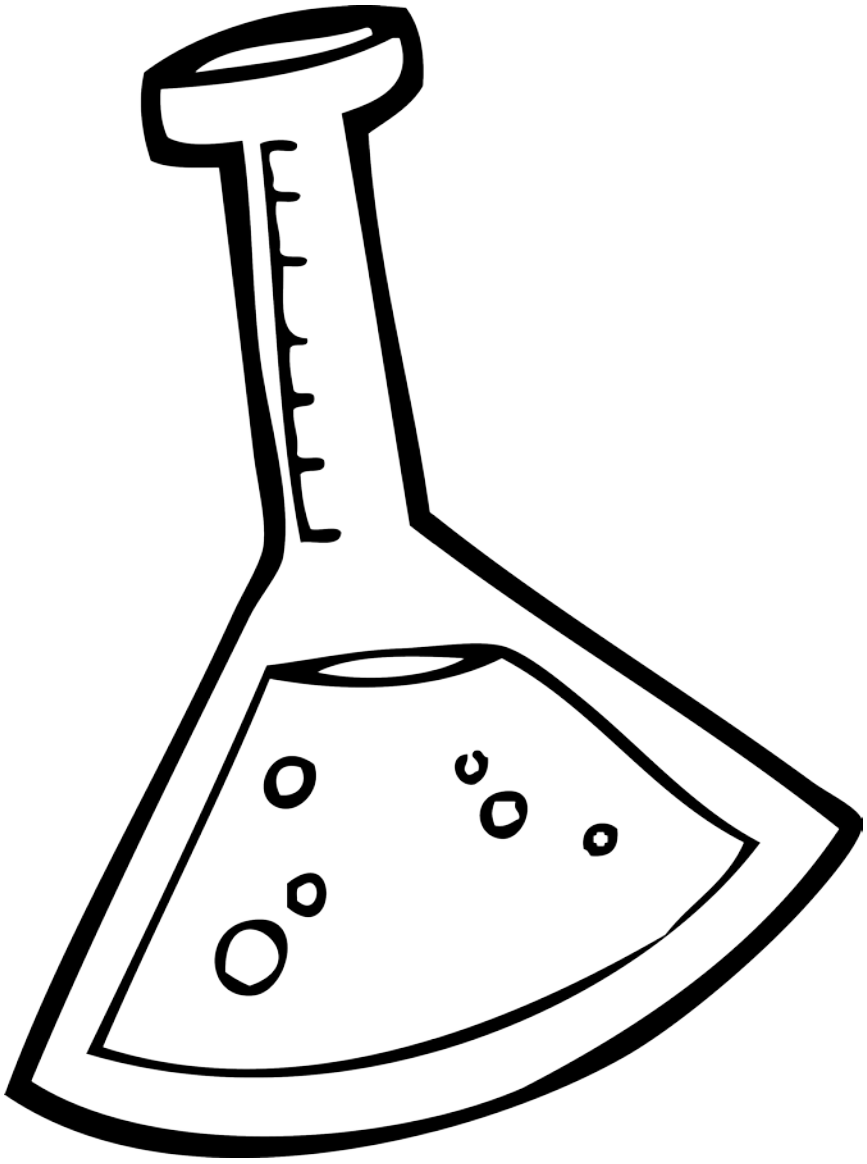
my science journal



Name _____

my science journal



Name _____

Name _____

The *disappearing* Egg Shell

Day	Drawing	Notes
1		
2		
3		

Name _____

Walking Water color mixing

◯	+	◯	=	◯
◯	+	◯	=	◯
◯	+	◯	=	◯
◯	+	◯	=	◯
◯	+	◯	=	◯

Name _____

Walking Water Color Mixing

_____ + _____ = _____

_____ + _____ = _____

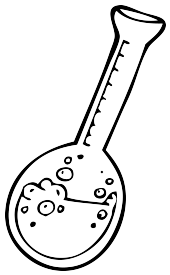
_____ + _____ = _____

_____ + _____ = _____

_____ + _____ = _____

Name _____

Lava in a Cup



Materials

Procedure

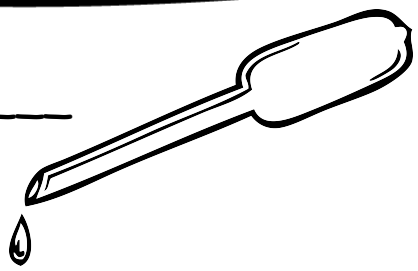
Hypothesis

Conclusion

Was your hypothesis correct? ◯ yes ◯ no

Name _____

Running pepper



Materials

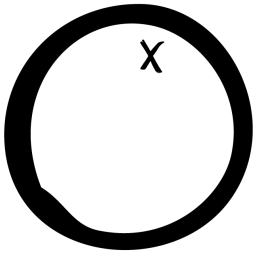
Procedure

Hypothesis

Conclusion

Was your hypothesis correct? ◯ yes ◯ no

Name _____



Sink and Float oranges

What do you think will happen when you drop the two oranges in water?

Orange	Drawing	Notes
with peel		
without peel		

Name _____

Will it melt?

object	yes	no

Name _____

Mint fireworks

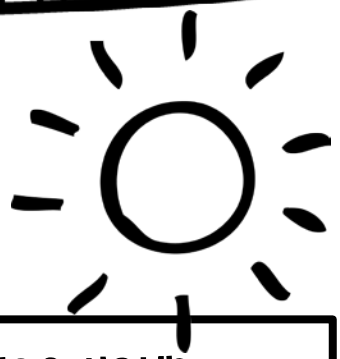
