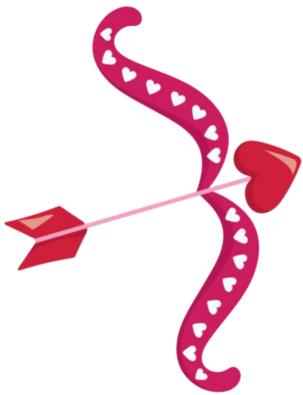
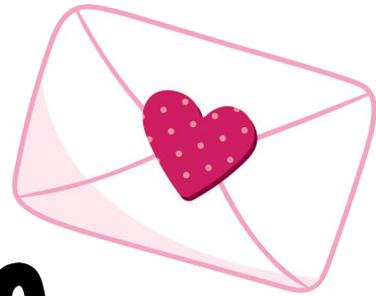


Valentine's Day STEM Challenges

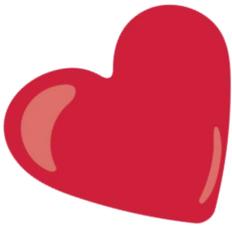
ACTIVITY



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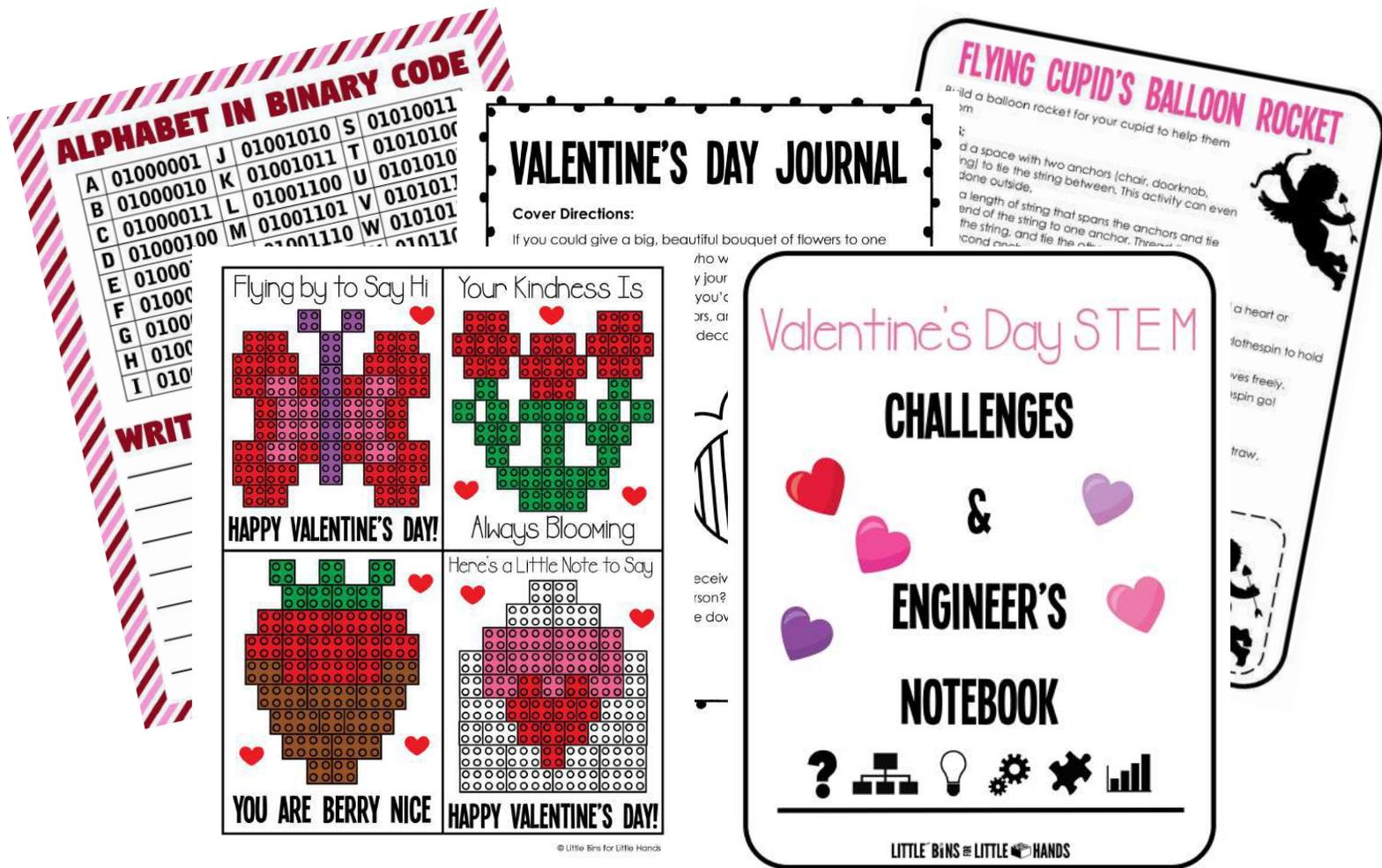
ENGINEER'S



NOTEBOOK



VALENTINE'S STEM PACK



INTRODUCTION:

Welcome to your Valentine's Day Theme STEM Pack filled with great science activities and STEM projects every junior scientist or engineer should try! I hope it sparks creativity and curiosity within your young scientists, inventors, and engineers.

In this pack, find a fun selection of activities, challenges, experiments, and even printable Valentine cards. I have added supplies, setup instructions, and simple science information for each activity. The pack also includes STEM projects and extras to share with your kids. Our packs now include simple writing activities!

Feel free to use this pack with one junior scientist or a whole group of junior scientists. You may copy activities as many times as you like for your class, but please send your friends to grab their own pack instead of sharing files.

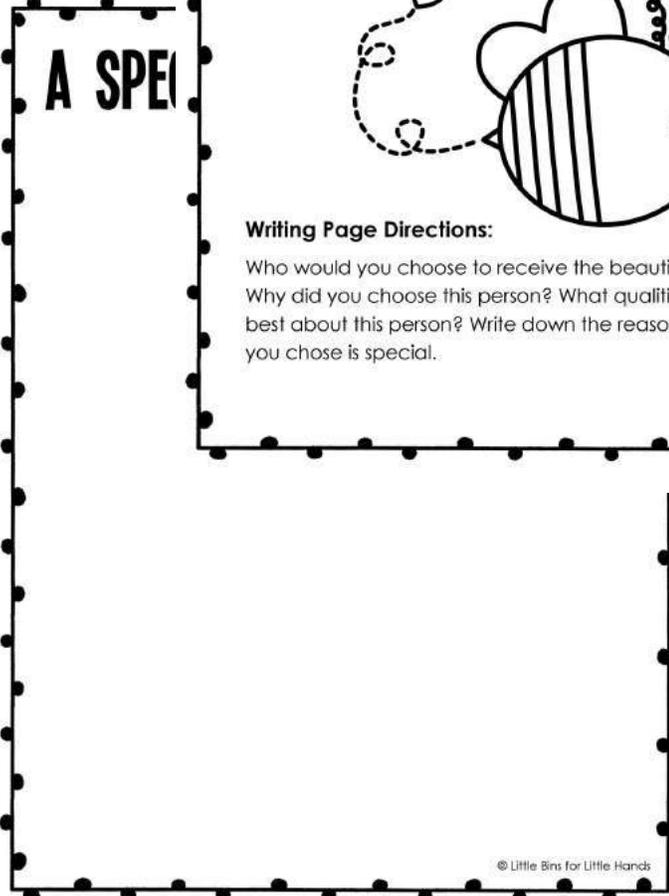
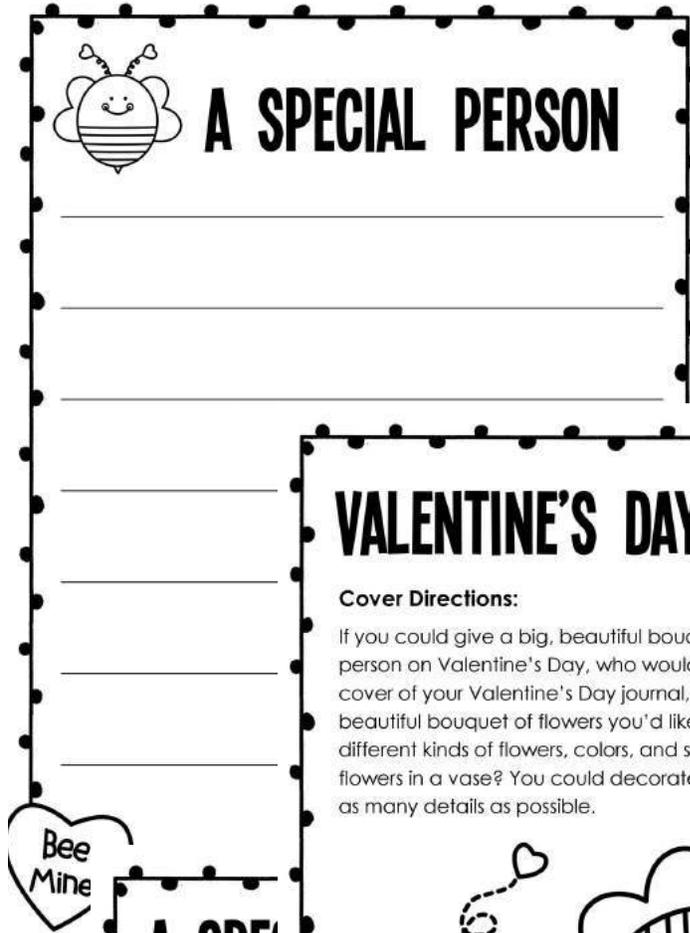
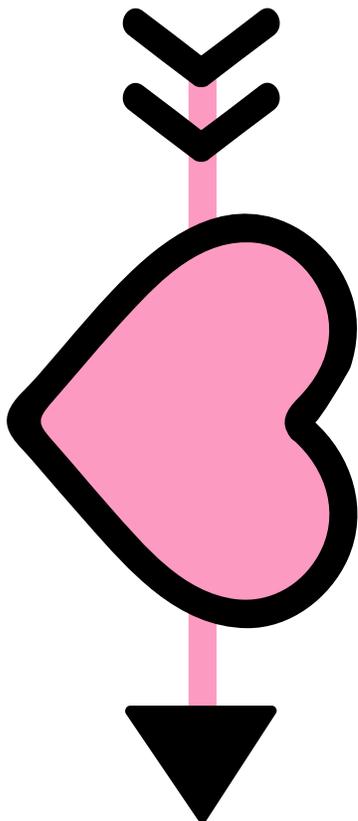
~ Thank you!

WRITING ACTIVITY

Our NEW cover page includes the opportunity to draw and write!

What's Included:

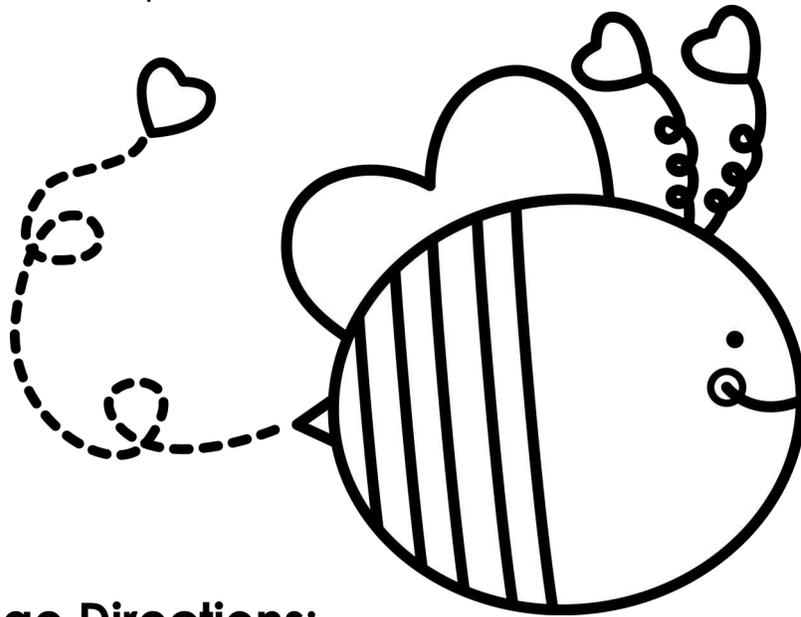
- Valentine's Day theme cover page with the space to draw or plan
- Writing prompt for a Valentine's Day project



VALENTINE'S DAY JOURNAL

Cover Directions:

If you could give a big, beautiful bouquet of flowers to one person on Valentine's Day, who would you choose? On the cover of your Valentine's Day journal, draw the big, beautiful bouquet of flowers you'd like to give. Think about different kinds of flowers, colors, and stems. Will you draw the flowers in a vase? You could decorate the vase as well. Add as many details as possible.



Writing Page Directions:

Who would you choose to receive the beautiful bouquet? Why did you choose this person? What qualities do you like best about this person? Write down the reasons the person you chose is special.

A SPECIAL FLOWER BOUQUET

VALENTINE'S DAY SCIENCE & STEM PROJECTS

Introduction

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Over at LittleBinsforLittleHands.com we have been bringing the magic of these special days to our simple science experiments for 5+ years.

Because I know kids love the novelty of the changing holidays. I have created and re-created many kid-favorite and classic science activities with special or unique themes to fit the occasion.

Join us as we celebrate the changing holidays with a bit of science and STEM. In these pages, you will find multi-sensory, hands-on learning experiences you can try over and over again each season.

Easy to set up, inexpensive, and **PERFECT for fun and educational science.**

Valentine's Guide

What is the best way to use these Valentine's science activities?

Just pick an activity and go for it. Make a science supplies list and check it twice. Grab the items on your grocery shopping trip. You'll probably have plenty of supplies on-hand already.

Many of these activities are playful. Some activities can take as little as 5-10 minutes or as long as an hour if your kids are still having fun observing, exploring and experimenting.

Also, make sure you check out the printable Valentine STEM Pack included. You will find lots of extras and fun ideas for the kids to try as well as science journaling pages.

Don't forget to visit the dollar store and craft stores around the holidays. You can find many fun and inexpensive items that can enhance your Valentine themes and be saved from year to year.

You can also fill a bin with recycled and up-cycled items for future projects. Then, you always have a stock of neat materials available for use.

Safety Guide

While all the ingredients in this Valentine's Day Science and STEM guide are easy to find at your local stores. I always recommend **adult supervision and assistance** at all times depending on the abilities and needs of each child.

- Be prepared to get a little messy.
- Stock your pantry with all the ingredients you need.
- Read through the instructions or recipe thoroughly before starting the process.
- Do NOT eat or drink any of these activities.
- Wash hands thoroughly after all activities.
- Wash all surfaces, utensils, and bowls thoroughly after activities.
- Protective eyewear is always recommended and perfect for junior scientists.

FUN SCIENCE & STEM!

AMAZING Sensory rich experiences!

EASY to Find Supplies!

Simple to set-up science ideas and fun STEM projects!

SIMPLE SCIENCE

- Erupting Hearts
- Cupid's Rocket
- Dancing Hearts
- Cupid's Magic Milk
- Inflating Hearts
- Exploding Hearts
- Valen-slimes
- Secret Love Notes
- and more!

ALWAYS BE SAFE!

Make sure you have an appropriate workspace and the correct supplies or ingredients.

Always ask for adult help before trying any science activity.



SCIENCE JOURNAL PAGES

Explore these fun theme science activities! Use the enclosed journal pages and best science practices pack to round out your science this season.

MY EXPERIMENT:

Materials I Used



MY EXPERIMENT:

What I did



MY EXPERIMENT:

Materials I Used



What I think will happen

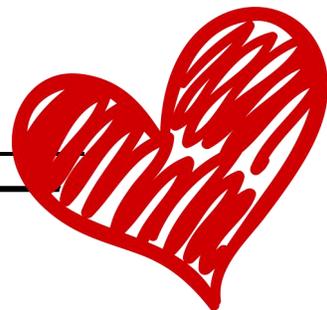
MY EXPERIMENT:

What happened:

What I think will happen:



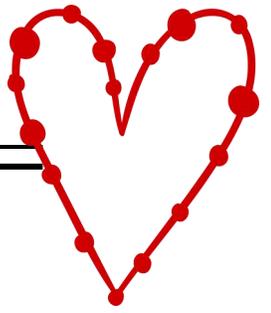
MY EXPERIMENT:



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MY EXPERIMENT:



What I did:

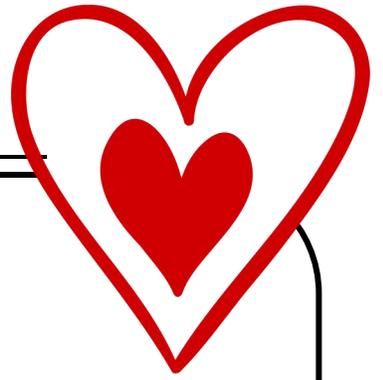
What I saw:

MY EXPERIMENT:



Draw it:

MY EXPERIMENT:



What happened:

SCIENCE ACTIVITIES

Explore these fun Valentine's Day theme science activities! Use the enclosed journal pages and best science practices pack to round out your science this season.

These science activity cards are designed to be printed double sided on 8.5 x 11 paper.

Cupid's Magic Milk

YOU WILL NEED:

- Whole milk
- Food coloring
- Dish soap
- Cotton swabs
- Valentine's Day cookie cutters

DIRECTIONS:

1. Start by pouring the milk into a shallow container or dinner plate to about a 1/4 inch in depth. Place a cookie cutter in the middle.
2. Next, add food coloring drop the surface of the milk, but don't stir or mix them into the milk!
3. Take a cotton swab and d



These science activity cards are designed to be printed double sided on 8.5 x 11 paper.

Valentine's Skittles

YOU WILL NEED:

- Pink, purple, and red Skittles® candy
- Water
- Dinner plate or pie plate
- Heart-shaped cookie cutters

DIRECTIONS:

1. Arrange the Skittles® in sequence around the edge of the plate alternating colors.



These science activity cards are designed to be printed double sided on 8.5 x 11 paper.

Cupid's Lava Lamp

YOU WILL NEED:

- Water
- Cooking oil
- Food coloring
- Heart sequins
- Glitter
- Fizzy tablets (Alka-Seltzer® style)
- Jar or tall glass

DIRECTIONS:

1. Start by adding about a 1/3 of a cup water to a jar and fill the rest of the jar with cooking oil.
2. Watch what happens. Do the oil and water mix? Which liquid is heavier or denser?
3. Next, add several squeezes of food coloring, but don't stir. Also, add glitter and sequins
4. Drop in a fizzy tablet and watch the activity!



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Coloring Hearts





Cupid's Magic Milk

YOU WILL NEED:

- Whole milk
- Food coloring
- Dish soap
- Cotton swabs
- Valentine's Day cookie cutters



DIRECTIONS:

1. Start by pouring the milk into a shallow container or dinner plate to about a 1/4 inch in depth. Place a cookie cutter in the middle.
2. Next, add food coloring drops to the surface of the milk, but don't stir or mix them into the milk!
3. Take a cotton swab and dip it into the dish soap. Lightly touch the surface of the milk. Watch what happens!

What's Happening?

THE SCIENCE OF CUPID'S MAGIC MILK:

Milk is made up of minerals, proteins, and fats. Proteins and fats are susceptible to changes. When the dish soap is added to the milk, those molecules run around and try to attach to the fat molecules in the milk. You wouldn't see this without the food coloring! The food coloring looks like fireworks because it's getting bumped around.

Repeat the process with another cotton swab to see if there are any milk fat molecules the soap hasn't found.

THINK ABOUT IT:

What would happen if you used milk with lower fat amounts?

Experiment with different milk fat percentages.



Cupid's Lava Lamp

YOU WILL NEED:

- Water
- Cooking oil
- Food coloring
- Heart sequins
- Glitter
- Fizzy tablets (Alka-Seltzer® style)
- Jar or tall glass



DIRECTIONS:

1. Start by adding about a 1/3 of a cup of water to a jar and fill the rest of the way with cooking oil.
2. Watch what happens. Do the oil and water mix? Which liquid is heavier or denser?
3. Next, add several squeezes of food coloring, but don't stir. Also, add glitter and sequins
4. Drop in a fizzy tablet and watch the activity!

What's Happening?

THE SCIENCE BEHIND CUPID'S LAVA LAMP:

Why don't all liquids simply mix together? Did you notice the oil and water separate? That's because water is heavier than oil. Liquids are made up of different numbers of atoms and molecules. In some liquids, these atoms and molecules are packed together more tightly resulting in a denser or heavier liquid.

Now for the chemical reaction! When the tablet and water mix, they create a gas called carbon dioxide which is all the bubbling you see. These bubbles carry the color water to the surface of the oil where they pop. Then the color water falls back down due to gravity.

THINK ABOUT IT:

Think about making a second Cupid's lava lamp with blue food coloring.

What do you think would happen if you pour the red batch into the blue batch.

Will the red and blue color mix together to make purple? Try it! See what happens.



Erupting Hearts

YOU WILL NEED:

- Plastic heart containers
- Cookie cutters
- Baking soda
- White vinegar
- Food coloring
- Glitter
- Eyedropper, turkey baster, or squeeze bottle



DIRECTIONS:

1. Set up a tray or baking dish with heart shaped cookie cutters and small containers.
2. Next, add a tablespoon or so of baking soda to each heart along with glitter and food coloring as desired.
3. Then, use an eye dropper or baster to squeeze vinegar into each one and watch the results.
4. You can also color the vinegar. Additionally, you can put a drop of dish soap in a squeeze bottle with vinegar.

What's Happening?

THE SCIENCE BEHIND ERUPTING HEARTS:

When the acid in the vinegar and the base in the baking soda mix together they form a gas called carbon dioxide. This gas releases the bubbles that you can see and hear.

The mixture has nowhere to go but up and out making the exciting eruption.

THINK ABOUT IT:

Besides vinegar, what other acidic based liquid could you use?

Brainstorm different liquids that are acidic and then give them a try.



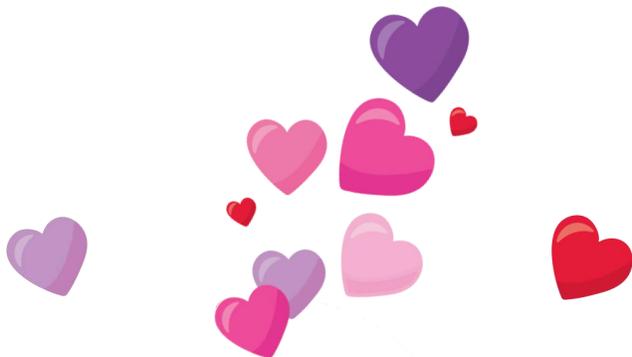
Valentine's Skittles

YOU WILL NEED:

- Pink, purple, and red Skittles® candy
- Water
- Dinner plate or pie plate
- Heart-shaped cookie cutters

DIRECTIONS:

1. Arrange the Skittles® in a pattern around the plate alternating colors in any number sequence - singles, doubles, triples, etc.
2. Put a heart-shaped cookie cutter in the center of the plate.
3. Carefully pour water into the center of the plate until it just covers the candy. Be careful not to shake or move the plate once you add the water or it will mess up the effect.
4. Wait and watch the colors stretch out.



What's Happening?

THE SCIENCE BEHIND THE VALENTINE'S SKITTLES®:

Skittles® science demonstrates a process called stratification. The simple definition is that stratification is the arrangement of something into groups. Specifically, this is water stratification, and water has different masses with different properties that create the barriers you see within the different colors of candies.

The coating of the candy is made up of mostly sugar and food coloring. The water dissolves the sugar and the coloring diffuses into the water. Each color creates a water solution with slightly different properties.

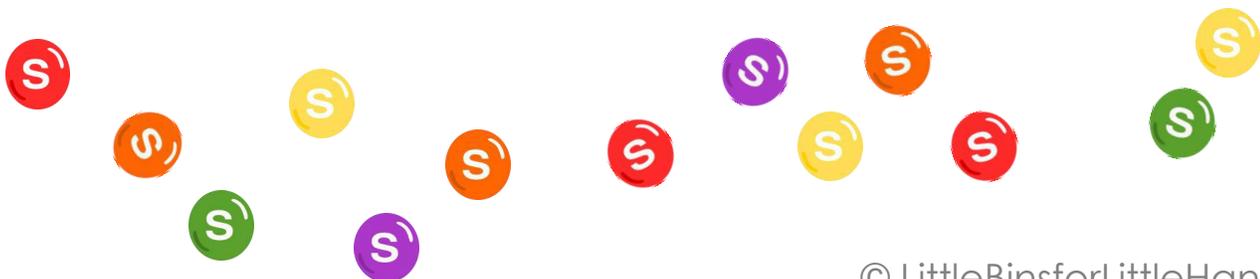
Note: over time the colors will eventually mix.

THINK ABOUT IT:

What if you used other liquids? Do you think warm water would work better or worse?

Alternate experiment:

Try using clear soda instead of water.



Cupid's Love Potion

YOU WILL NEED:

- Empty water bottles or flasks
- Yeast packet (1 T. per container)
- Very warm water (2-3 T. per container)
- 1/2 cup hydrogen peroxide (per container)
- Dish soap
- Red food coloring

DIRECTIONS:

1. Place your bottles on some kind of tray or shallow container to catch the overflow.
2. Use a funnel to pour 1/2 a cup of hydrogen peroxide into each of the bottles.
3. Next, add 3 or 4 drops of dish soap and 3 or 4 (or more) drops of food coloring to each bottle.
4. In a separate container mix together the yeast and warm water until yeast is mostly dissolved.
5. Quickly and carefully pour the yeast mixture into each bottle.... Watch it go!



What's Happening?

THE SCIENCE BEHIND CUPID'S LOVE POTION:

Feel the container, can you feel the warmth that has been created? That is the energy being released.

The reaction between the yeast and the hydrogen peroxide is called exothermic reaction. The yeast is helping to remove the oxygen from the peroxide and the tiny bubbles created to make that awesome foam along with the water and dish soap.

Add a few more drops of food coloring as it swells for more color.

THINK ABOUT IT:

Think about what you've learned.

How can you change one of the materials to affect the results? Brainstorm different ideas and what might happen.

When you have time, repeat the experiment with your change.



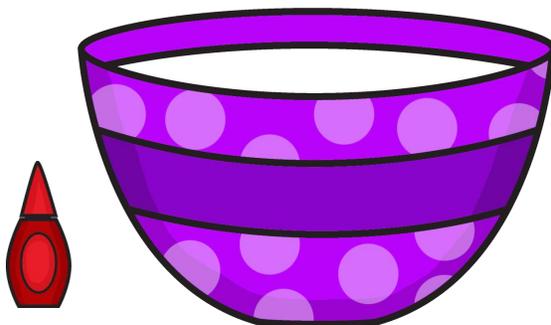
Heartfelt Oobleck

YOU WILL NEED:

- Cornstarch
- Water
- Conversation candy hearts
- Food coloring (optional)

DIRECTIONS:

1. Start by mixing a 2:1 ratio of cornstarch and water in a baking dish or shallow bowl. You can add food coloring to the water.
2. The mixture should be neither too dry nor too soupy. You can adjust the texture by adding more water or more cornstarch.
3. Decorate with candy hearts and observe how they begin to also dissolve in the oobleck.



What's Happening?

THE SCIENCE BEHIND THE HEARTFELT OOBLECK:

Is it a solid or a liquid? The answer is it's both, and it's neither. Oobleck is a fun substance made from a mixture of cornstarch and water.

Oobleck is called a non-Newtonian fluid. This means it is neither a liquid nor a solid. You can pick up a clump of the substance like a solid and then watch it ooze back into the bowl like a liquid. Touch the surface lightly and it will feel firm and solid. If you apply more pressure, your fingers will sink into it like a liquid.

THINK ABOUT IT:

Can the oobleck substance ever be separated? If so, how?

Document your theory.

Then, plan how you can test the theory to separate the oobleck. Record your results.



Dissolving Candy Hearts

YOU WILL NEED:

- Conversation candy hearts
- Clear cups (or test tubes)
- Variety of liquids such as water, oil, vinegar, milk, rubbing alcohol, etc...
- Stirrers

DIRECTIONS:

1. Set out as many cups or test tubes as the number of liquids you will use for the experiment. Make sure to label the cups to remember which liquid is which.
2. Add a conversation heart to each cup of liquid. Give a stir if desired.
3. Set a timer for 1, 5, and 10 minutes. Check the progress of the dissolving candy hearts along the way! Stir each one at the end of each time period.
4. Be patient and observe the changes in the candy.



What's Happening?

THE SCIENCE BEHIND THE DISSOLVING CANDY HEARTS:

For a liquid to dissolve a solid, the molecules in both the liquid and the solid must be attracted to each other.

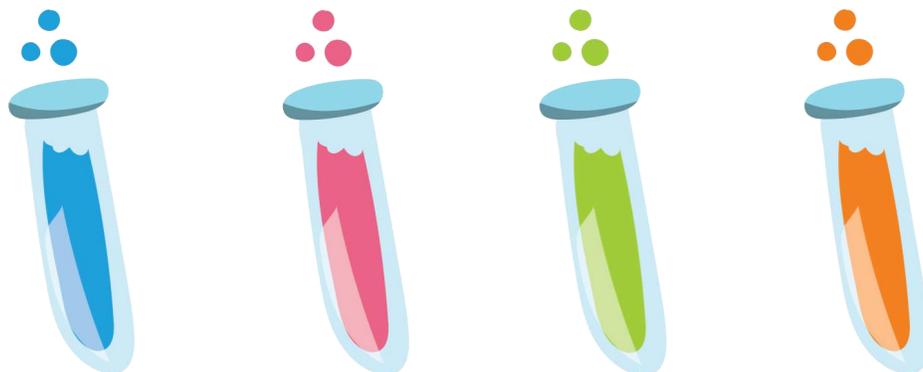
The molecules in the sugar (candy heart) and the water are attracted to each other. The candy hearts are called the solute and the liquid is called the solvent.

Experiment with different types of liquids such as vinegar, oil, soda water, or milk and see if the changes are similar or different.

THINK ABOUT IT:

Experiment with different types of liquids such as vinegar, oil, soda, or milk and see if the changes are similar or different.

As you experiment document your results.



Crystal Hearts

YOU WILL NEED:

- Pipe cleaners
- Water
- Borax Laundry Booster Powder
- Glass Jars
- Ribbon
- Craft Sticks
- Scissors

DIRECTIONS:

1. Start by making your pipe cleaner heart. Twist one or two pipe cleaners together and bend into a heart shape.
2. Cut a length of ribbon and tie it to the heart so that it can hang freely in the middle of the jar. Use a popsicle stick to hang the heart. It should not touch the bottom or the sides.
3. Make a borax solution. Mix approximately 1 cup of boiling water with 3 tablespoons of borax powder. Make enough to fill however many jars you have. The heart should be completely immersed.



What's Happening?

THE SCIENCE BEHIND THE CRYSTAL HEARTS:

Borax is a natural chemical compound, sodium tetraborate. The mixture of borax and water mixture is called a saturated solution.

While the liquid is hot the borax is suspended throughout the solution. More borax can be dissolved in hot liquid than in cold liquid. This is because in hot liquid the space between molecules is larger, which means there is more room between molecules for the borax particles to dissolve.

As the solution cools, the particles settle out of the saturated mixture. The settling particles form crystals and adhere to the pipe cleaner. These crystals can be seen, felt, and touched.

THINK ABOUT IT:

What would happen if you used cold water for your mixture? What about warm water? Could you add food coloring to the water? If so, would that change the color of the crystals?

Experiment making crystals with other compounds.

Suggested compounds:
salt, sugar, Epsom salt, alum



Salt Crystal Hearts

YOU WILL NEED:

- Construction paper
- Water
- Salt
- Scissors

DIRECTIONS:

1. Cut out Valentine theme shapes from construction paper. You can even trace cookie cutters.
2. Make a salt solution. Start with hot water. Let the tap water run really hot or boil the water if desired.
3. Tablespoon by tablespoon add salt until the water could not hold anymore. The hotter the water, the more salt you will be able to add. The goal is to add as much salt as the water will hold to make a saturated solution.
4. Place your shapes on a tray and pour just enough of the saltwater to cover the paper. You may even see some salt leftover in your container, that's ok!
5. Set your tray aside for a few days to wait and watch the crystals form. Near a sunny window is a great idea. Eventually, the water will evaporate. Be careful not to disturb the tray! Let the paper fully dry on paper towels. These crystals will be more delicate than the borax crystals.



What's Happening?

THE SCIENCE BEHIND THE CRYSTAL HEARTS:

The chemical name for table salt is sodium chloride. When mixed with water you form a solution. The more salt you have the more saturated the solution becomes. Eventually, if you added enough salt to the water it would stop dissolving.

When you place your heart in the sunlight the water molecules heat up and convert to a gas state. This process is called evaporation. As the gases rise the salt is left behind, this process of removing salt from water is called desalination.

As the salt solution cools and the water evaporates, the atoms (sodium and chlorine) are no longer separated by water molecules. They begin to bond together and then bond further forming the special cube-shaped crystal for salt.

Look closely at your crystals, what shape are they? This is because sodium and chlorine are reactive atoms. When combined the sodium atom gives up an electron, and the chlorine atom catches it. The ions formed within the sodium chloride are so tightly packed that the crystals look like a cube.

THINK ABOUT IT:

If you were to try the experiment again using rock salt would your results be different?

If so, how?



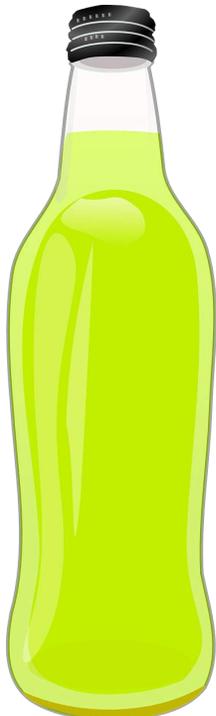
Dancing Hearts

YOU WILL NEED:

- Tiny candies (like Nerds®)
- Club soda
- Clear glass

DIRECTIONS:

1. Fill your glass about 2/3 of the way with club soda.
2. Drop in a few candies, watch, and wait.
3. Every so often, add more candy and a bit of club soda. What do you see happening?



What's Happening?

THE SCIENCE BEHIND THE DANCING HEARTS:

Can you change the buoyancy of something?

Yes, you can! You observed that the candies sunk to the bottom of the glass because they are heavier than the water.

However, the club soda has gas in it which you can see with the bubbles. The bubbles attach themselves to the surface of the candy and lift it up. When the candy reaches the surface, the bubbles pop and the candy falls back down. You do have to be a little patient at times to observe this happening.

THINK ABOUT IT:

What other ways would you be able to affect buoyancy?

What solutions could you make that would cause something heavy to float?

Write down your ideas.

Of course, it's always fun to test your theories. Be sure to document any experiment you attempt.



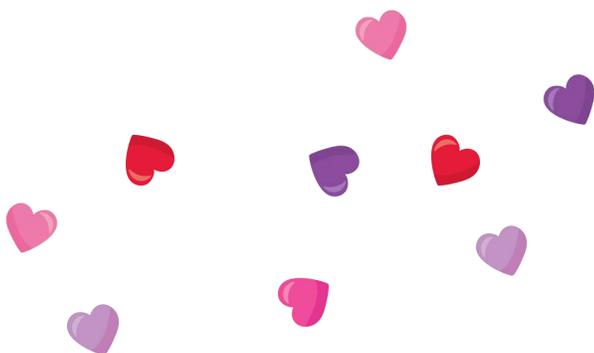
Jumping Hearts

YOU WILL NEED:

- Balloon
- Construction paper (or colored copy paper or tissue paper)
- Scissors, or heart shaped paper punch

DIRECTIONS:

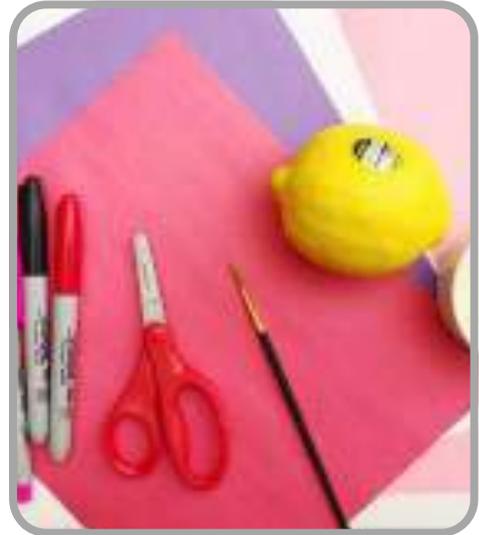
1. Cut out small hearts from your construction paper.
2. Blow up a balloon but not all the way. All you need is for it to be big enough to hold it comfortably and be able to see what's happening.
3. First, you need to charge your balloon. A good way to do this is to rub it against your hair. Try to go in one direction.
4. Next, place the balloon near the hearts but don't put it on the hearts. You will see the hearts jumping or floating up to the balloon. The hearts will even tag hearts to follow along.



Secret Love Notes

YOU WILL NEED:

- Construction paper
- Lemons
- Paint brush, or cotton swabs
- Scissors
- Markers
- Glue
- Heat source such as a hairdryer



DIRECTIONS:

* Adult Supervision Required*

1. Make cards! Cut out hearts from your construction paper.
2. Cut the lemon and squeeze the juice out into a dish. You can also dilute with some water.
3. Use a skinny paintbrush or cotton swabs to draw/paint a message or picture onto your heart. The larger/thicker the letters the better.
4. Let the cards dry completely.



*Adult Supervision:

You will need to use a heat source to reveal the code such as a hairdryer. You can also use an iron or light bulb, but be careful to not keep the paper there too long as it could burn or catch on fire.*



What's Happening?

THE SCIENCE BEHIND SECRET LOVE NOTES:

Lemon juice is an organic substance that oxidizes and turns brown when heated. When you add the heat source to the dry card the message will be revealed as the carbon from the lemon juice is broken down and oxidizes.

Oxidization often causes things to become darker like your message.

THINK ABOUT IT:

What other substances might work in the same way? Think about what you know, or do some research to determine other substances that oxidize with heat.

Write out some things you would like to test.

Compare different substances to see which ones give the best results. Document your results.



What's Happening?

THE SCIENCE BEHIND THE JUMPING HEARTS:

Why are the hearts jumping up to the balloon all on their own? They are getting a boost from static electricity.

When you rub the balloon on your hair you give it a negative charge. The electrons from your hair flow onto the portion of the balloon that is touching your hair.

Matter is made up of atoms which have both negative (electrons) and positive (nucleus) parts. You transferred some of the negative atoms to the balloon.

The negatively charged balloon is then able to attract the positive charged parts of the paper hearts which cause them to jump to the balloon.

THINK ABOUT IT:

What would happen if you used a different kind of paper? or altered the paper in some way.

Would adding glitter to the paper make it react differently? If so, how?

Test your theory.



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ENGINEERING PACK

Try these themed, problem-based challenges, and get the kids thinking about the engineering design process.

What's Included:

- STEM Challenges
- STEM Journal Pages
- Engineering Design Process

KNOW IT, TEST IT, WRITE IT

Test It: Once you've made your Cupid's rocket, it's time to test it. Perform your test several times. Track the time and distance as the rocket travels with each flight.

Try your experiment multiple times.	Time	Distance
Trial #1		
Trial #2		
Trial #:		
Trial		
Tric		
T		

Questions for Reflection

Use these questions for reflection with your kids after they have completed the STEM challenge to encourage discussion of results and critical thinking.

1. What were some of the challenges you discovered along the way?
2. What worked well and what did not

My STEM Challenge:

ASK What's the problem?

Engineering Design Process



Engineering Design Process

- ASK** What is the problem?
What do I need to know?
How can I solve the problem?
- Imagine** What information will I need?
What are some solutions?
How can I solve the problem?
- Plan** What things do I need to use?
Draw a diagram and make a list of needed materials.

VALENTINE'S DAY STEM

Acrylic paint	Gummy B
Aluminum foil	Hammer
Baking soda	Hinges
Baggies	K'Nex
Bamboo sticks	Leave
Beads	LEGO
Bows	Lollipop
Buttons	M&M
Candy Hearts	Mc
Cloth	M
Clothes pins	N
Coffee filters	Nail
Cookie cutters	Needle & thread
Cotton balls	Nuts & bolts
Cotton swabs	Paint
Craft sticks (wide)	Paper
Dollies	Paper clips
Dried cereal	Paper cups
Dried pasta	Paper plates
Duct tape	Pencils
Feathers	Pipe cleaners
Felt	Plastic bowls
Flat marbles	Plastic spoons
Funnel	Plastic wrap
Gems	Pom-poms
Glitter	Popicle sticks
Glitter glue	Pretzel Sticks
Glow sticks	Raffia
Glue	Ribbon
Goat feet	Rubber Bands
Google eyes	
Gumdrops	

LITTLE BINS @ LITTLE HANDS

Valentine's Day STEM CHALLENGES & ENGINEER'S NOTEBOOK

? [Icons: computer, lightbulb, gears, puzzle, bar chart]

LITTLE BINS @ LITTLE HANDS

ROCKET

your plan and create hing. out!

changes can to make it better?

Supplies: could cut out (found in the printable pack), string, straw, and tape.

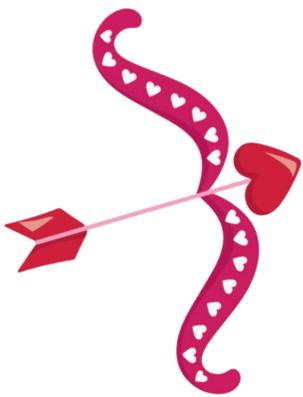
Use a clothespin to hold

Make sure the straw moves freely.

Send to the side of the balloon and let the clothespin gal

Valentine's Day STEM Challenges

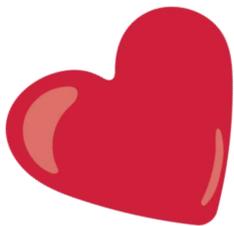
ACTIVITY



&



ENGINEER'S



NOTEBOOK



Valentine's Day STEM Challenges Supply List

Acrylic paint
Aluminum foil
Baking soda
Baggies
Bamboo sticks
Beads
Bows
Buttons
Candy Hearts
Cloth
Clothes pins
Coffee filters
Cookie cutters
Cotton balls
Cotton swabs
Craft sticks (wide)
Doilies
Dried cereal
Dried pasta
Duct tape
Feathers
Felt
Flat marbles
Funnel
Gems
Glitter
Glitter glue
Glow stars
Glow sticks
Glue
Golf tees



Google eyes
Gumdrops
Gummy Bears
Hammer
Hinges
K'nex®
Leaves
LEGO® bricks
Lollipop sticks
M&Ms®
Magnets
Marbles
Marshmallows
Measuring cups
Mint tins
Nails
Needle & thread
Nuts & bolts
Paint
Paper
Paper clips
Paper cups
Paper plates
Pencils
Pipe cleaners
Plastic bowls
Plastic spoons
Plastic wrap
Pom-poms
Popsicle sticks
Pretzel Sticks
Raffia



Ribbon
Rubber Bands
Scissors
Screwdriver
Skewers
Sequins
Shells
Shredded paper
Skewers
Soil
Spice jars
Sponges
Stapler
Strainer
Sticks
Straws
String
Styrofoam balls
Suckers
Sugar cubes
Tape
Tea lights
Toilet paper rolls
Toothpicks
Twine
Twist ties
Water beads
Washi® tape
Wire
Wooden planks
Yarn
Zip ties



CUPID'S ROCKET

Using toothpicks and candies, build a rocket ship starting with a base in the shape of a hexagon.

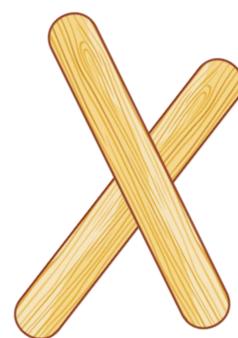
Supplies: Heart Shaped Gumdrops, Toothpicks



CUPID'S CATAPULT

Build a catapult for Cupid. Using items found on the STEM supply list build a catapult to launch hearts, pom-poms, and other goodies.

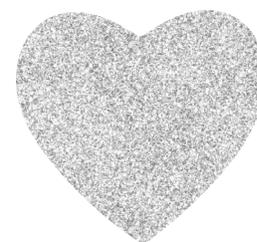
Supplies: Craft sticks, Rubber bands, Bottle cap, Glue, Candy hearts, Erasers, Pom poms



LOVE BOAT

Build a floating boat. Use the foil to fashion a heart shaped boat. Then see how many pennies you can place in the boat before it sinks.

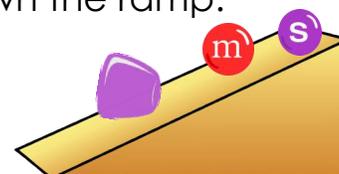
Supplies: Foil, Basin of water, Pennies, Toothpicks, Washi tape, Craft paper



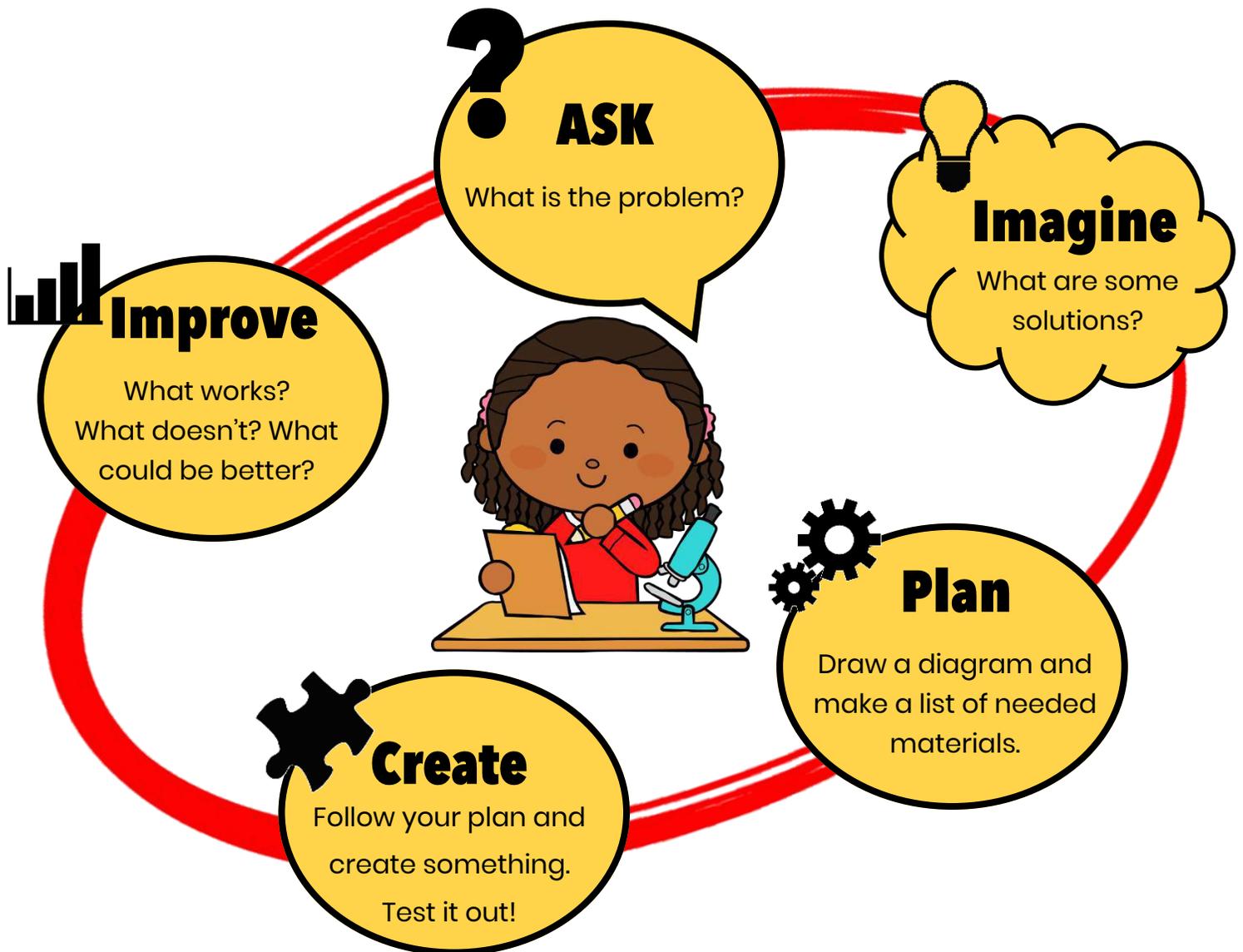
CANDY RAMP RACES

Build ramps using a variety of supplies, such as toothpicks, straws, tape, Washi tape, foil. Use a variety of candy types to roll down the ramp.

Supplies: Toothpicks, Straws, Tape, Foil, Washi[®] tape, Gumballs, Candy hearts, M&Ms[®], Skittles[®]



Engineering Design Process



Engineering Design Process



ASK

What is the problem?

What do I need to know?

How can I solve the problem?



Imagine

What information will I need?

What are some solutions?

How can I solve the problem?



Plan

What things do I need to use?

Draw a diagram and make a list of needed materials.



Create

Follow your plan and create something.

Test it out!



Improve

What changes can I make to make it better?