The mint looks like this at the start of the experiment:	I predict the mint will look like this after the experiment:	The mint actually looked like this after the experiment:

Conclusion- What happened to the mint?

Was your prediction correct? ◯ yes ◯ no

Name _____

Sunscreen *science*



What do you think will happen when you place your paper in the sun?

	has sunscreen	no sunscreen
prediction		
results		

Was your prediction correct? ◯ yes ◯ no

Name _____

Is *it* magnetic?

Predict whether each object is magnetic by marking the correct column with an X. Then record the results by marking the correct spot with an O. Were you correct?

object	magnetic	not magnetic

Name _____

Phases of the Moon

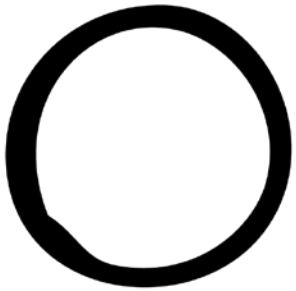
Date Started Recording _____

Day 1	Day 2	Day 3	Day 4	Day 5
Day 6	Day 7	Day 8	Day 9	Day 10

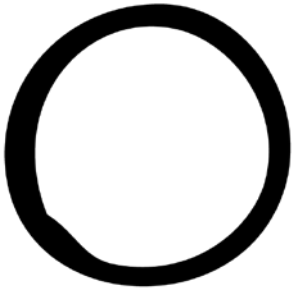
Day 11 Day 12 Day 13 Day 14 Day 15

Day 16 Day 17 Day 18 Day 19 Day 20

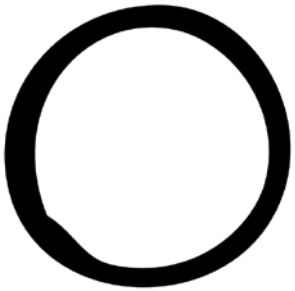
Day 21 Day 22 Day 23 Day 24 Day 25



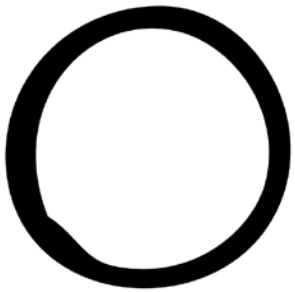
Day 26



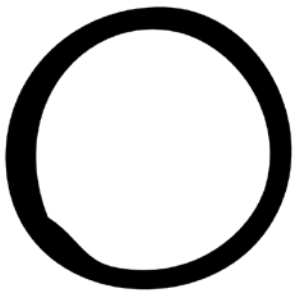
Day 27



Day 28



Day 29



Day 30

Conclusion- What happened to the moon this month? Why?