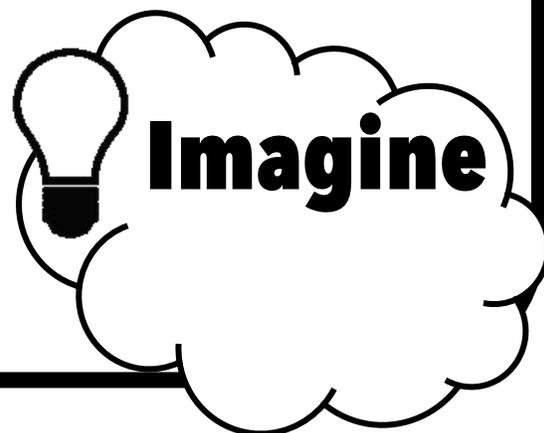
My STEM Challenge:



ASK

What's the problem?

BRAINSTORM AND RECORD possible solutions, as many as you can.



Imagine

My STEM Challenge:



Plan

Draw a diagram and make a list of needed materials.

My STEM Challenge:



Create

Look at the materials provided for use in creating your models.

My STEM Challenge:



Improve

Create a new drawing incorporating your ideas as well as the feedback you received on your prototype. Create an improved version of your original model.

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Valentine's Day STEM

CHALLENGES



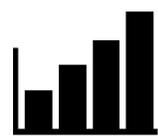
&



ENGINEER'S



NOTEBOOK



FLYING CUPID'S BALLOON ROCKET

Build a balloon rocket for your cupid to help them zoom



STEPS:

1. Find a space with two anchors (chair, doorknob, railing) to tie the string between. This activity can even be done outside.
2. Cut a length of string that spans the anchors and tie one end of the string to one anchor. Thread the straw onto the string, and tie the other end of the string to the second anchor.
3. Next, cut out the cupid pattern or design your own. Add a heart or bullseye to the other end of the anchor!
4. Blow up the balloon filling it with potential energy! Use a clothespin to hold the balloon closed until you are ready to let it go.
5. Tape the balloon below the straw. Make sure the straw moves freely.
6. Tape the cupid to the side of the balloon and let the clothespin go!

Possible Supplies:

balloons, cupid cut out (found in the printable pack), string, straw, scissors and tape



KNOW IT, TEST IT, WRITE IT

How does Cupid get his go?

It's all about Newton's Third Law of Motion.

"For every action, there is an equal and opposite reaction."



When you blow up a balloon it fills with gas.

When you release the balloon the air/gas escapes creating a forward pushing motion called thrust.

When the gas is forced out of the balloon, it is pushed back against the air outside the balloon. This pushes the balloon forward!

Variations on the Experiment:

You can test the experiment with different shaped balloons. Or, you could change the angle, tightness, or even type of string. What happens if your string is droopy or if the string is as thick as the diameter of the straw opening.

How do you think these factors will change the movement of the balloon?

KNOW IT, TEST IT, WRITE IT

Test it: Once you've made your Cupid's rocket, it's time to test it. Perform your test several times. Track the time and distance as the rocket travels with each flight.



Try your experiment multiple times.	Time	Distance
Trial #1		
Trial #2		
Trial #3		
Trial #4		
Trial #5		
Trial #6		

VALENTINE'S DAY STEM CHALLENGES SUPPLY LIST

Acrylic paint
Aluminum foil
Baking soda
Baggies
Bamboo sticks
Beads
Bows
Buttons
Candy Hearts
Cloth
Clothes pins
Coffee filters
Cookie cutters
Cotton balls
Cotton swabs
Craft sticks (wide)
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Glow stars
Glow sticks
Glue
Golf tees
Google eyes
Gumdrops



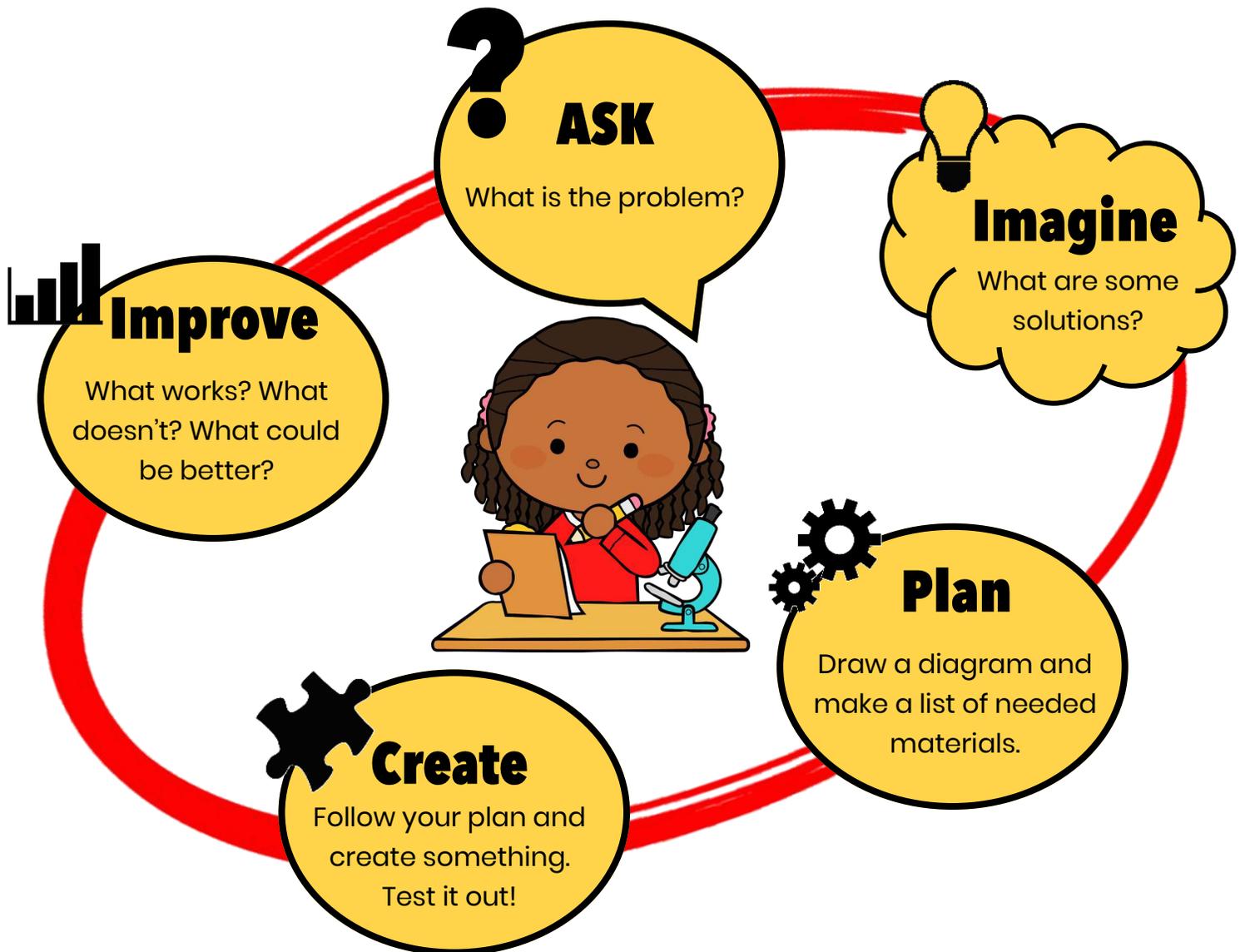
Gummy Bears
Hammer
Hinges
K'nex®
Leaves
LEGO® bricks
Lollipop sticks
M&Ms®
Magnets
Marbles
Marshmallows
Measuring cups
Mint tins
Nails
Needle & thread
Nuts & bolts
Paint
Paper
Paper clips
Paper cups
Paper plates
Pencils
Pipe cleaners
Plastic bowls
Plastic spoons
Plastic wrap
Pom-poms
Popsicle sticks
Pretzel Sticks
Raffia
Ribbon
Rubber Bands



Scissors
Screwdriver
Skewers
Sequins
Shells
Shredded paper
Skewers
Soil
Spice jars
Sponges
Stapler
Strainer
Sticks
Straws
String
Styrofoam balls
Suckers
Sugar cubes
Tape
Tape measure
Tea lights
Timer
Toilet paper rolls
Toothpicks
Twine
Twist ties
Water beads
Washi® tape
Wire
Wooden planks
Yarn
Zip ties



Engineering Design Process



Engineering Design Process



ASK

What is the problem?

What do I need to know?

How can I solve the problem?



Imagine

What information will I need?

What are some solutions?

How can I solve the problem?



Plan

What things do I need to use?

Draw a diagram and make a list of needed materials.



Create

Follow your plan and create something.

Test it out!



Improve

What changes can

I make to make it better?

My STEM Challenge:



ASK

What's the problem?

BRAINSTORM AND RECORD possible solutions, as many as you can.



My STEM Challenge:



Plan

Draw a diagram and make a list of needed materials.

My STEM Challenge:



Create

Look at the materials provided for use in creating your models.

My STEM Challenge:



Improve

Create a new drawing incorporating your ideas as well as the feedback you received on your prototype. Create an improved version of your original model.

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6. What would you do differently next time?
7. What parts of your model or prototype are similar to the real world version?

Valentine's Day STEM



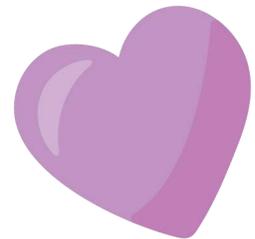
CHALLENGES



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ENGINEER'S



NOTEBOOK



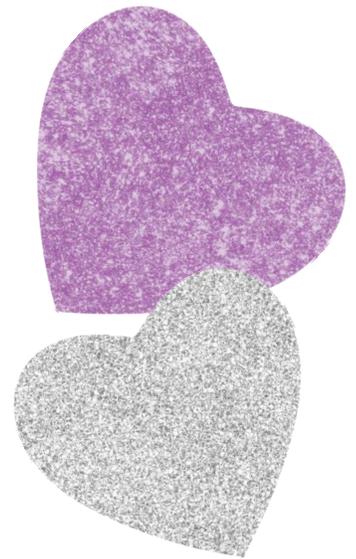
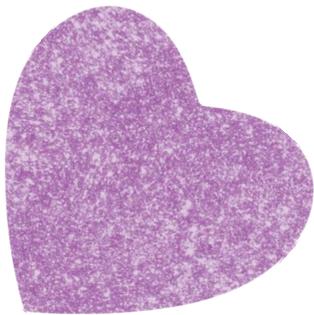
Valentine's Day STEM

CHALLENGES

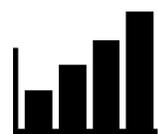


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ENGINEER'S



NOTEBOOK



SINKING LOVE BOAT

Build a boat using foil. Mold it into the shape of a heart for Valentine's Day.

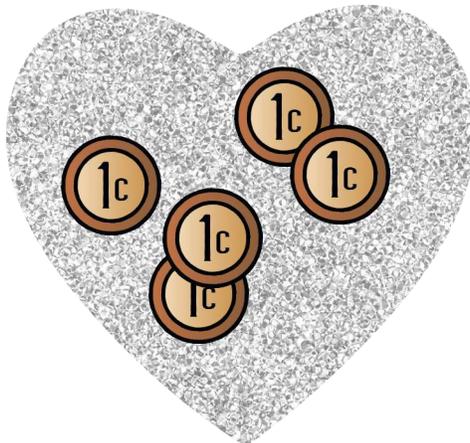


STEPS:

1. Cut two 8" squares of aluminum foil
2. Fill a bowl with water and place on a table.
3. Shape one piece of tin foil into a boat with little sides. We made a heart since we are all about Valentine's Day physics right now!
4. Start by placing 15 pennies on the square of tin foil (not the boat) and have them ball it up and place it in the water. What happens?
5. Next, try to float your aluminum foil boat.
6. Slowly add the 15 pennies. What happens this time with the same amount of weight and same size piece of foil?

Possible Supplies:

aluminum foil, 30 pennies, bowl of water (large enough to float the boat), additional themed items (optional if you want to compare results with different objects)



KNOW IT, TEST IT, WRITE IT

Sink the love boat physics activity is all about buoyancy which is how well something floats.

Just now you saw two different results when you used the same amount of pennies and the same size piece of foil. Both items weighed the same, but they were a different shape.

The ball of foil and pennies take up less room and there is not enough upward force pushing up on the ball to keep it afloat.

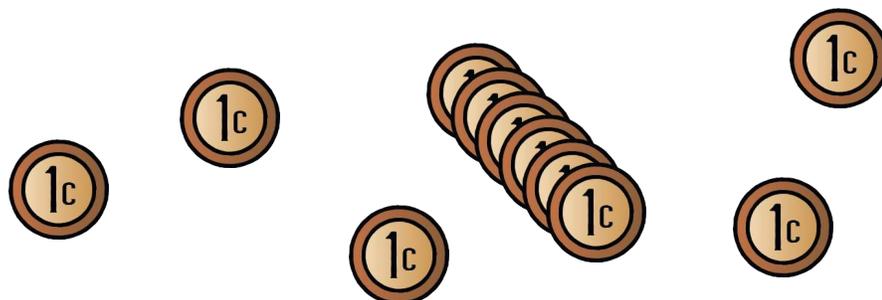
However, the love boat takes up a greater surface area so it has more force pushing up on it.

Variations on the Experiment:

Can you sink your love boat?

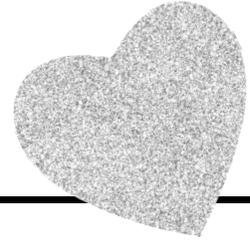
Keep going and see how many pennies it actually takes to sink your boat.

Can you build a stronger love boat?

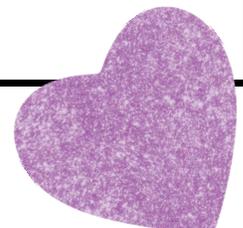
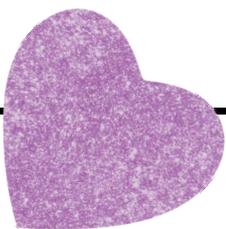


KNOW IT, TEST IT, WRITE IT

Test it: Test your boat to see how many pennies it will take to sink your boat. Record your trials.



Try your experiment multiple times.	number of pennies
Trial #1	
Trial #2	
Trial #3	
Trial #4	
Trial #5	
Trial #6	

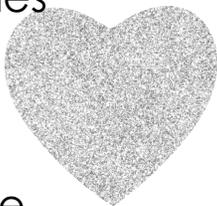
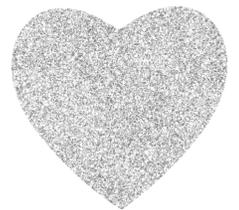
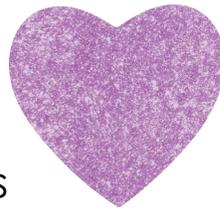


VALENTINE'S DAY STEM CHALLENGES SUPPLY LIST

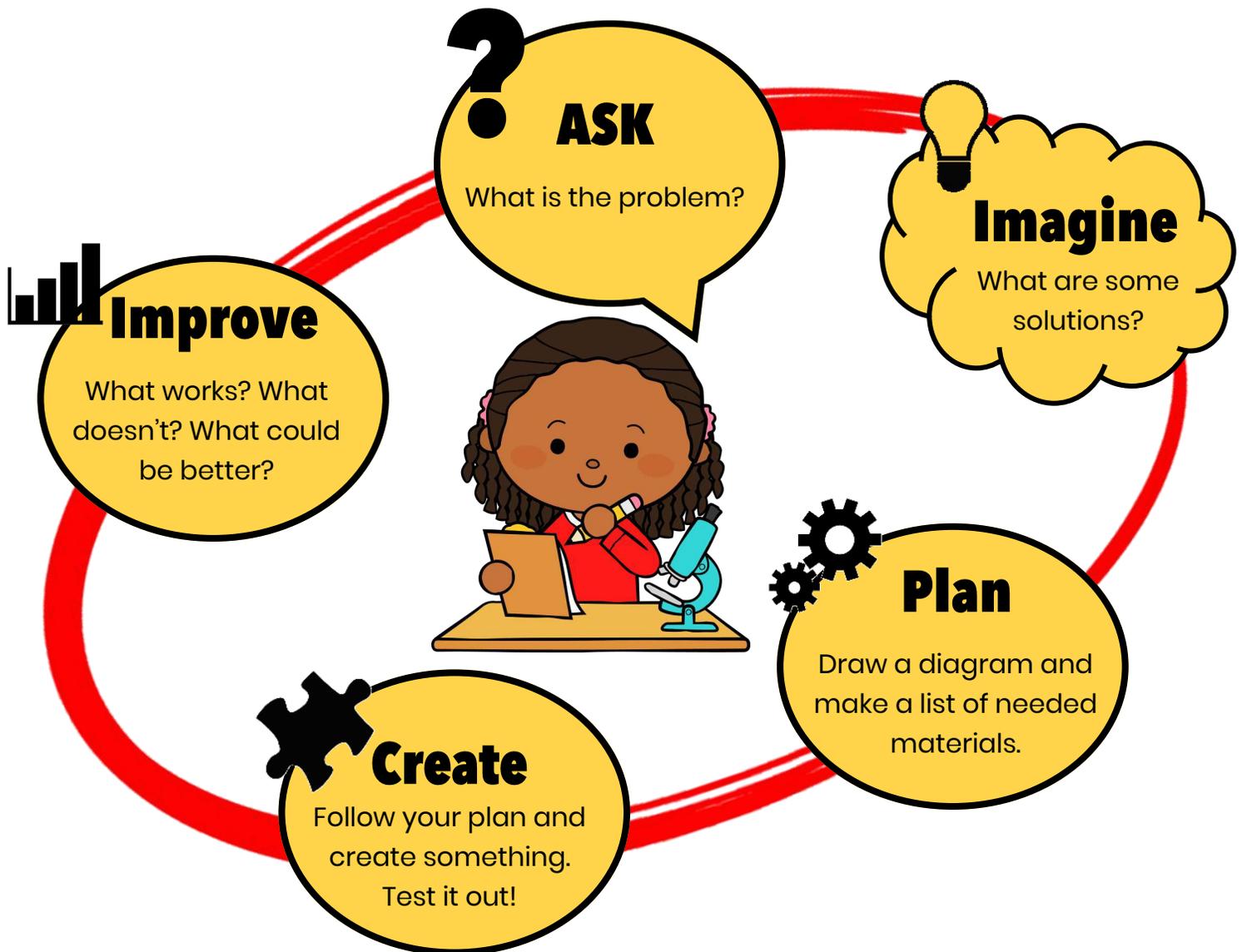
Acrylic paint
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Glow sticks
Glue
Golf tees
Google eyes
Gumdrops

Gummy Bears
Hammer
Hinges
K'nex®
Leaves
LEGO® bricks
Lollipop sticks
M&Ms®
Magnets
Marbles
Marshmallows
Measuring cups
Mint tins
Nails
Needle & thread
Nuts & bolts
Paint
Paper
Paper clips
Paper cups
Paper plates
Pencils
Pipe cleaners
Plastic bowls
Plastic spoons
Plastic wrap
Pom-poms
Popsicle sticks
Pretzel Sticks
Raffia
Ribbon
Rubber Bands

Scissors
Screwdriver
Skewers
Sequins
Shells
Shredded paper
Skewers
Soil
Spice jars
Sponges
Stapler
Strainer
Sticks
Straws
String
Styrofoam balls
Suckers
Sugar cubes
Tape
Tape measure
Tea lights
Timer
Toilet paper rolls
Toothpicks
Twine
Twist ties
Water beads
Washi® tape
Wire
Wooden planks
Yarn
Zip ties



Engineering Design Process



Engineering Design Process



ASK

What is the problem?

What do I need to know?

How can I solve the problem?



Imagine

What information will I need?

What are some solutions?

How can I solve the problem?



Plan

What things do I need to use?

Draw a diagram and make a list of needed materials.



Create

Follow your plan and create something.

Test it out!



Improve

What changes can

I make to make it better?

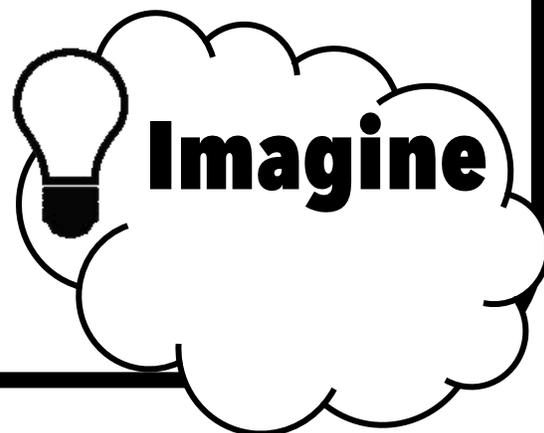
My STEM Challenge:



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BRAINSTORM AND RECORD possible solutions, as many as you can.



Imagine

My STEM Challenge:



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Draw a diagram and make a list of needed materials.

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Look at the materials provided for use in creating your models.

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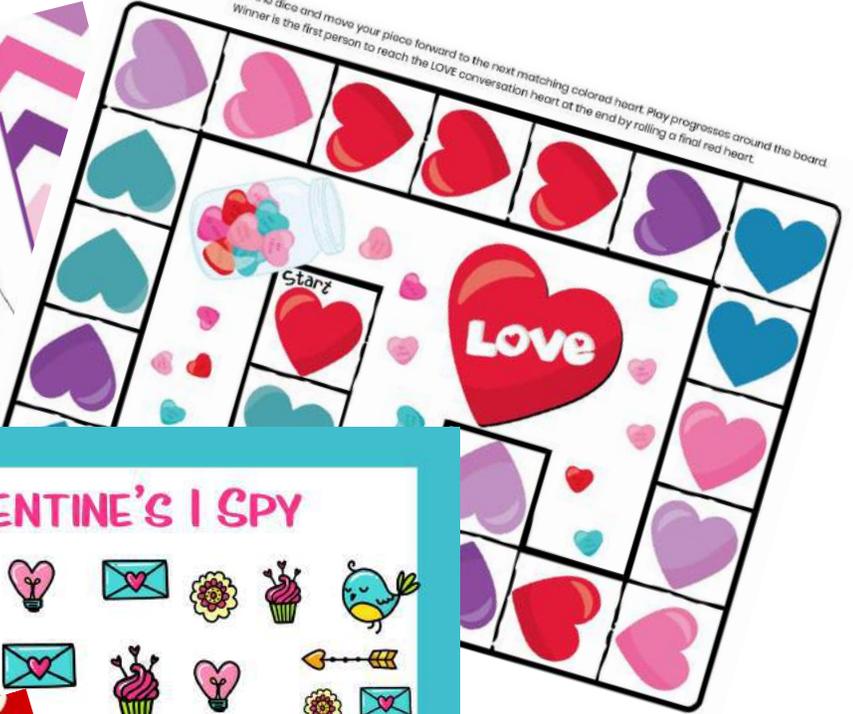
BONUS: VALENTINE FUN PACK

Play a game, make some matches, ask a question or two, do a word search, play bingo, or try an I-Spy! Print and play.

VALENTINE'S DAY BINGO



Taking turns, roll the dice and move your piece forward to the next matching colored heart. Play progresses around the board. Winner is the first person to reach the LOVE conversation heart at the end by rolling a final red heart.

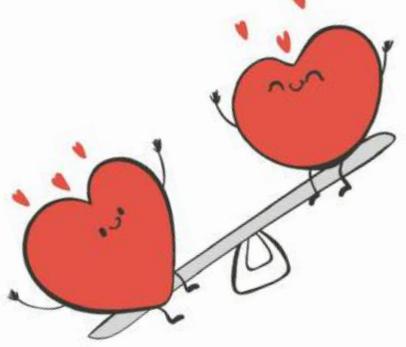


VALENTINE'S I SPY



VALENTINE'S DAY

Would You Rather?
Conversation Starters



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Day Word Search



- Roses
- Love
- Hearts
- Party
- Mail
- Poem

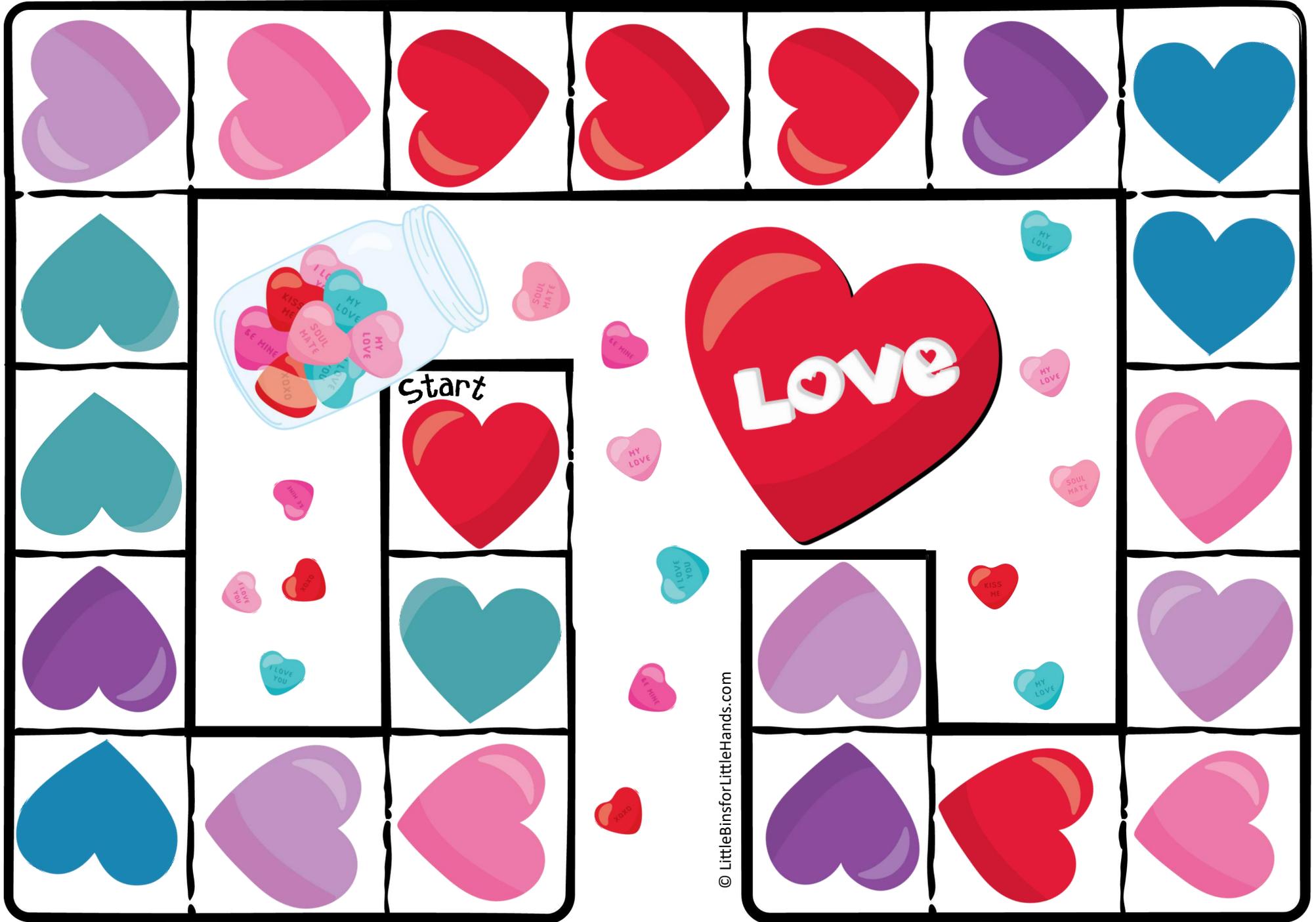
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Valentine's Day Conversation Heart Scramble

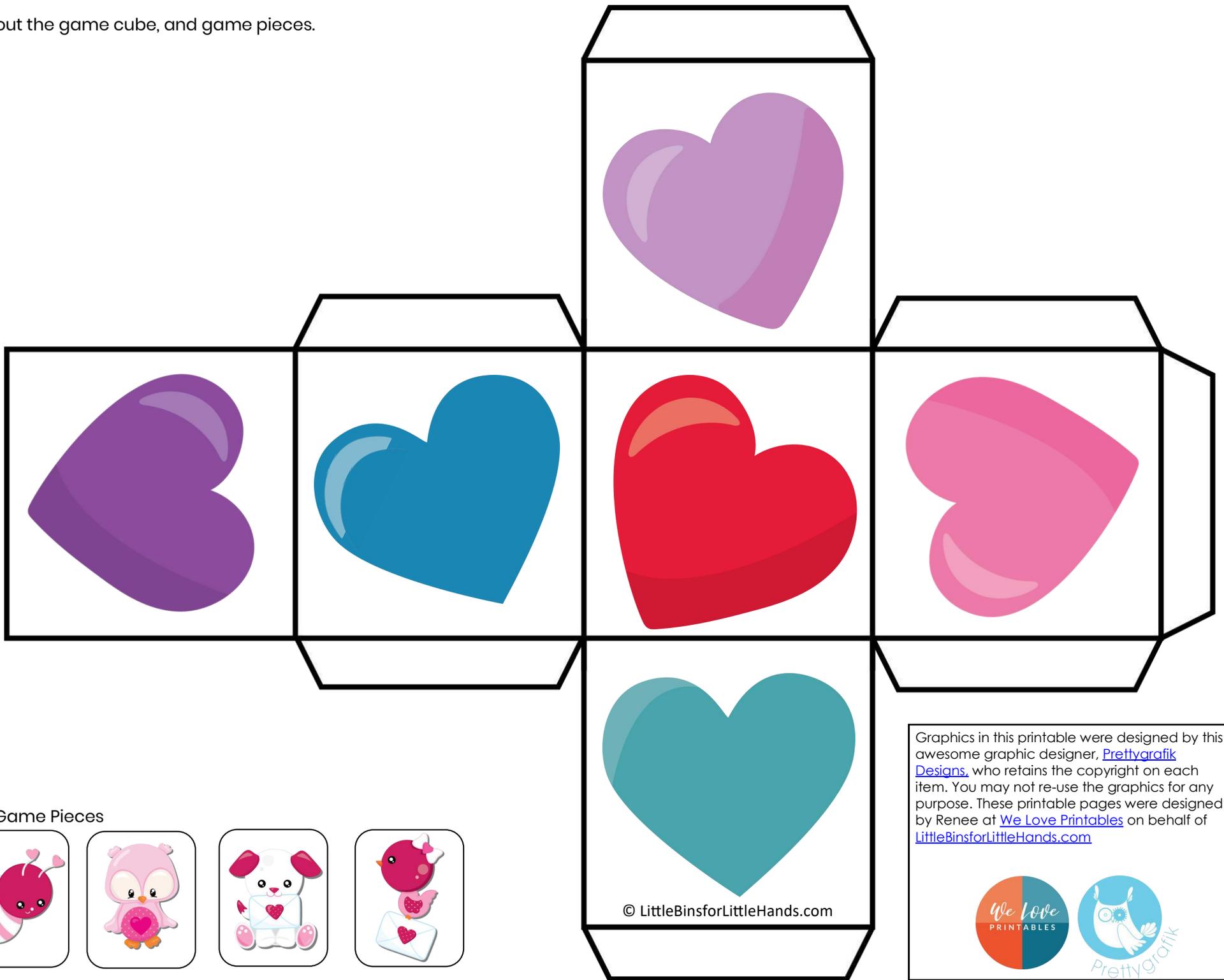


Board Game

Taking turns, roll the dice and move your piece forward to the next matching colored heart. Play progresses around the board.
Winner is the first person to reach the LOVE conversation heart at the end by rolling a final red heart.



Cut out the game cube, and game pieces.



Game Pieces



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VALENTINE HEARTS MATCH THE SHAPE GAME

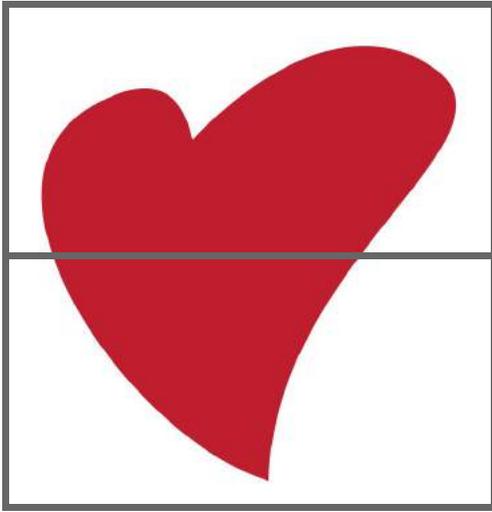
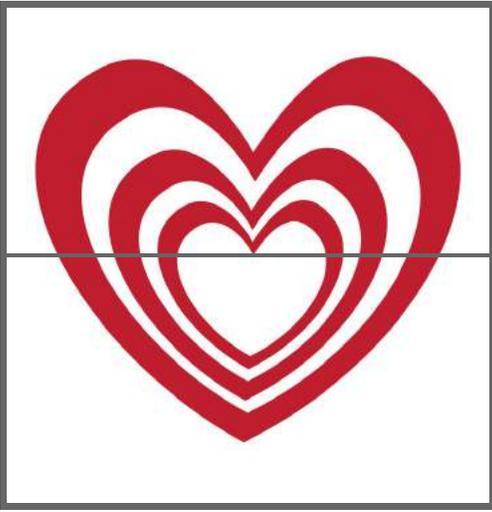
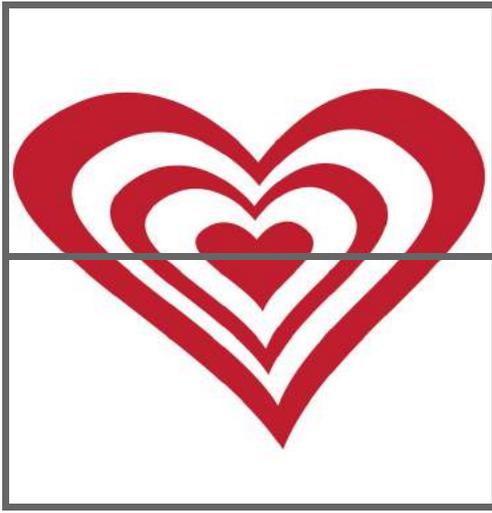
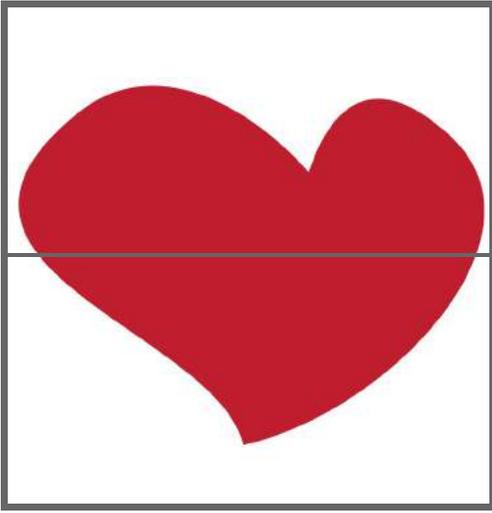
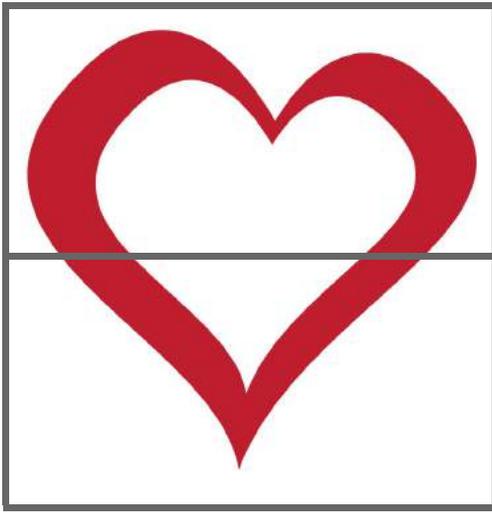


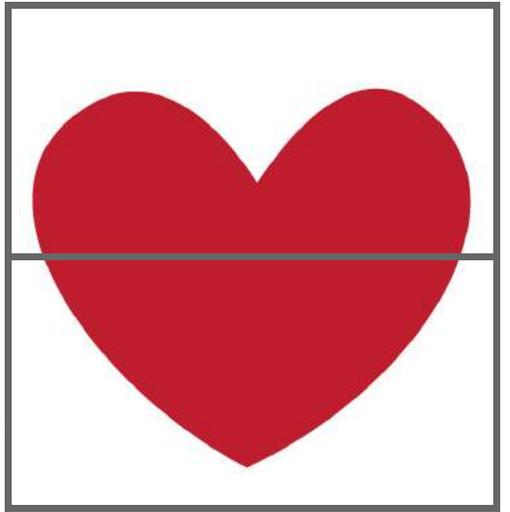
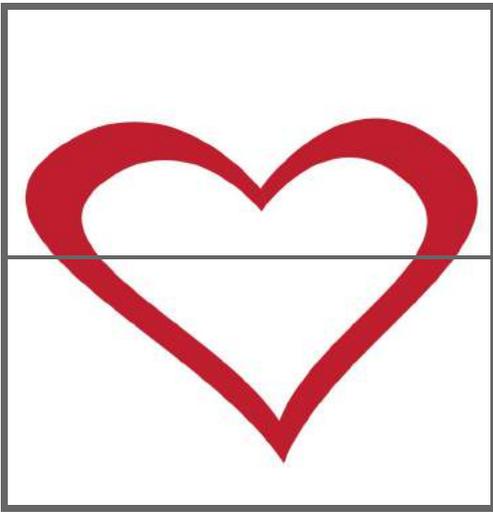
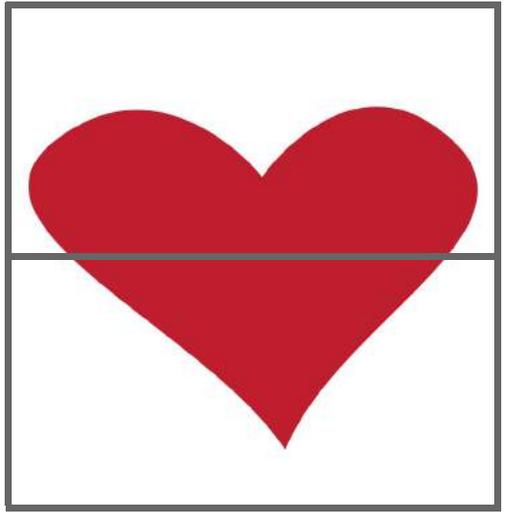
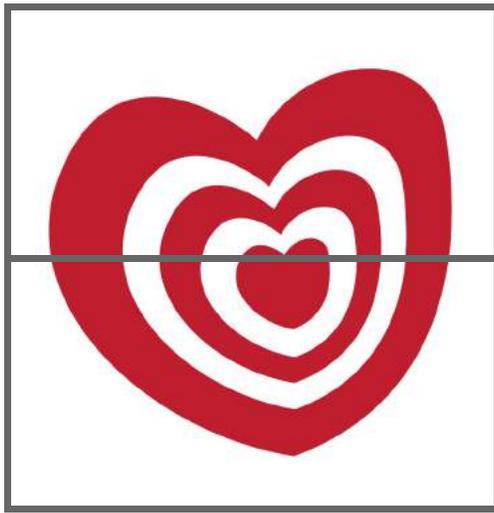
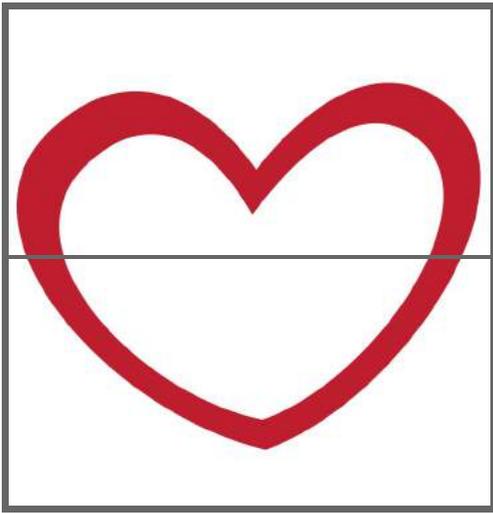
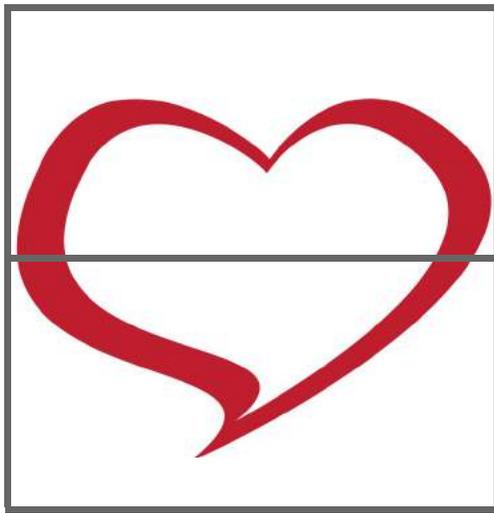
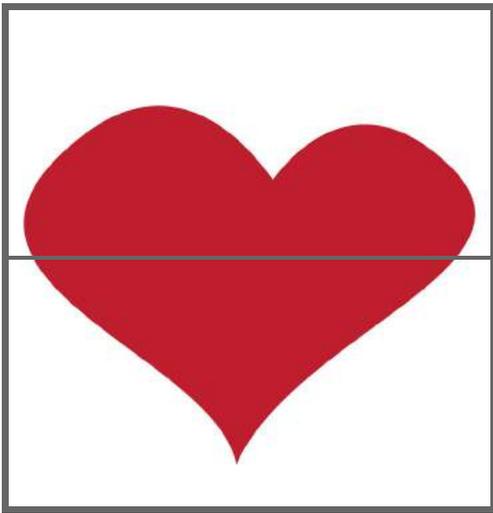
This game can be played individually or as a competition against friends.

To play alone, set a timer for 5 minutes. Then try to match all of the hearts before the timer runs out. Challenge yourself by reducing the number of minutes on the timer each time you play.

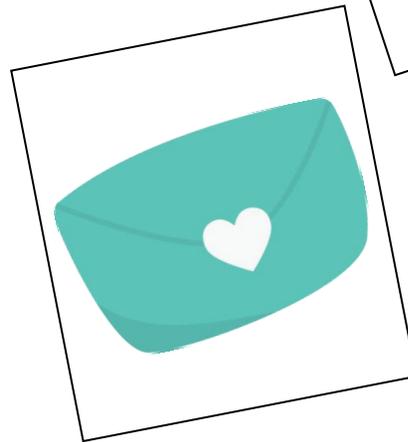
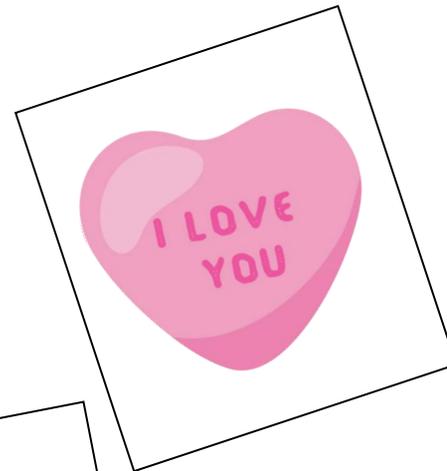
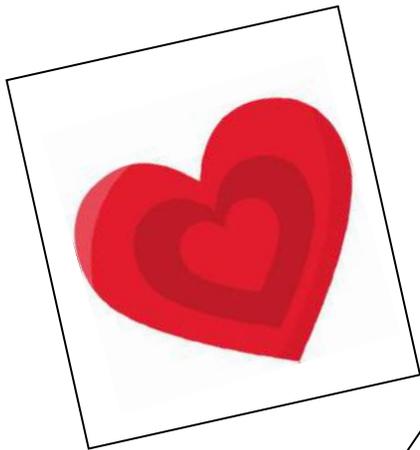
To play in a group, print and cut out enough pages for each player to have a set of cards. Then, everyone starts at the same time trying to match their own hearts. The person who matches all their hearts the fastest is the winner.

Cut out the squares below. Then, cut across the center line separating the top part of each heart from its matching bottom.

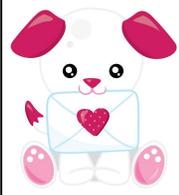
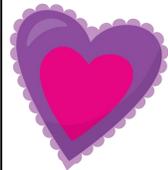




VALENTINE'S DAY BINGO



VALENTINE'S DAY BINGO

				
				
		FREE		
				
				

VALENTINE'S DAY BINGO

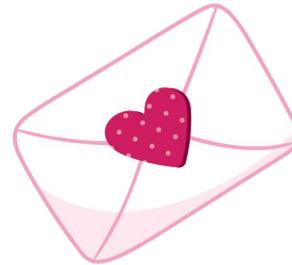
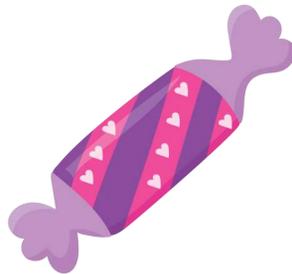
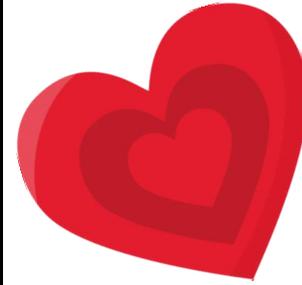
				
				
		FREE		
				
				

VALENTINE'S DAY BINGO

				
				
		FREE		
				
				

VALENTINE'S DAY BINGO

				
				
		FREE		
				
				



Valentine's Day Word Search

E N Q K W C M C N C B H F P K D G H
A L I A M E C V K O H G L Y D N A C
L Y R O C G S P X D L Z O Q M O N S
P V I A Y P H Z T J U D W Y E B K S
K A C Y R A U R B E F Y E D O I R E
S G V E F L S T E I O N R I P C M S
C P M W Z G Z X I J H J S M G H M O
V Y F B U J H G C A L K P Y T O C R
S B Y A D S E N I T N E L A V C I L
O D X I U H W f D G N M S U Z O N O
D T R E P N E O W U Q W F B M L D V
I U O A E D C A B L X Y R A F A F E
P N X Z C M L T R P A R T Y R T A H
U F W B W T H X F T L S T P W E W R
C I T Q Z W O R R A S U V E H T E U

Valentine's Day

Roses

Flowers

Love

Arrow

Hearts

Candy

Party

Chocolate

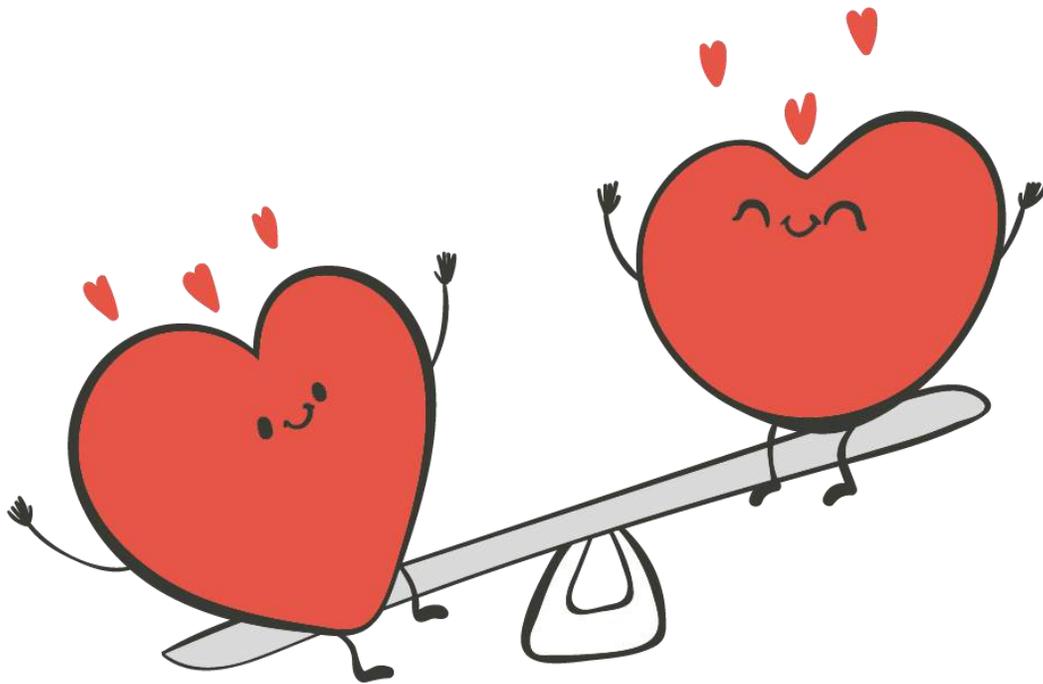
Mail

Cards

Poem

VALENTINE'S DAY

Would You Rather?
Conversation Starters



Would you rather?

eat a dozen
Valentine's Day
cookies or
a dozen Valentine's day
cupcakes



Would you rather?

get lollipop
candy cards
or a box of
conversation hearts



Would you rather?

receive a box
of chocolates
or a dozen
roses



Would you rather?

write a
Valentine's Day
poem or design a
Valentine's Day card



Would you rather?

eat only
gummy hearts
or conversation
hearts for Valentine's Day



Would you rather?

live in a house
made of chocolate
or a house made of
gummy candies



Would you rather?

create your own
Valentine's
Day cards or
buy them from the store



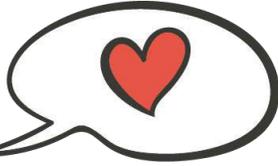
Would you rather?

get a day off
of school or
have a fabulous
Valentine's Day party



Would you rather?

watch a movie
with a love story
or have to wear
pink clothes all day



Would you rather?

have a toy robot
that says "I love you" all day
or have a pet dog who licks
your face all day