Name _____

Tornado in a Jar

Materials

Procedure

Hypothesis

Conclusion

Was your hypothesis correct? ◯ yes ◯ no

Name _____

Volcano *in a* Bottle

Materials

Procedure

Hypothesis

Conclusion

Was your hypothesis correct? ◯ yes ◯ no

Name _____

Fireworks in a Jar

Materials

Procedure

Hypothesis

Conclusion

Was your hypothesis correct? ◯ yes ◯ no

Name _____

Flying *tea* Bags

Hypothesis

Start

Middle

End

Conclusion

Name _____

Magic balloons

Materials

Procedure

Hypothesis

Conclusion

Was your hypothesis correct? ◯ yes ◯ no

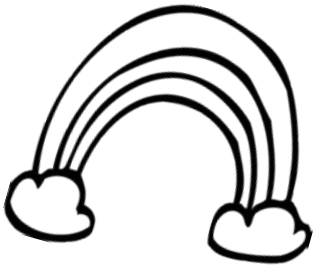
Name _____

States of Matter Balloons

Balloon	Heavy?	Hard?	Cold?
Gas	yes no	yes no	yes no
Liquid	yes no	yes no	yes no
Solid	yes no	yes no	yes no

Name _____

Magic rainbow Milk



Materials

Procedure

Hypothesis

Conclusion

Was your hypothesis correct? ◯ yes ◯ no

Name _____

Candy chromatography

Materials

Procedure

Hypothesis

Conclusion

Was your hypothesis correct? ◯ yes ◯ no

Name _____

Water Cycle *in a* Bag

Hypothesis

Start	Check in #1	Check in #2
Day _____	Day _____	Day _____
Time ____:____	Time____:____	Time ____:____

Conclusion

Name _____

Crystal names

Hypothesis

Start	Check in #1	Check in #2
Day _____	Day _____	Day _____
Time ____:____	Time____:____	Time ____:____

Conclusion

Name _____

Dancing raisins

Hypothesis

Start

Middle

End

Conclusion

Name _____

Disappearing *letters*

Hypothesis

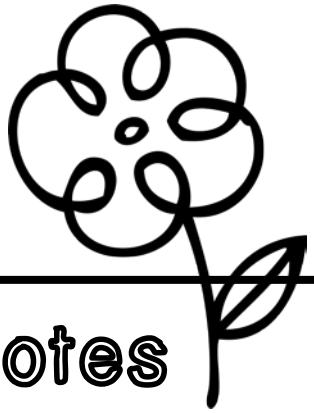
Start

End

Conclusion

Name _____

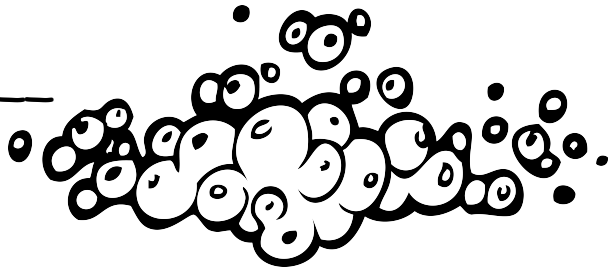
Coloring flowers



Day	Drawing	Notes
1		
2		
3		

Name _____

Fluffy soap



Materials

Procedure

Hypothesis

Conclusion

Was your hypothesis correct? ◯ yes ◯ no

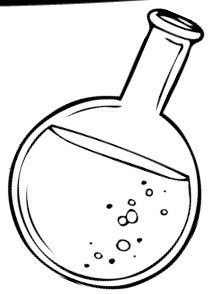
Name _____

Shining *pennies*

mixture	notes
ketchup and baking soda	
vinegar and salt	
pencil eraser	
lemon and salt	

Name _____

Flubber



Materials

Procedure

Hypothesis

Conclusion

Was your hypothesis correct? ◯ yes ◯ no

Name _____

Fishing for Ice

Materials

Procedure

Hypothesis

Conclusion

Was your hypothesis correct? ◯ yes ◯ no

Name _____

Will it sink or float?

object	sink ↓	float 

Name _____

Turning Grapes into Raisins

Day	Drawing	Notes
1		
14		

Name _____

Sprout *house* Observations

Day	Drawing	Notes
1		
14		

My Little Sprout House

Name _____

CUT OUT

My Little Sprout House

Name _____

CUT OUT

My Little Sprout House

Name _____

CUT OUT

My Little Sprout House

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