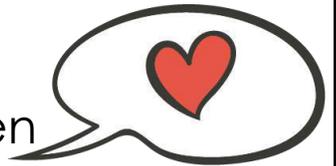
Would you rather?

eat pink eggs
and ham or
green eggs and ham



Would you rather?

eat heart
shaped chicken
nuggets or
a heart shaped pizza
for lunch



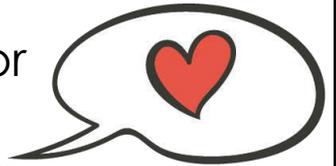
Would you rather?

wear a
sweatshirt with
heart all over it
or wear giant clown shoes
shaped like hearts



Would you rather?

cook dinner for
your family
or buy pizza for
100 people



Would you rather?

kiss a frog
or hug
a hippopotamus



Would you rather?

fly around like
cupid
or sing a love
song in front of your friends



VALENTINE'S I SPY

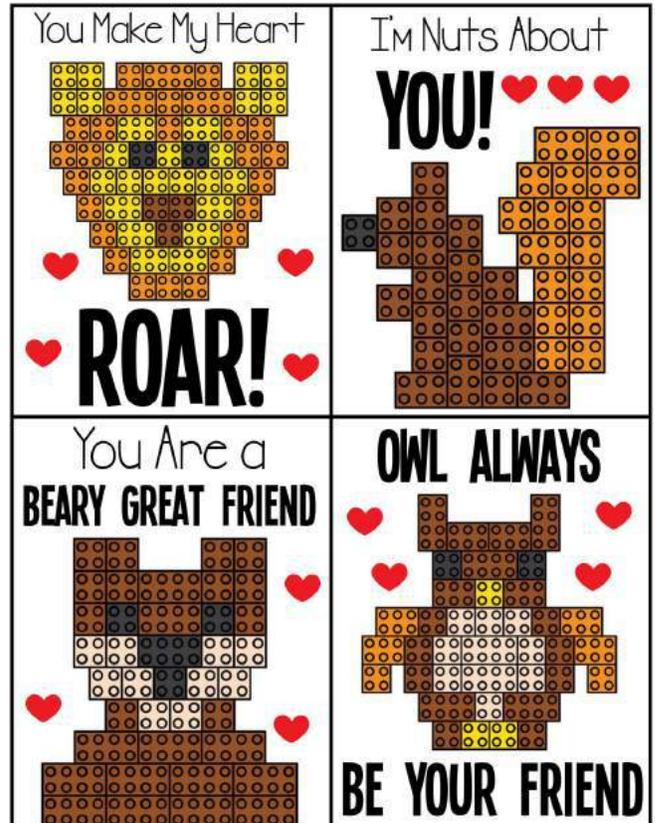
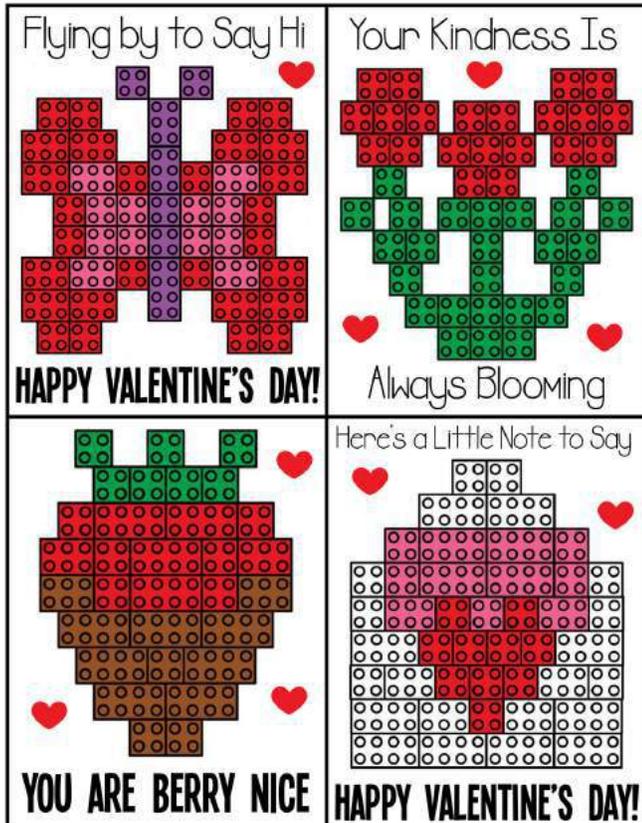
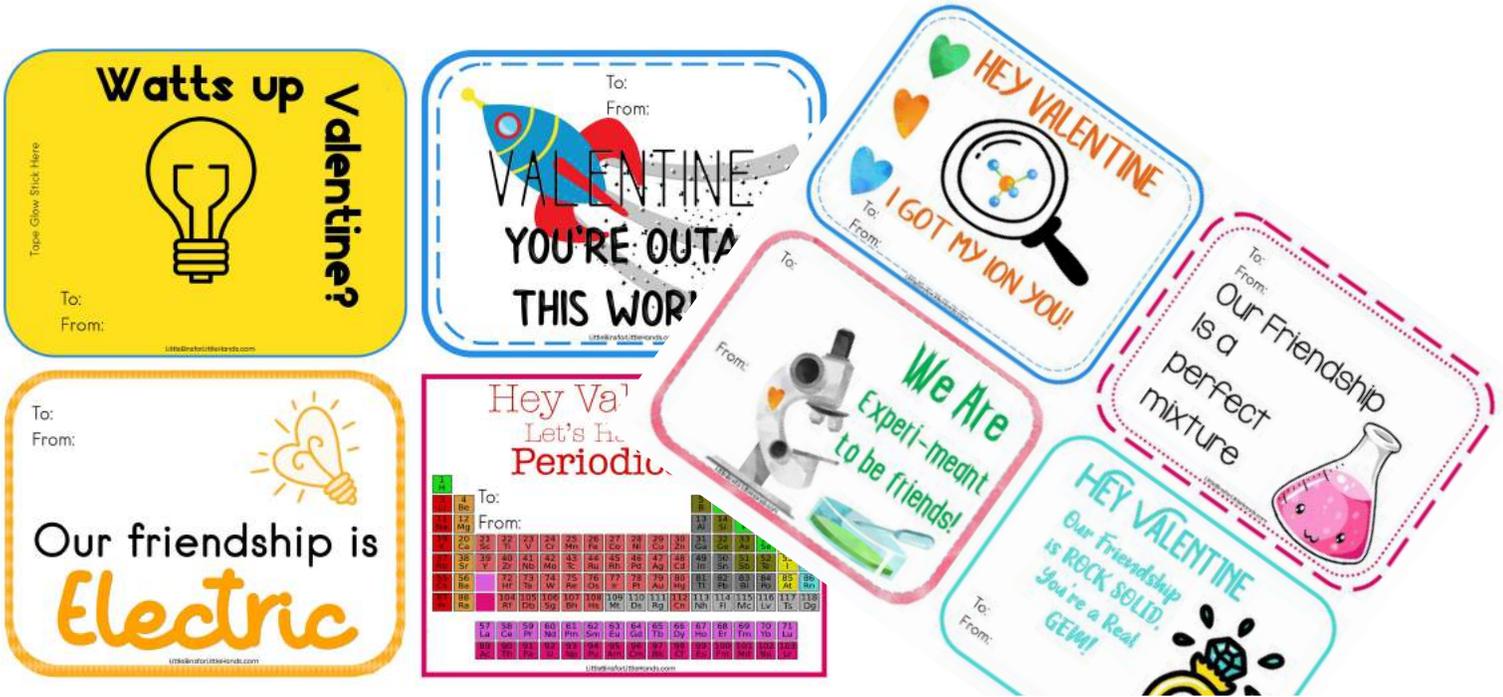


VALENTINE'S I SPY

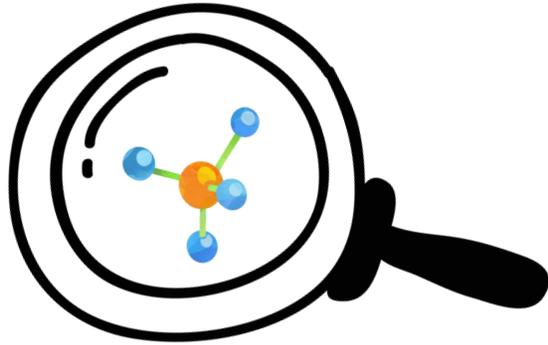


SCIENCE VALENTINE'S CARDS

What's Included: Print and cut science theme and brick building Valentine's Day cards for kids to give and get! Add a small treat, such as a glow stick, and you're ready to go!



HEY VALENTINE



I GOT MY ION YOU!

To:

From:

LittleBinsforLittleHands.com

To:

From:

Our Friendship
Is a
perfect
mixture

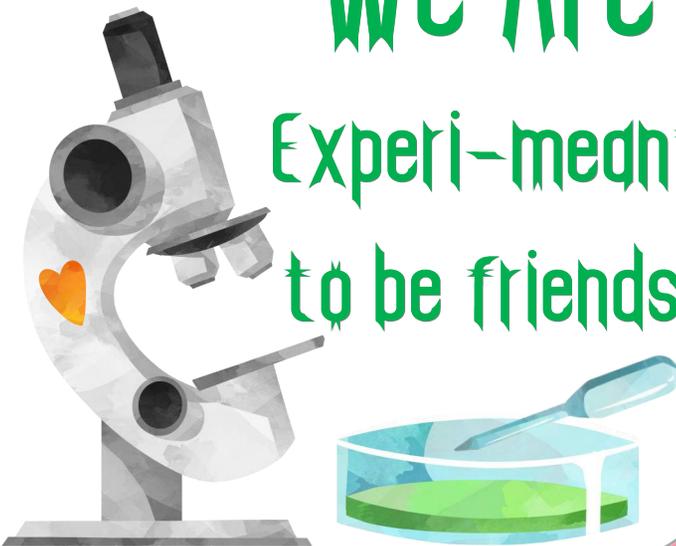


LittleBinsforLittleHands.com

To:

We Are
Experi-ment
to be friends!

From:



LittleBinsforLittleHands.com

HEY VALENTINE

Our Friendship
is ROCK SOLID,
You're a Real
GEM!

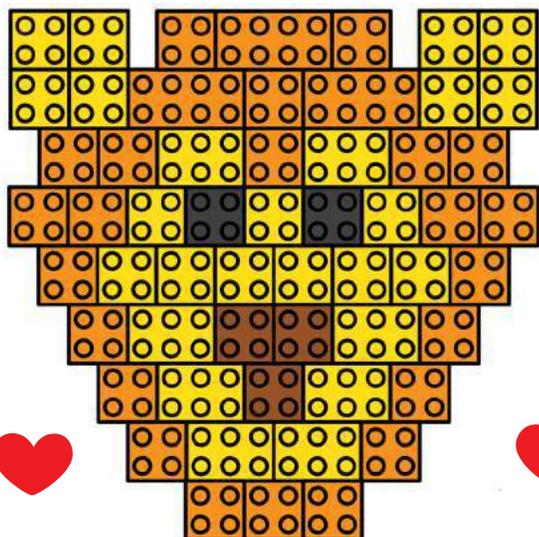


To:

From:

LittleBinsforLittleHands.com

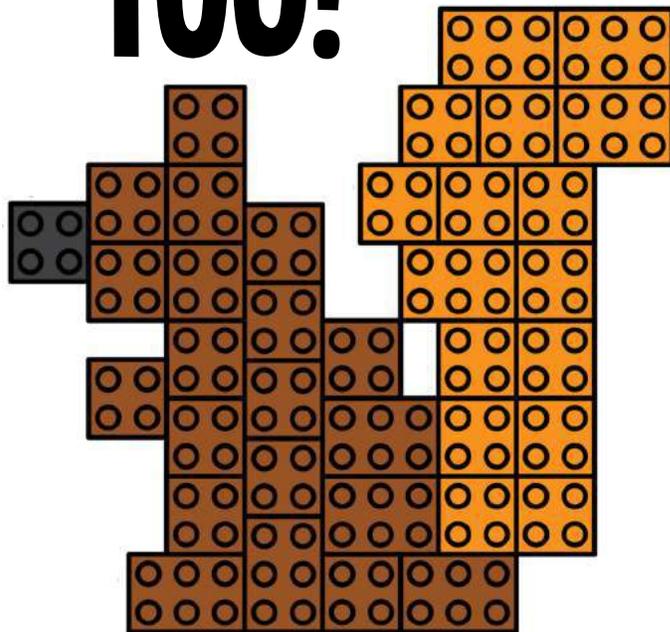
You Make My Heart



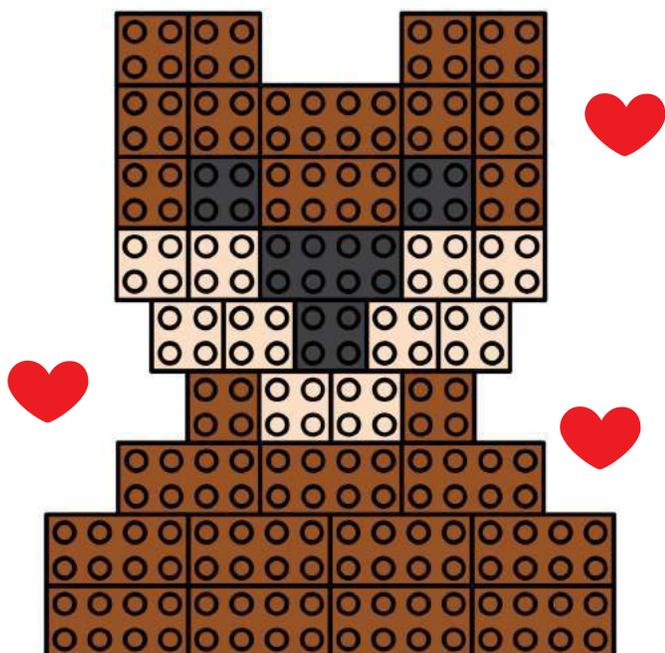
ROAR!

I'm Nuts About

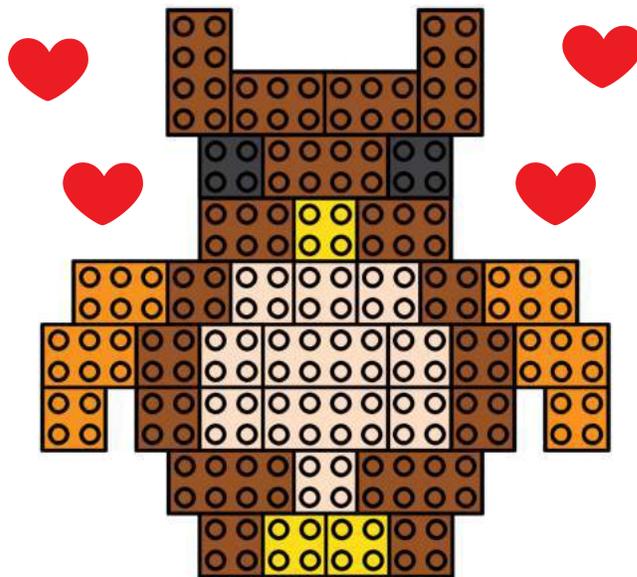
YOU! 



You Are a
BEARY GREAT FRIEND

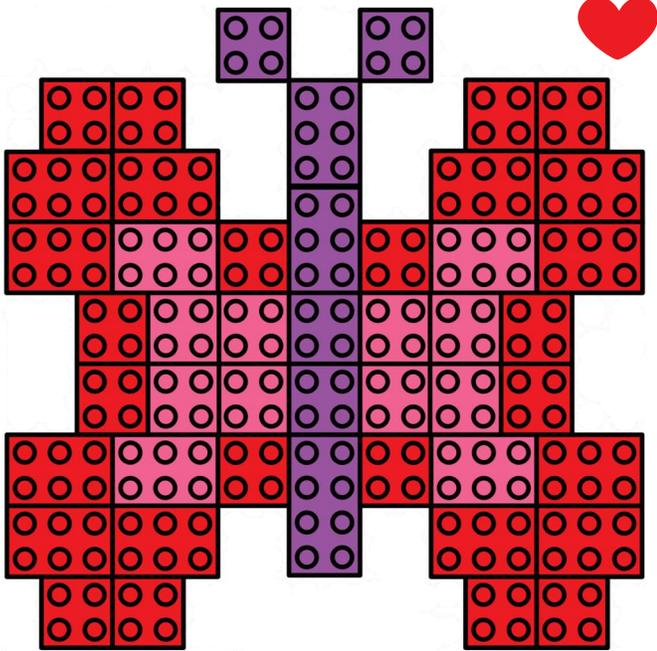


OWL ALWAYS



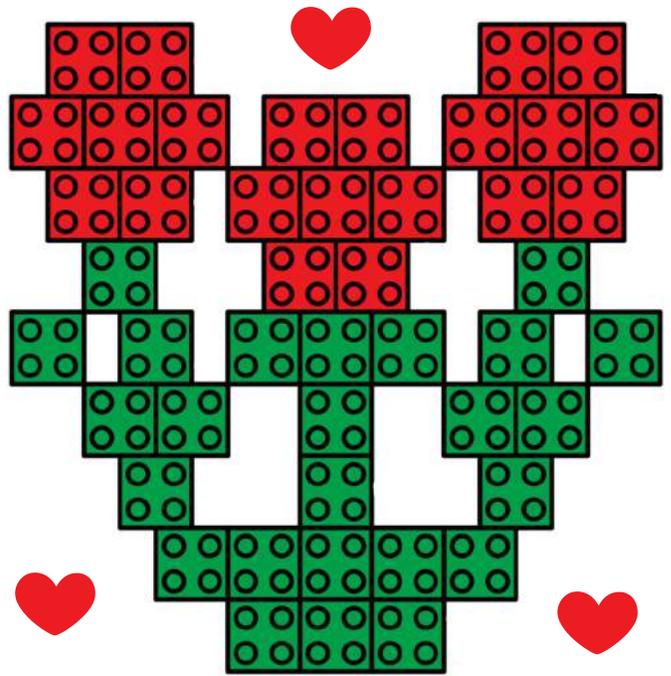
BE YOUR FRIEND

Flying by to Say Hi

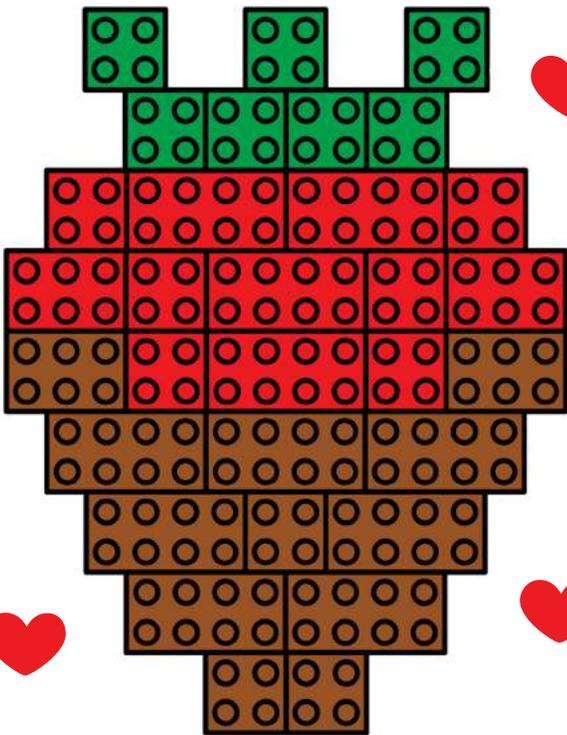


HAPPY VALENTINE'S DAY!

Your Kindness Is

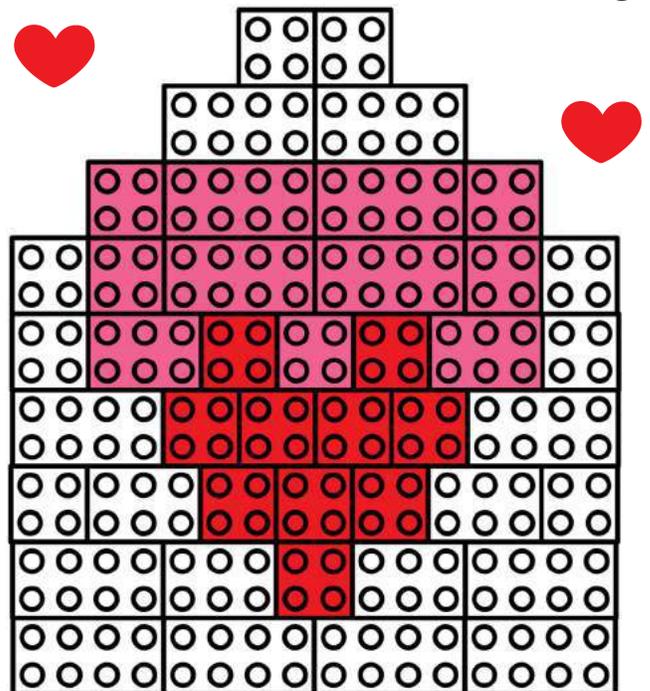


Always Blooming



YOU ARE BERRY NICE

Here's a Little Note to Say



HAPPY VALENTINE'S DAY!

VALENTINE'S BRICK BUILDING

Try these Valentine's Day themed brick activities perfect for your brick building fans. Also, check out the fun brick theme Valentine's Day cards!

What's Included:

- Brick Building Math
- Brick Building Challenges

RACE CHALLENGE
Find someone to race with.
Your challenge is to be the first person to finish building the strawberry.

OPPOSITE HANDS
Build the butterfly with one hand using red and purple bricks, and the other hand using blue and yellow bricks.

BRICK CHALLENGE
Build the heart using red, pink, and white bricks.
Use the blue red first, then the pink bricks, then the white bricks.

TWICE IS NICE CHALLENGE
Time yourself building the butterfly.
Build it a second time and try to beat your first time.

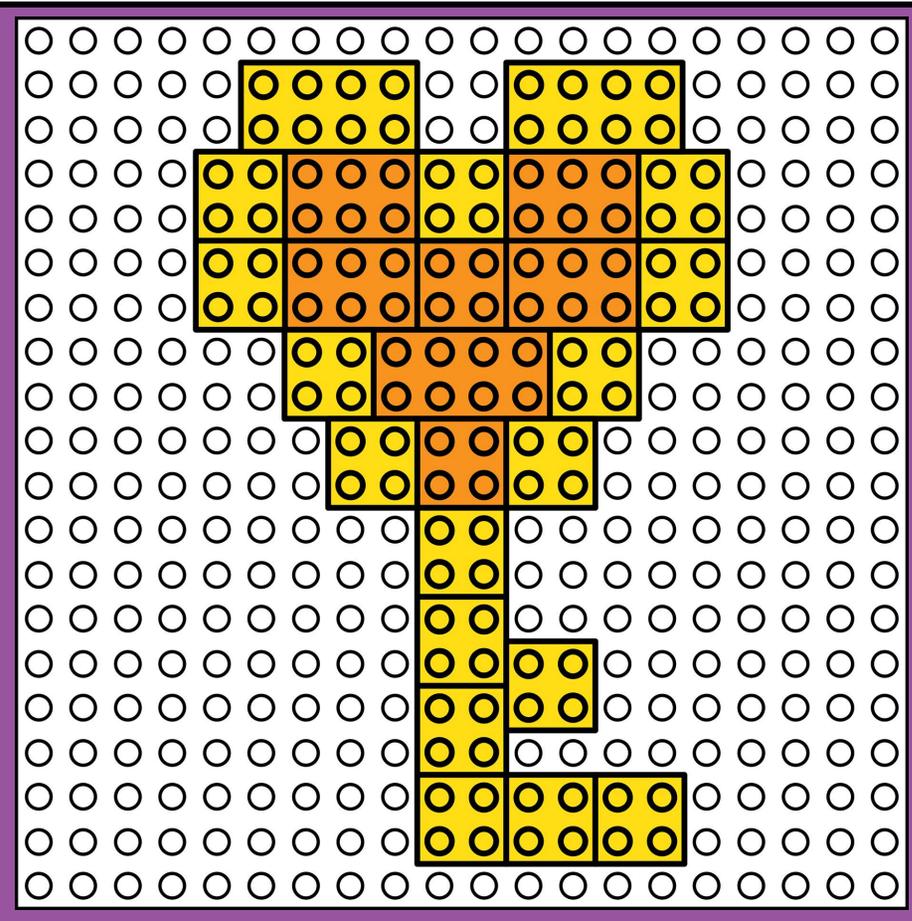
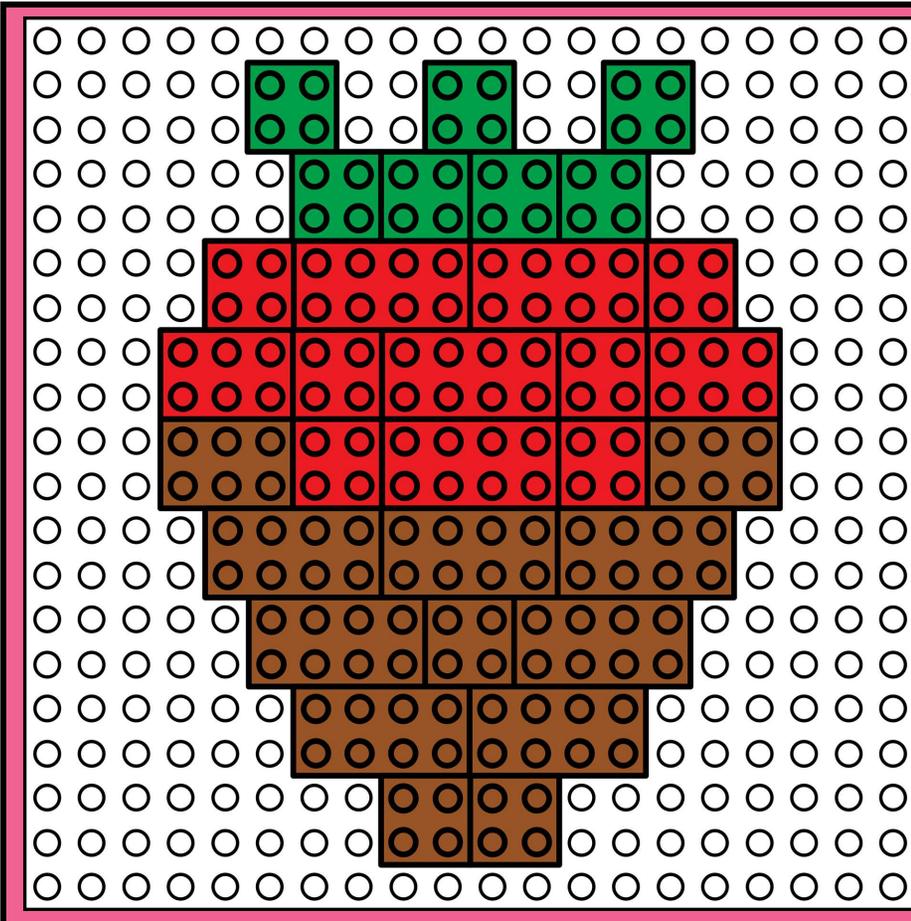
TEAMWORK CHALLENGE
Find a partner. Roll a dice. Add that many bricks to the board. Then it's your partner's turn. Continue until the design is completed.

TWO-STORY CHALLENGE
Build it twice as tall!
Make sure the entire strawberry has two layers of bricks.

COLOR SWAP CHALLENGE
Your challenge is to build the asteroid with a new color scheme. You can use any color of bricks except for red or blue.

ESTIMATION CHALLENGE
1. Estimate 2. Build 3. Count
How many bricks do you think you will use?
How many bricks did you use?

© Little Sins for Little Hands



TWO-STORY CHALLENGE



TIMER CHALLENGE

Build it twice as tall!

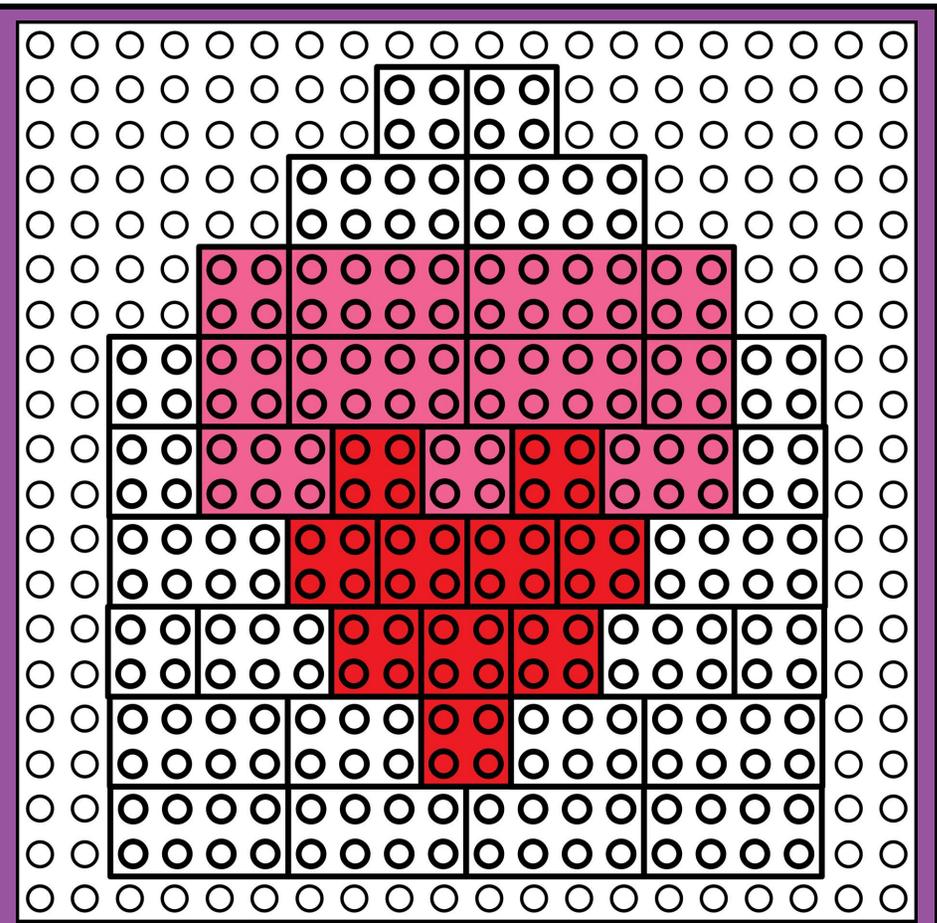
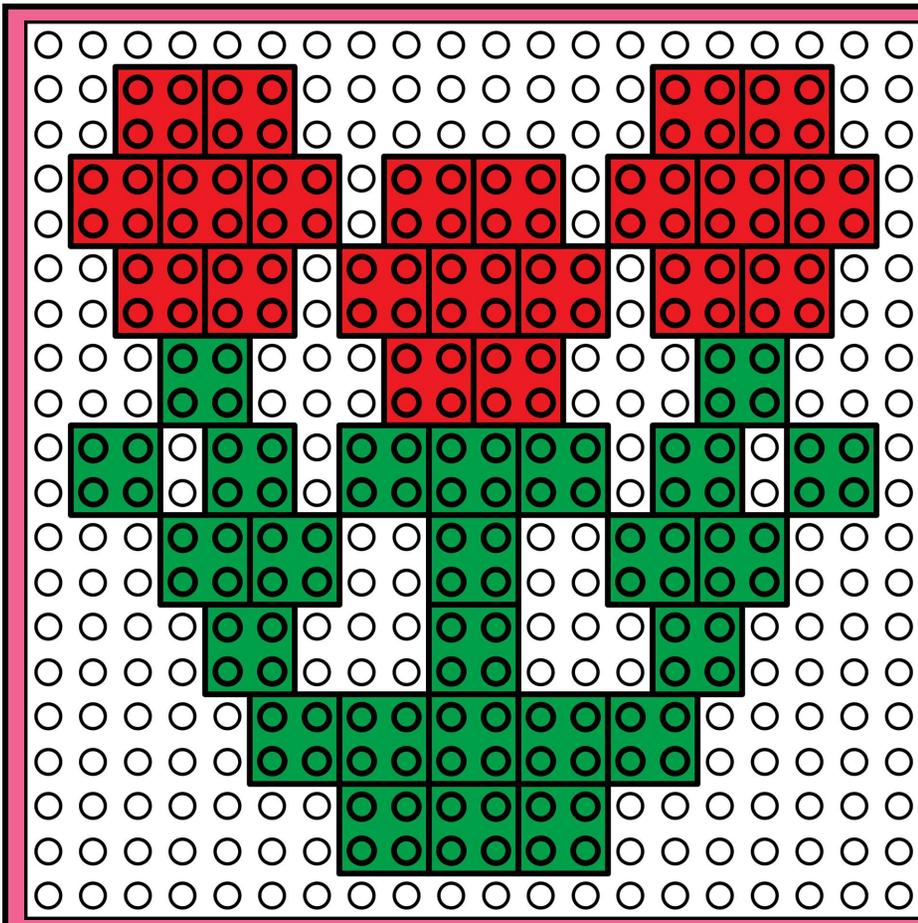
Make sure the entire strawberry



has two layers of bricks.



Build the key in **two** minutes or less.
On your mark, get set, go!

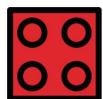


OPPOSITE HAND CHALLENGE BRICK BY BRICK CHALLENGE



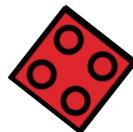
Are you right-handed?

Build with your left hand.

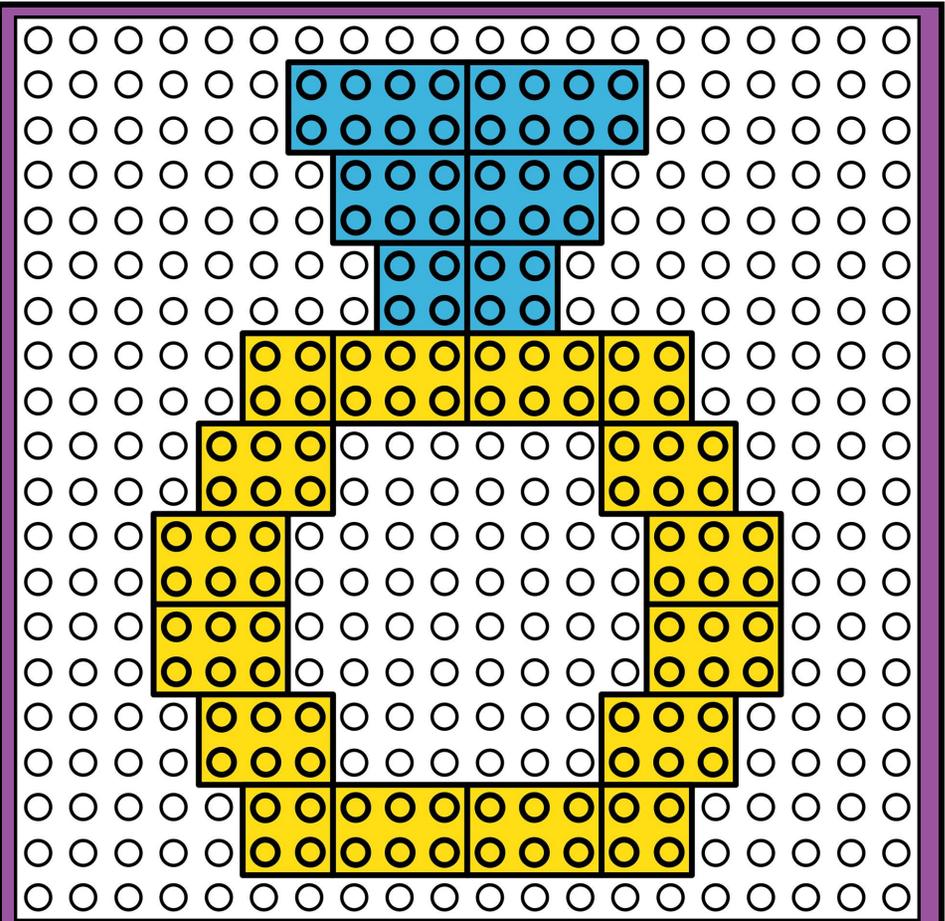
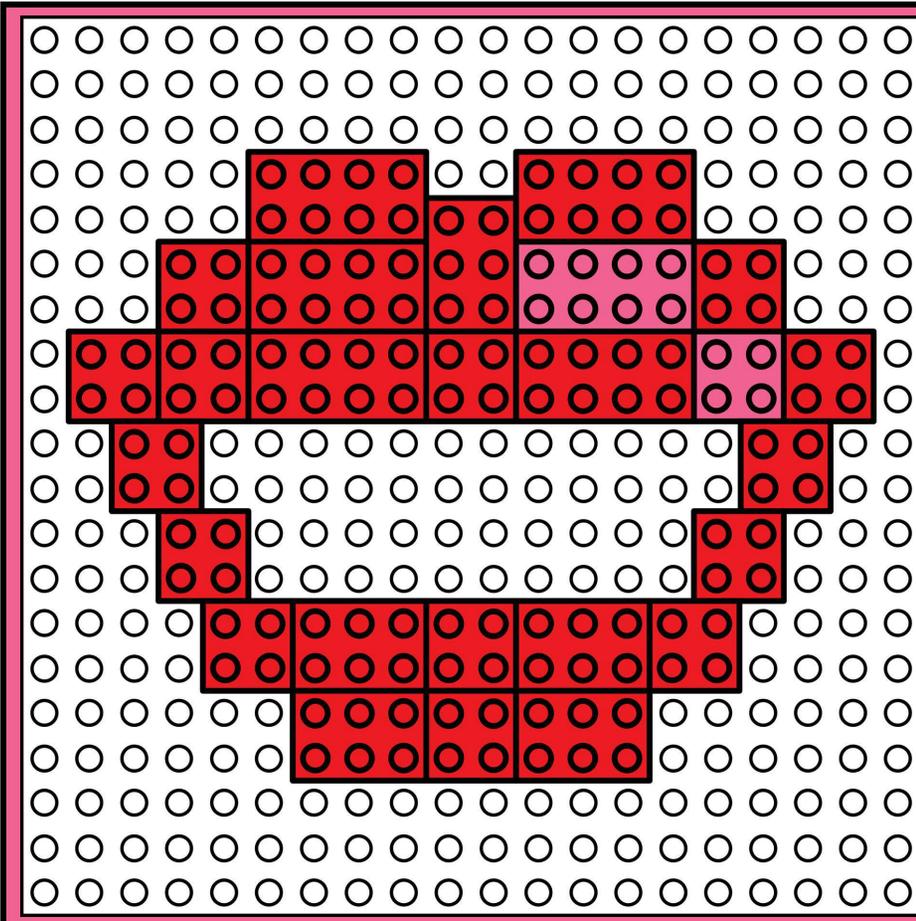


Are you left-handed?

Build with your right hand.



Add all of the blue red first.
Next, add all of the pink bricks.
Last, add all of the white bricks.



RACE CHALLENGE



Find someone to race with you.
Your challenge is to be the first person to finish building the lips.

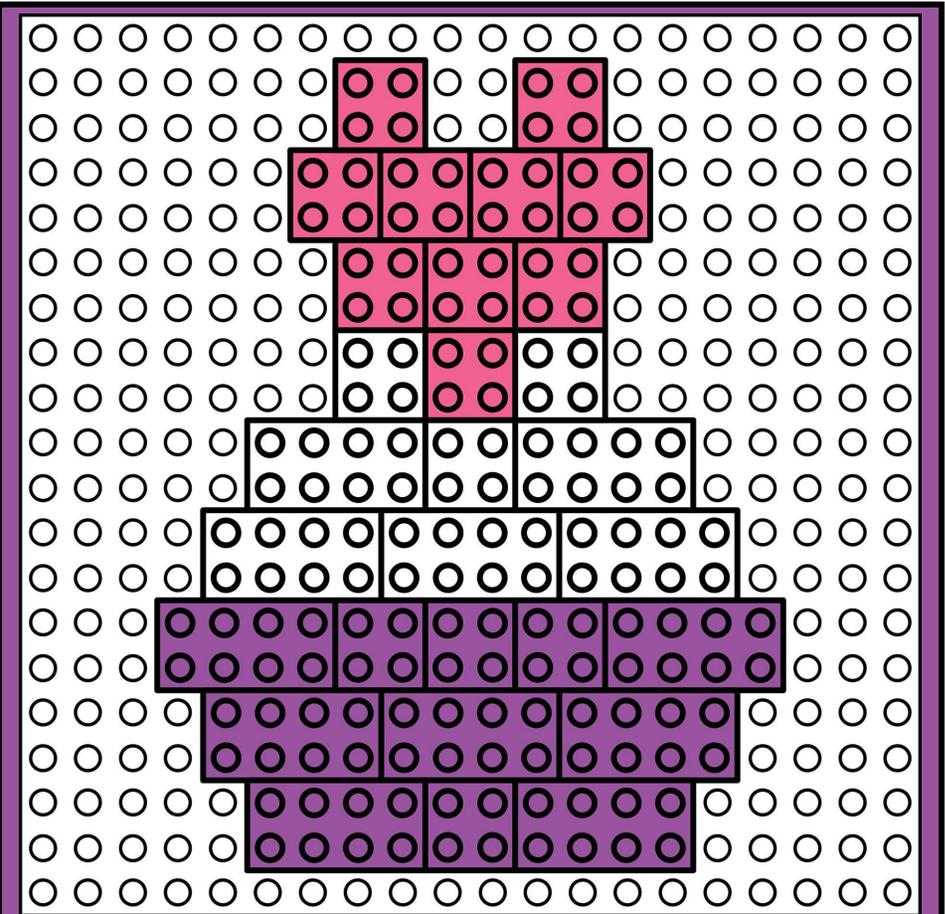
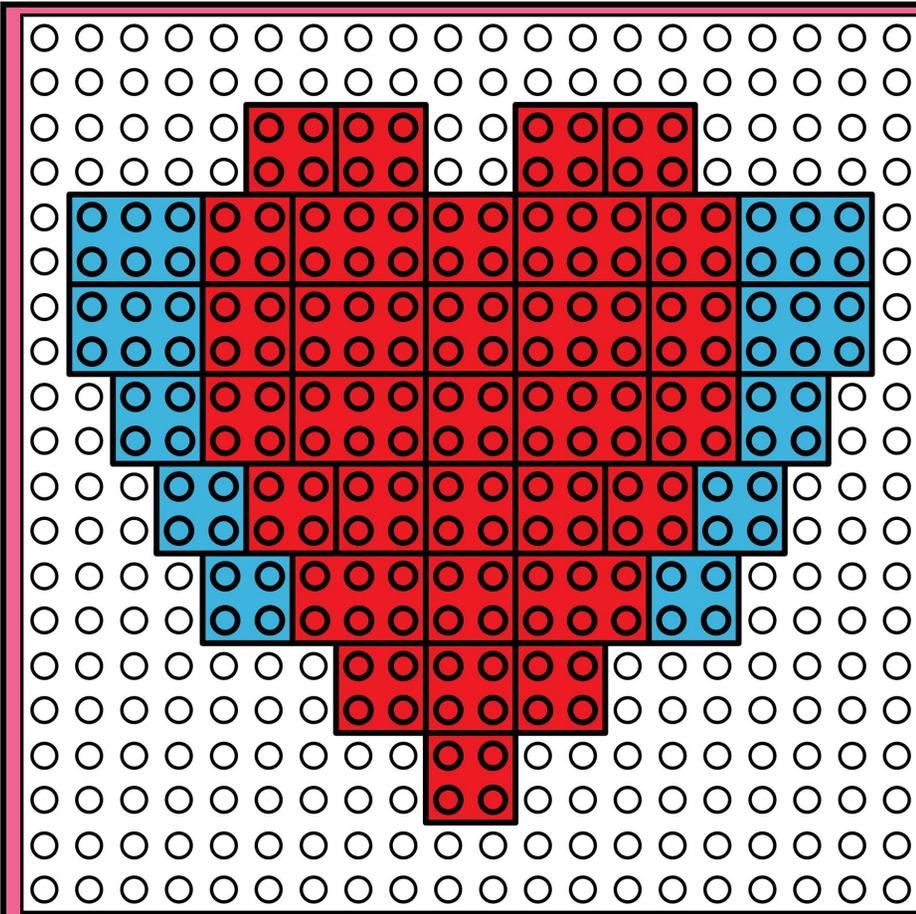
UPSIDE DOWN CHALLENGE

Your challenge is to build an upside down ring. Make sure you keep the



template right-side up.





COLOR SWAP CHALLENGE

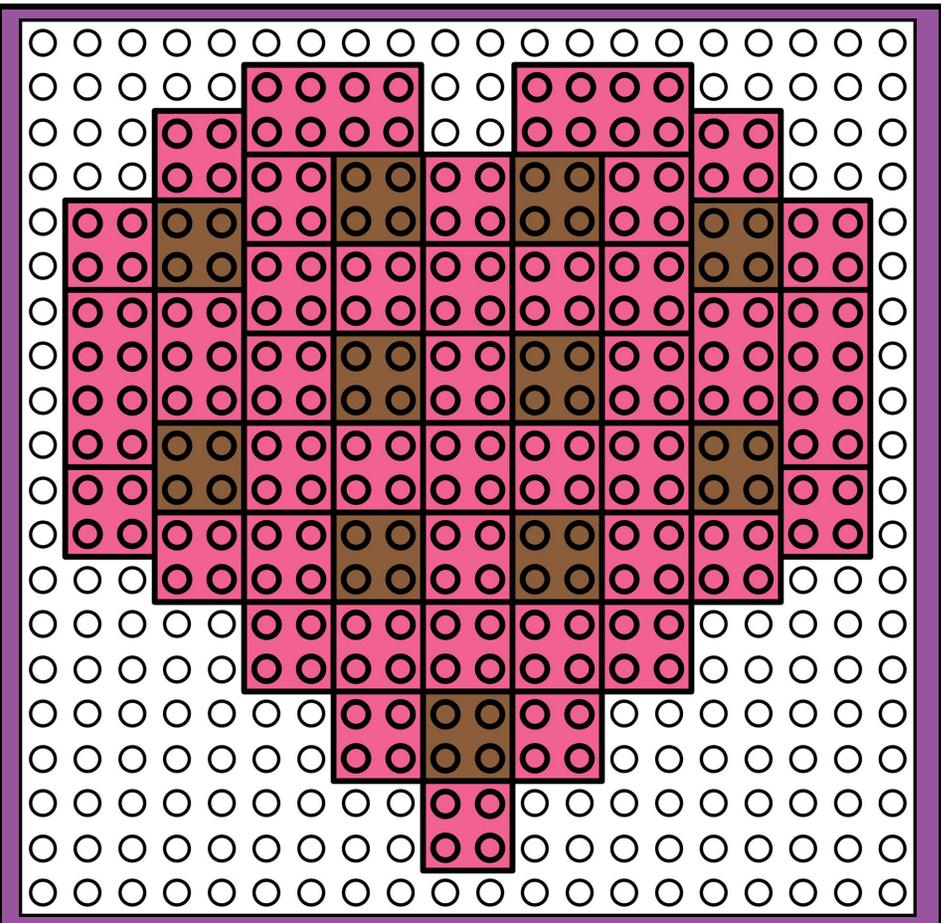
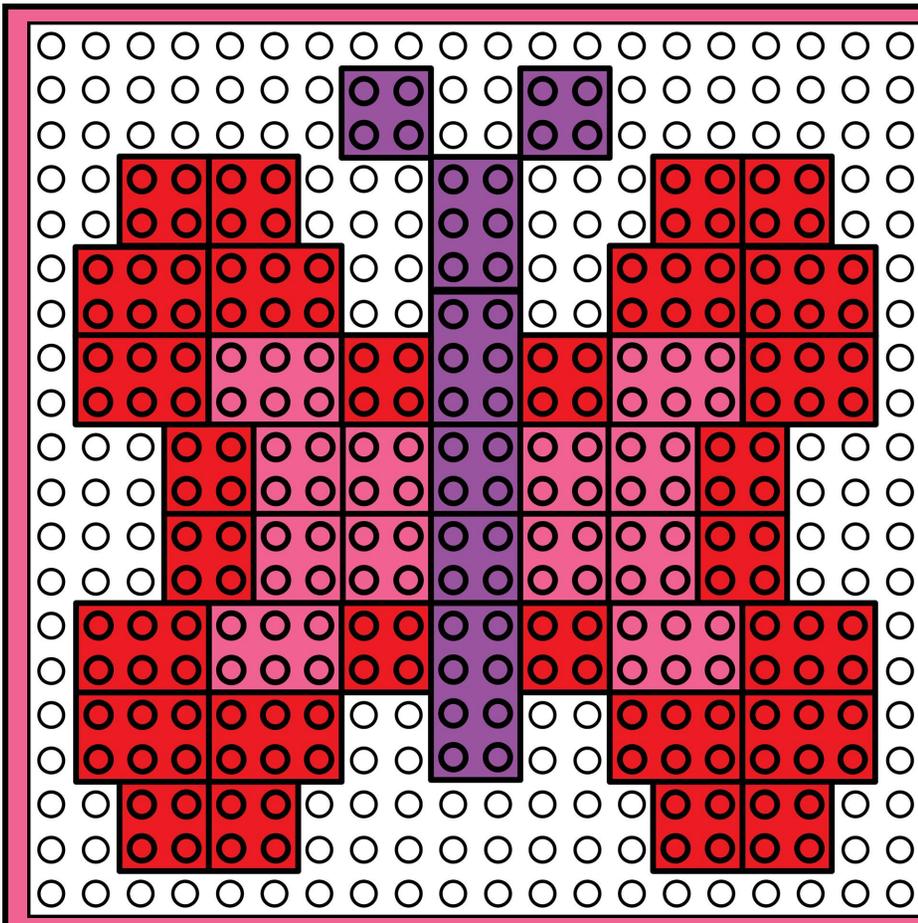
Your challenge is to build the asteroid with a new color scheme. You can use any color of bricks except for red or blue.

ESTIMATION CHALLENGE

1. Estimate 2. Build 3. Count

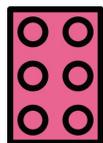
How many bricks do you think you will use?

How many bricks did you use? _____

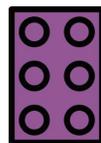


TWICE IS NICE CHALLENGE

Time yourself building the butterfly.



Build it a second time and try to beat your first time.



TEAMWORK CHALLENGE



Find a partner. Roll a dice. Add that many bricks to the board. Then it's your partner's turn. Continue until the design is completed.

BEST SCIENCE PRACTICES

Explore these fun theme science activities! Use the enclosed journal pages and best science practices pack to round out your science this season.

1. I can ask questions.	2. I can develop and use models.
3. I can plan and carry out investigations.	4. I can analyze and interpret data.
5. I can use math and computational thinking.	

BEST SCIENCE AND ENGINEERING PRACTICES

It is important to note that the scientific method is not a linear set of steps, and you can adapt it to fit your investigation.

1. I can ask questions.
2. I can develop and use models.
3. I can plan and carry out investigations.
4. I can analyze and interpret data.
5. I can use math and computational thinking.
6. I can construct explanations.
7. I can engage in arguments from evidence.
8. I can obtain, evaluate, and communicate information.

8. I CAN OBTAIN, EVALUATE, AND COMMUNICATE INFORMATION



I CAN PLAN AND CARRY OUT INVESTIGATIONS

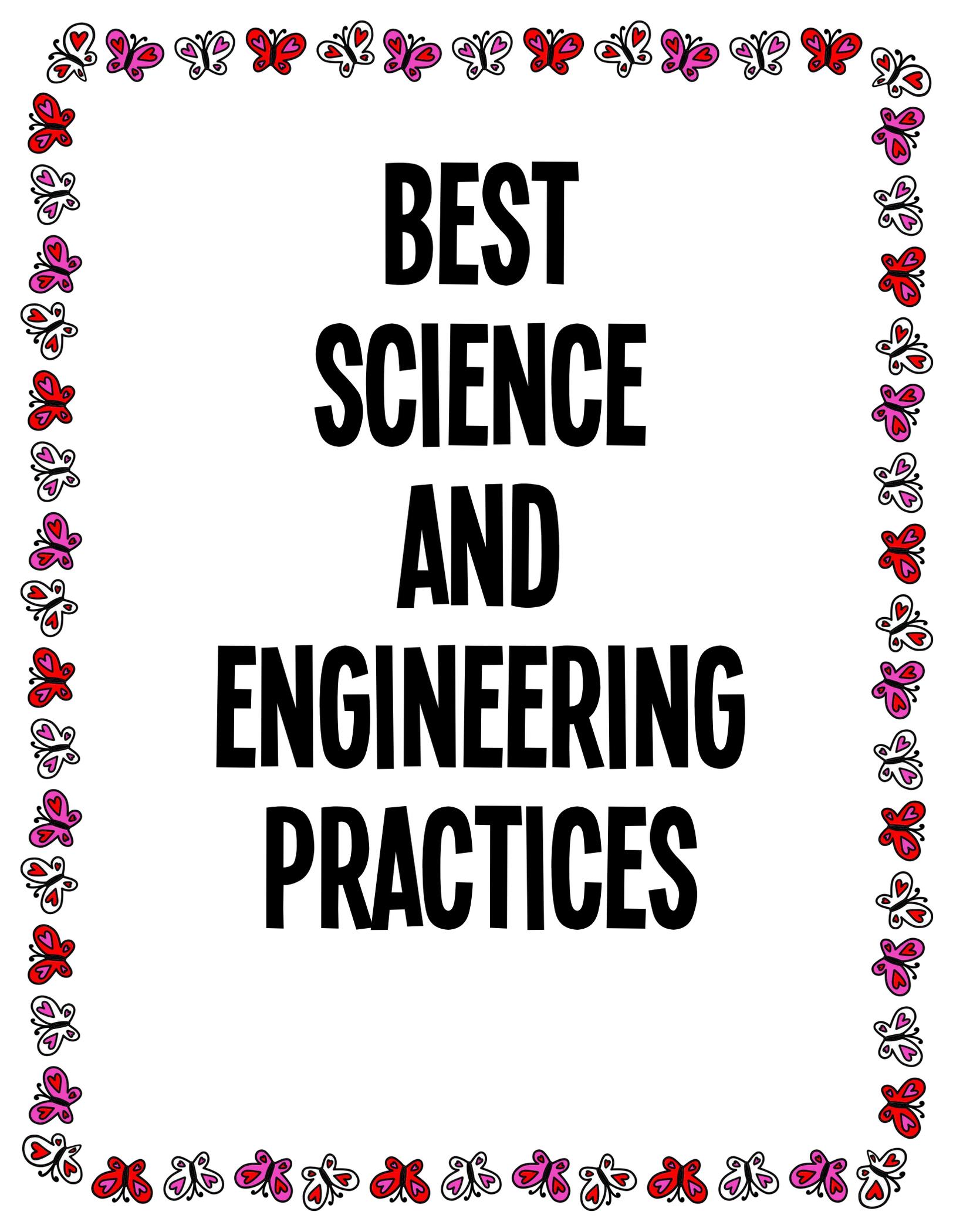
THE SCIENTIFIC METHOD, BEST SCIENCE PRACTICES, AND LEARNING!

What is science, and why should we learn it?
The word "science" comes from the Latin word that means "knowledge". So science is all about gaining knowledge about the world around us. We know kids love to ask questions about what they see!

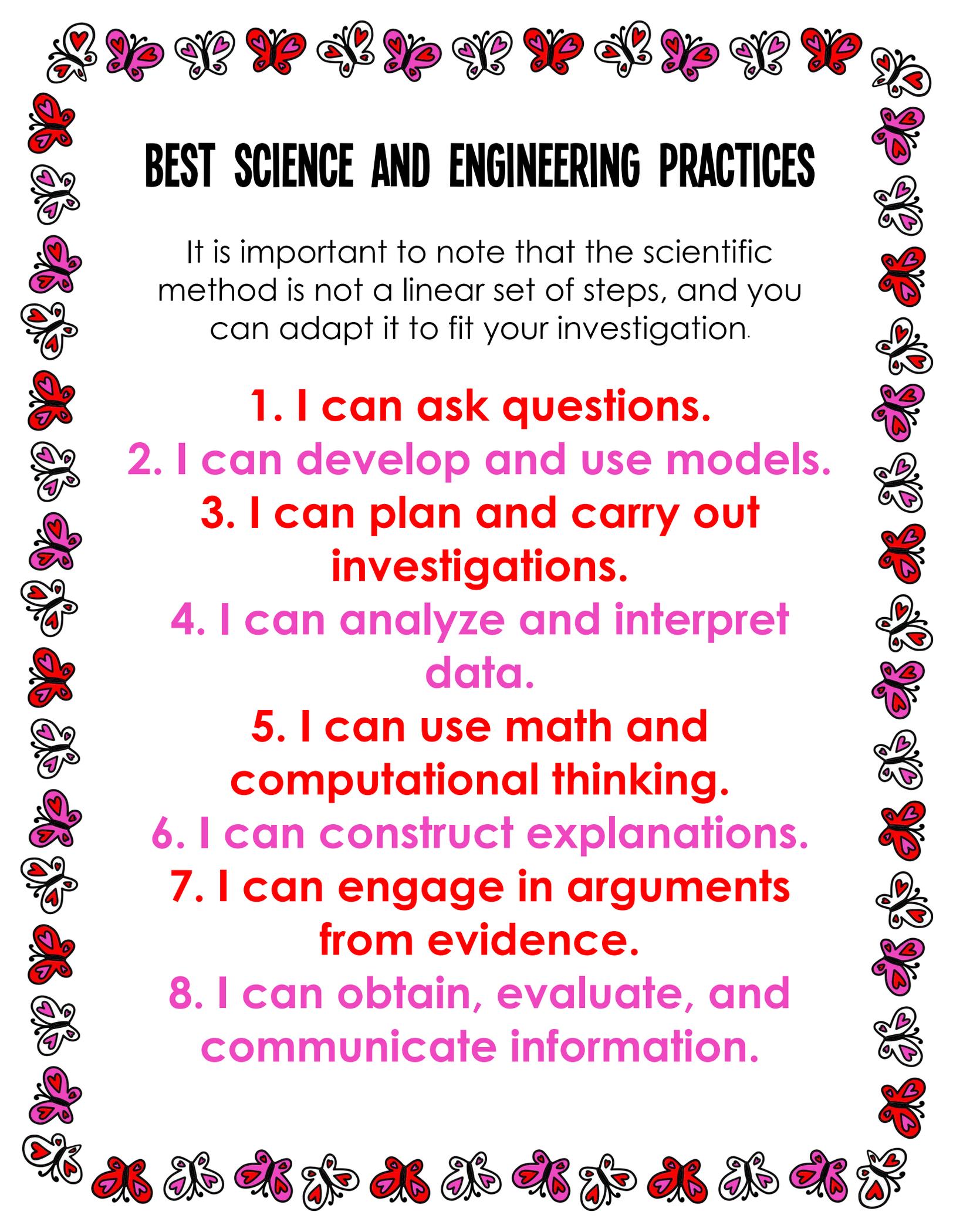
The word "method" comes from the Greek word that means "road". A method is all about the route you take to get someplace, but is it a road science and method, you get a new term used to talk about a series of steps or to gain knowledge.

Introducing kids to a logical way to think for guiding the process, but understand that the scientific method can be adapted to suit the needs of your learning. It is important to be creating, evaluating, questioning, gathering, and applying these critical thinking skills.

A version which these steps include research, doing inclusions.

A decorative border of colorful butterflies surrounds the text. The butterflies are in various colors including red, pink, purple, and white, and are arranged in a repeating pattern along the top, bottom, and sides of the page.

BEST SCIENCE AND ENGINEERING PRACTICES



BEST SCIENCE AND ENGINEERING PRACTICES

It is important to note that the scientific method is not a linear set of steps, and you can adapt it to fit your investigation.

- 1. I can ask questions.**
- 2. I can develop and use models.**
- 3. I can plan and carry out investigations.**
- 4. I can analyze and interpret data.**
- 5. I can use math and computational thinking.**
- 6. I can construct explanations.**
- 7. I can engage in arguments from evidence.**
- 8. I can obtain, evaluate, and communicate information.**



THE SCIENTIFIC METHOD, BEST SCIENCE PRACTICES, AND LEARNING!

What is science, and why should we learn it?

The word "science" comes from the Latin word that means "knowledge". So science is all about gaining knowledge about the world around us. We know kids love to ask questions about what they see!

The word "method" comes from the Greek word that means "road". A method is all about the route you take to get someplace, but is it a road map?

If you put the two words together, science and method, you get a new term called "scientific method". This term is used to talk about a series of steps to use as a way to figure things out or to gain knowledge.

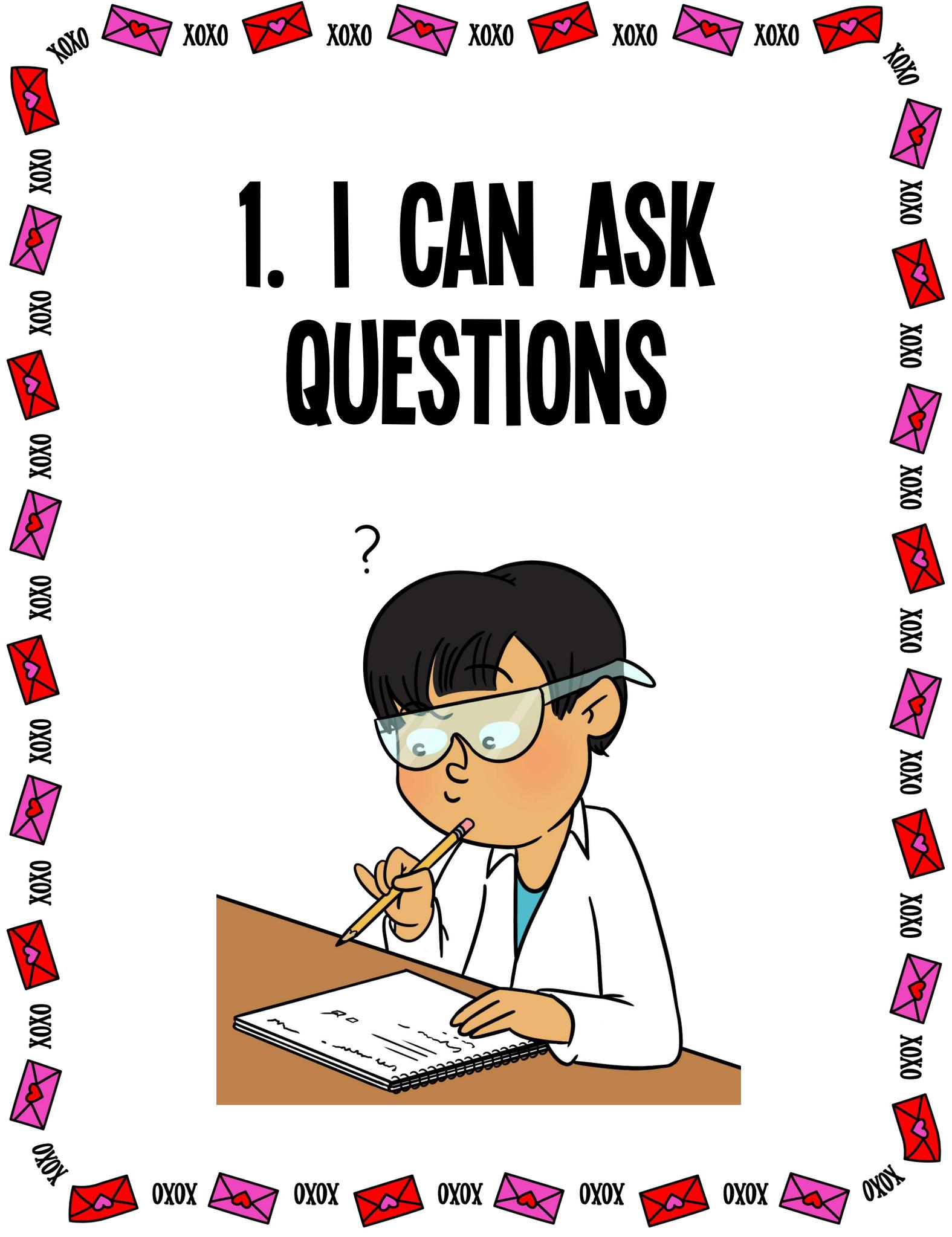
The scientific method is a useful tool for introducing kids to a logical way to solve scientific problems. The steps are helpful for guiding the process, but "guide" is the key here. It's important to understand that the scientific method is not a linear set of steps and can be adapted to suit the needs of a variety of investigations.

There are many ways scientists look to gain knowledge. It is important to allow kids to use the practices with what they are learning. This process will encourage the use of higher-order thinking skills for creating, evaluating, and analyzing. As kids develop the practices of questioning, gathering data, analyzing, and communication, they can apply these critical thinking skills to any situation. Now that's a winner!

* Note: You might be familiar with the more traditional version which includes some similar practices but in a linear format. These steps include asking questions, developing a hypothesis, conducting research, doing experiments and tests, analyzing data, and drawing conclusions.

However, the following eight science practices are less structured and allow for a more free-flowing approach to problem-solving and finding answers to questions.

1. I CAN ASK QUESTIONS



2. I CAN DEVELOP AND USE MODELS



**3. I CAN
PLAN AND CARRY
OUT INVESTIGATIONS**



**4. I CAN
ANALYZE AND
INTERPRET DATA**



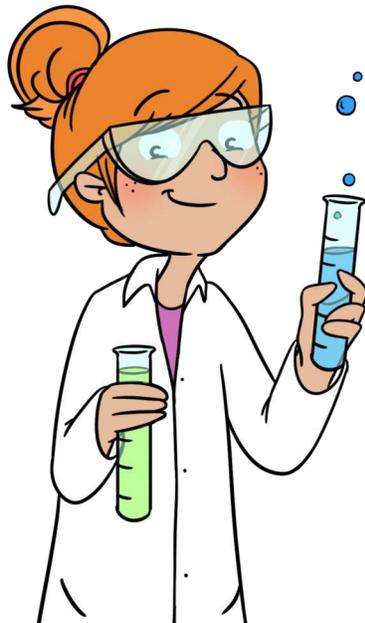
**5. I CAN USE
MATH AND
COMPUTATIONAL
THINKING**



6. I CAN CONSTRUCT EXPLANATIONS



7. I CAN ENGAGE IN ARGUMENTS FROM EVIDENCE



**8. I CAN
OBTAIN, EVALUATE,
& COMMUNICATE
INFORMATION**



1. I can **ask questions.**

2. I can **develop and use models.**

3. I can **plan and carry out investigations.**

4. I can **analyze and interpret data.**

5. I can use **math and computational thinking.**

6. I can **construct explanations.**

7. I can **engage in arguments from evidence.**

8. I can **obtain, evaluate, and communicate information.**

1. I can
**ask
questions.**

2. I can
**develop
and use
models.**

3. I can
**plan and
carry out
investigati
ons.**

4. I can
**analyze
and
interpret
data.**

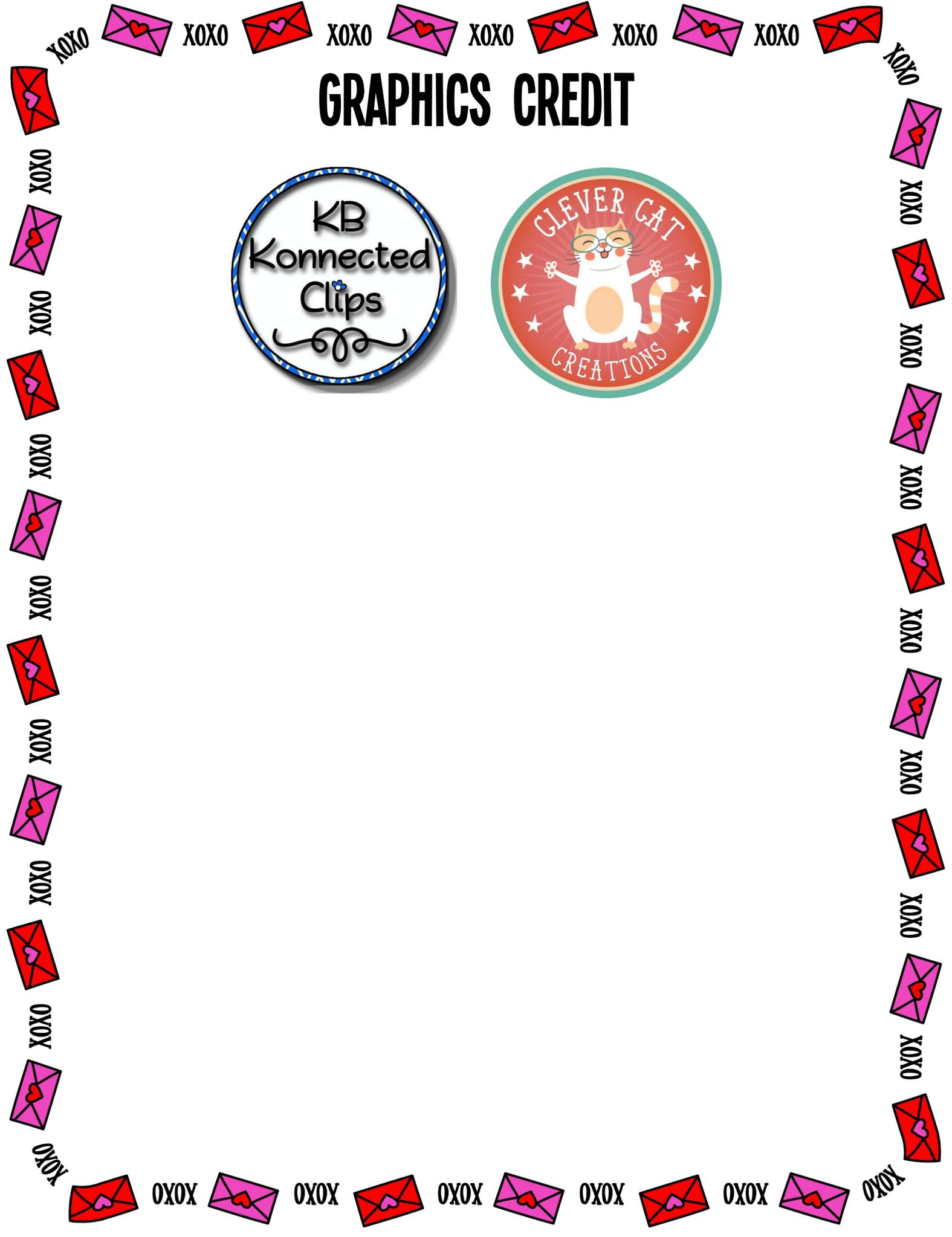
5. I can use
math and
computational thinking.

6. I can
construct
explanations.

7. I can
engage in
arguments
from
evidence.

8. I can
obtain,
evaluate,
and
communicate
information.

GRAPHICS CREDIT

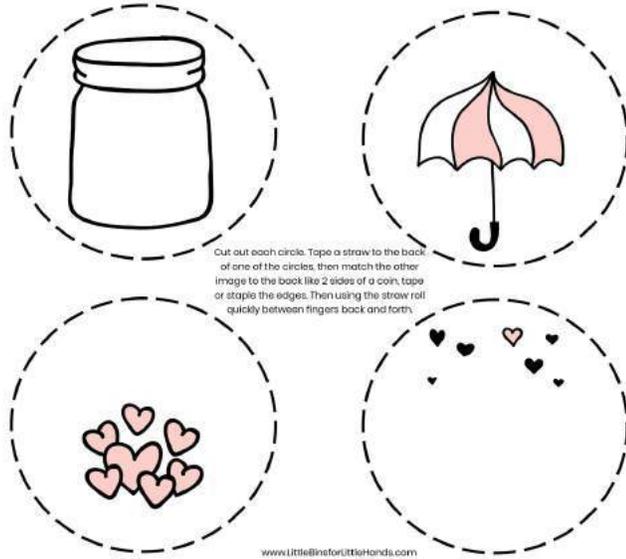


STEM EXTRAS

Add the answer to your candy heart structure $8 + 2$ 	Add the answer to your candy heart structure $10 + 2$ 	Add the answer to your candy heart structure $12 + 3$ 
Add the answer to your candy heart structure $1 + 6$ 	Add the answer to your candy heart structure $4 + 5$ 	Add the answer to your candy heart structure $9 + 0$ 
Add the answer to your candy heart structure $10 + 8$ 	Add the answer to your candy heart structure $7 + 4$ 	Add the answer to your candy heart structure $13 + 3$
Add the answer to your candy heart structure $5 + 2$ 	Add the answer to your candy heart structure $3 + 4$ 	Add the answer to your candy heart structure $6 + 7$

littlebinsforlittlehands.com

create a triangle (2D) you need 	create a pyramid (3D) you need 
create a square (2D) you need 	create a cube (3D) you need 



Cut out each circle. Tape a straw to the back of one of the circles, then match the other image to the back like 2 sides of a coin, tape or staple the edges. Then using the straw roll quickly between fingers back and forth.

(2D)

(2D)

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A 	B 	C 	D 	E 	F 
G 	H 	I 	J 	K 	L 
M 	N 	O 	P 	Q 	R 
S 	T 	U 	V 	W 	X 
Y 	Z 				

WHAT DID THE LIGHT BULB SAY TO THE OTHER LIGHT BULB?

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<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
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5x7	4x8	3x10	9x3	2x6	3x0	3x2	1x0	2x10	6x7	6x6	6x3	2x0	0x6	9x4	4x3	2x5	6x6	5x8	0x12	4x8	
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1x12	4x8	3x5	7x3	6x7	3x0	1x13	4x10	2x13	7x7	7x8	5x10	2x13	1x1	3x10	0x12	9x4	1x11	2x3	1x8	1x4	13x0
9x4	9x4	1x11	3x3	1x11	4x8	1x1	1x0	6x8	5x10	6x8	1x8	0x0	6x7	13x0	5x7	9x4	1x12	1x12	1x2	1x12	1x12
3x10	13x0	2x10	3x10	9x3	6x6	1x1	2x10	0x1	1x1	1x0	4x8	3x10	5x8	6x6	5x8	6x6	1x11	9x3	1x11	9x3	2x11

red 0, 1, 2
blue 3, 4, 5

yellow 6, 7, 8
brown 9, 10, 11

pink 12, 13
purple 14, 15



9+3	3+10	5+8	6+6	1+12	1+12	6+7	13+0	6+7	13+0	6+7	13+0	6+6	1+12	2+10	6+7	6+1	4+4	6+6	5+8	5+7	3+10
5+7	4+8	3+10	9+3	2+0	0+0	0+2	1+1	2+10	6+7	6+6	0+2	1+1	2+0	0+1	9+4	4+5	2+5	6+6	5+8	0+12	4+8
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red 0, 1, 2

blue 3, 4, 5

yellow 6, 7, 8

brown 9, 10, 11

pink 12, 13

purple 14, 15

9+3	3+10	5+8	6+6	1+12	1+12	6+7	13+0	6+7	13+0	6+7	13+0	6+6	1+12	2+10	6+7	6+1	4+4	6+6	5+8	5+7	3+10
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3+10	13+0	2+10	3+10	9+3	6+6	1+11	2+10	0+1	1+1	1+0	4+8	3+10	5+8	6+6	5+8	6+6	1+11	9+3	1+11	9+3	2+11

red	0, 1, 2
blue	3, 4, 5

yellow	6, 7, 8
brown	9, 10, 11

pink	12, 13
purple	14, 15

WHAT DID THE PICKLE SAY TO THE OTHER PICKLE?

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WHAT DID THE PICKLE SAY TO THE OTHER PICKLE?

Y O U



M E A N



A



G R E A T



D I L L



T O



M E



WHAT DID THE LIGHT BULB SAY TO THE OTHER LIGHT BULB?

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WHAT DID THE LIGHT BULB SAY TO THE OTHER LIGHT BULB?

I



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Y

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U



A



W

A

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**WHAT DO YOU CALL
TWO BIRDS IN LOVE?**

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--	--	--	--	--	--



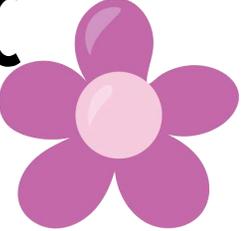
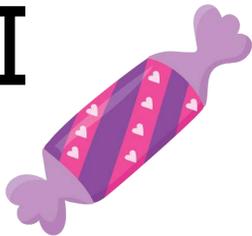
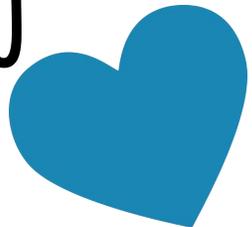
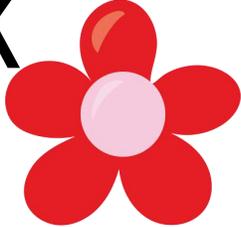
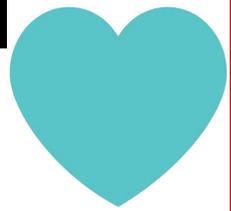
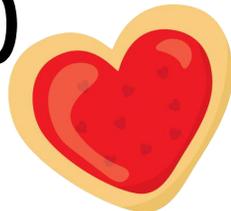
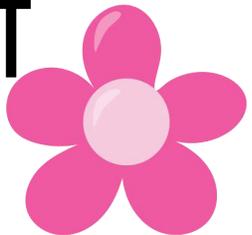
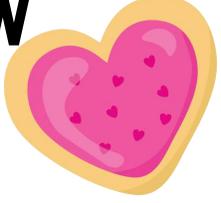
**WHAT DO YOU CALL
TWO BIRDS IN LOVE?**

T	W	E	E	T
---	---	---	---	---



H	E	A	R	T	S
---	---	---	---	---	---



A 	B 	C 	D 	E 	F 
G 	H 	I 	J 	K 	L 
M 	N 	O 	P 	Q 	R 
S 	T 	U 	V 	W 	X 
Y 	Z 	VALENTINE'S DAY DECODER			

GRAPHICS CREDIT



VALENTINE'S DAY SUDOKU

VALENTINE'S DAY SUDOKU

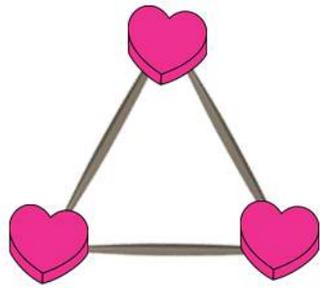
SOLUTIONS

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

8	9	1	4	6	2	5	7	3
5	6	4	1	3	7	2	9	8
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4	8	3	2	9	5	7	1	6
9	2	5	6	7	1	8	3	4
1	7	6	8	4	3	9	2	5
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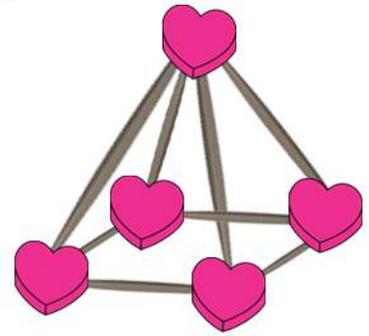
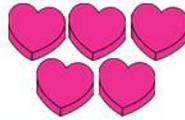
create a triangle (2D)

you need



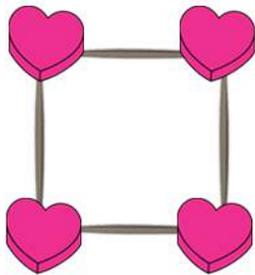
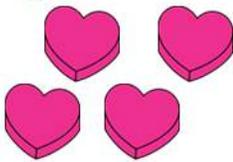
create a pyramid (3D)

you need



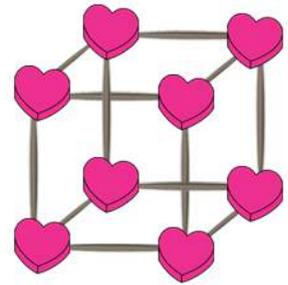
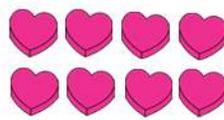
create a square (2D)

you need



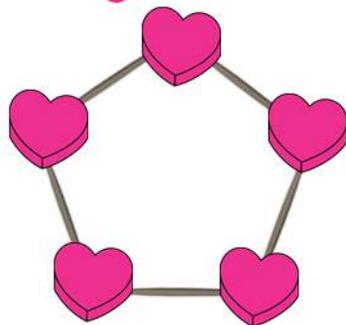
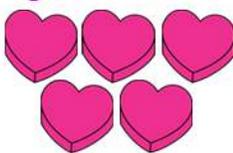
create a cube (2D)

you need



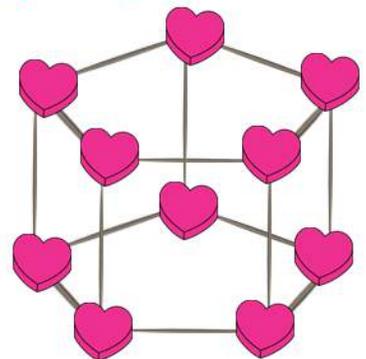
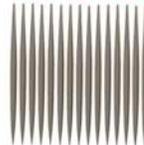
create a pentagon (2D)

you need



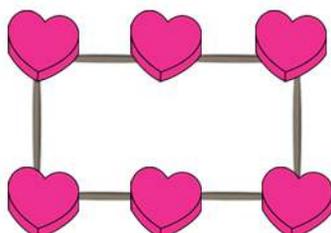
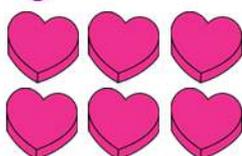
create a pentagonal prism (3D)

you need



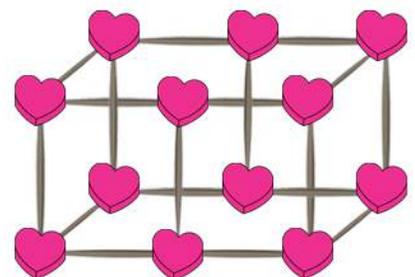
create a rectangle (2D)

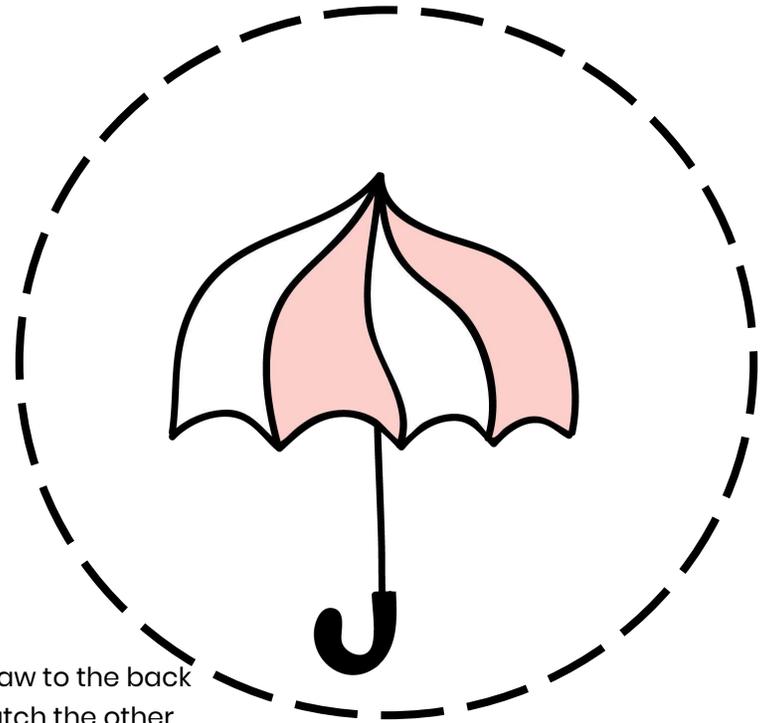
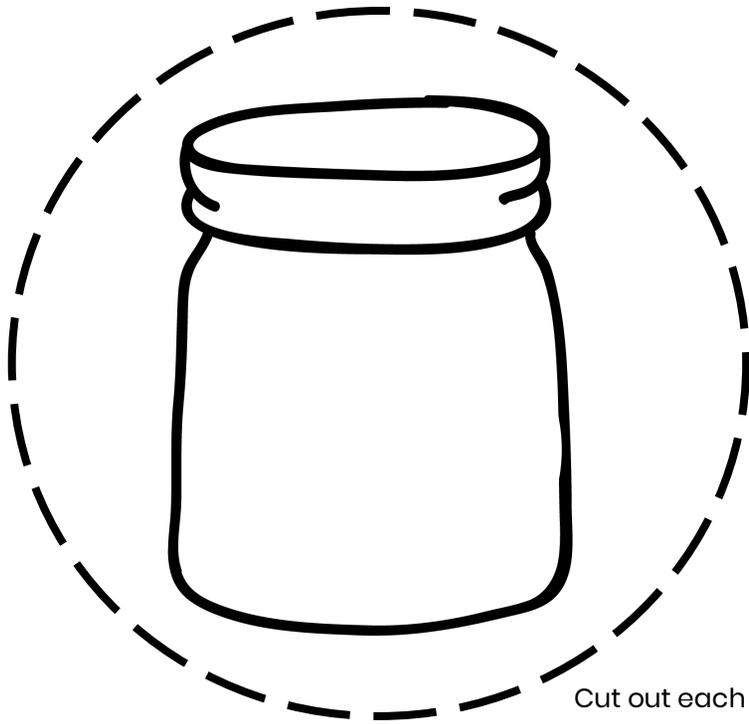
you need



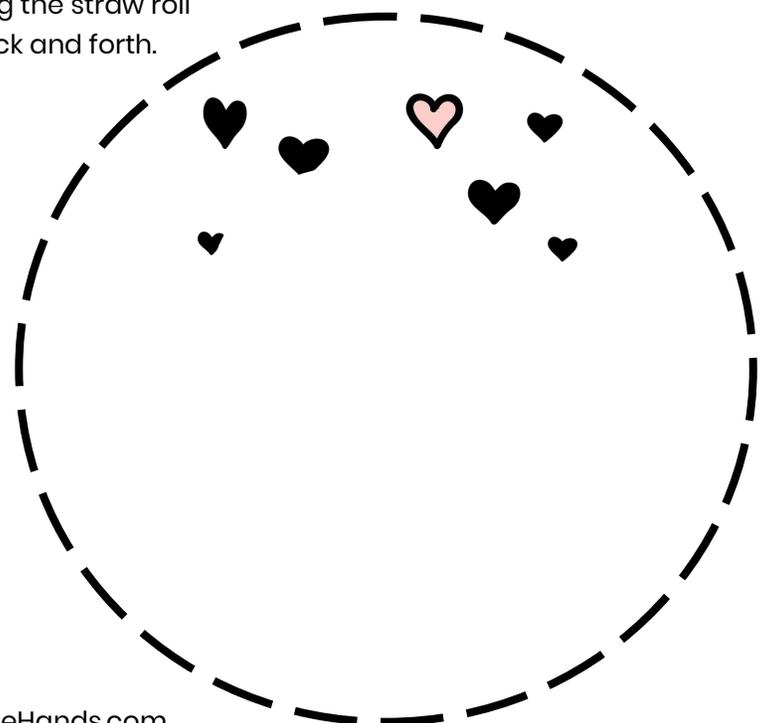
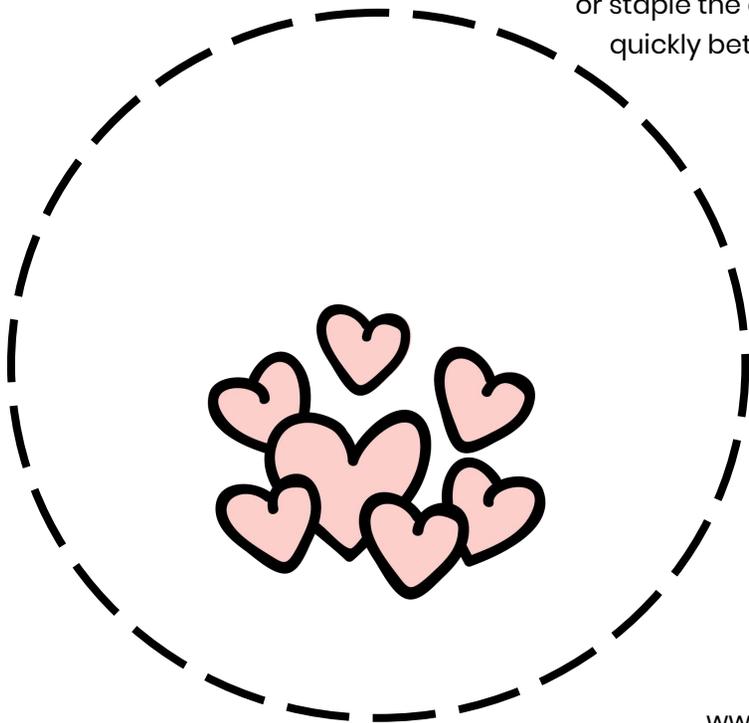
create a rectangular prism (3D)

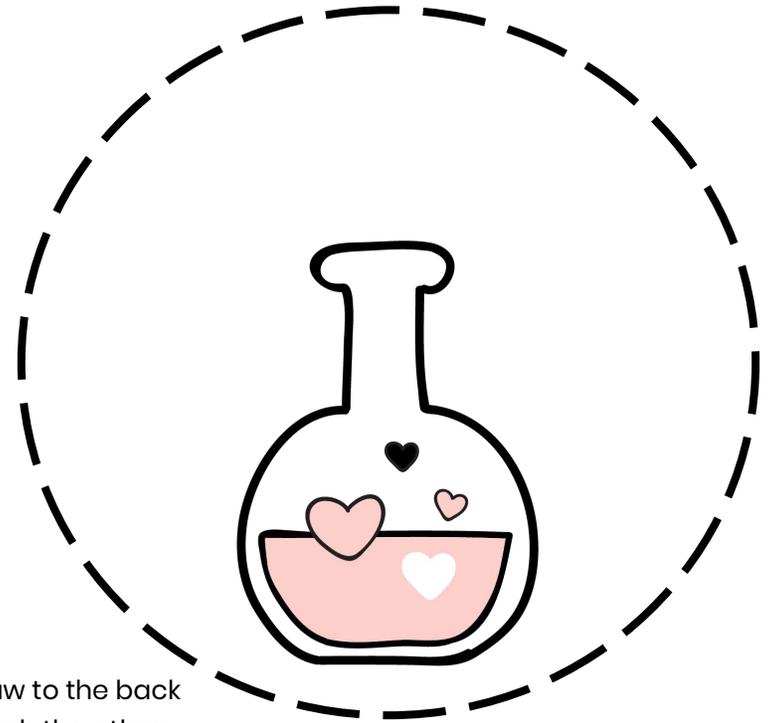
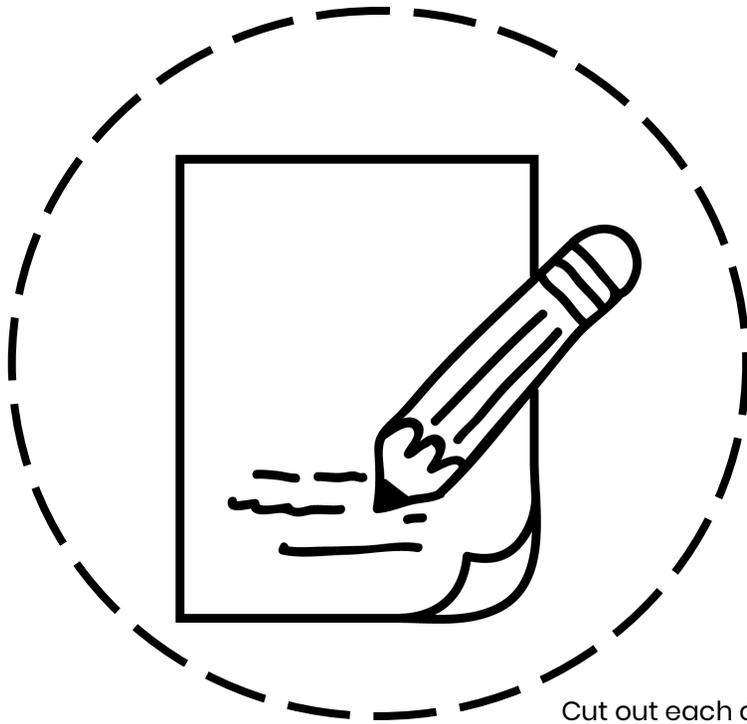
you need



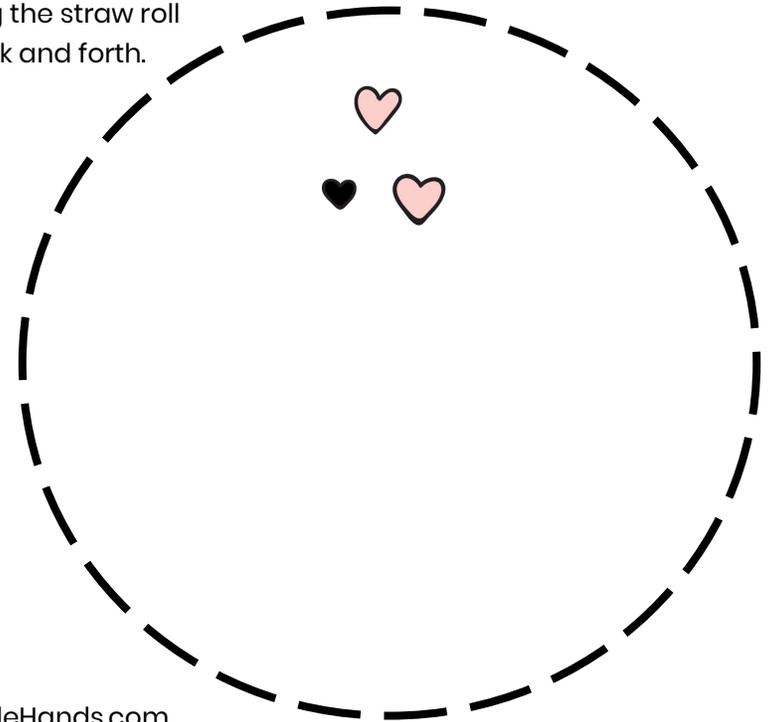
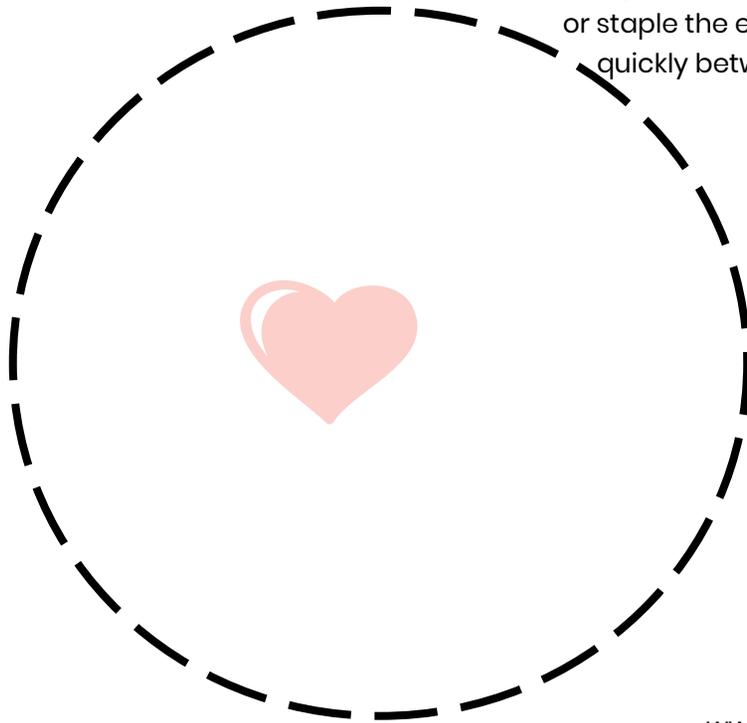


Cut out each circle. Tape a straw to the back of one of the circles, then match the other image to the back like 2 sides of a coin, tape or staple the edges. Then using the straw roll quickly between fingers back and forth.





Cut out each circle. Tape a straw to the back of one of the circles, then match the other image to the back like 2 sides of a coin, tape or staple the edges. Then using the straw roll quickly between fingers back and forth.



Add the answer to your
candy heart structure

$$8 + 2$$



Add the answer to your
candy heart structure

$$10 + 2$$



Add the answer to your
candy heart structure

$$12 + 3$$



Add the answer to your
candy heart structure

$$1 + 6$$



Add the answer to your
candy heart structure

$$4 + 5$$



Add the answer to your
candy heart structure

$$9 + 0$$



Add the answer to your
candy heart structure

$$10 + 8$$



Add the answer to your
candy heart structure

$$7 + 4$$



Add the answer to your
candy heart structure

$$13 + 3$$



Add the answer to your
candy heart structure

$$5 + 2$$



Add the answer to your
candy heart structure

$$3 + 4$$



Add the answer to your
candy heart structure

$$6 + 7$$



Add the answer to your
candy heart structure

$$5 - 2$$



Add the answer to your
candy heart structure

$$13 - 4$$



Add the answer to your
candy heart structure

$$18 - 16$$



Add the answer to your
candy heart structure

$$10 - 1$$



Add the answer to your
candy heart structure

$$7 - 2$$



Add the answer to your
candy heart structure

$$17 - 4$$



Add the answer to your
candy heart structure

$$11 - 8$$



Add the answer to your
candy heart structure

$$20 - 15$$



Add the answer to your
candy heart structure

$$15 - 7$$



Add the answer to your
candy heart structure

$$13 - 6$$



Add the answer to your
candy heart structure

$$10 - 8$$



Add the answer to your
candy heart structure

$$5 - 0$$



$45 - 27$



$72 - 20$



$37 - 15$



$40 - 11$



$41 - 39$



$55 - 17$



$90 - 57$



$77 - 25$



$99 - 20$



$74 - 14$



$33 - 16$



$58 - 42$



$44 + 18$



$24 + 13$



$29 + 52$



$16 + 19$



$41 + 31$



$10 + 55$



$73 + 9$



$26 + 45$



$18 + 44$



$38 + 23$



$15 + 40$



$75 + 12$



QUICK STEM CHALLENGES

Add these STEM challenge cards to a simple engineering kit filled with easy to find supplies. Encourage the kids to get creative! Fun individual or group activity that's perfect for maker spaces or tinker tables.

Build the Tallest Candy Heart Tower

Possible Supplies:
Candy hearts, gummy candies, Airhead candies, Ooze tube candy



Build a Candy Box

Possible Supplies:
paper, cardstock, glue, toothpicks, cardboard, Stickers, glitter glue, sequins, ribbon



Build a Mailbox to Hold a Letter

Possible Supplies:
cardboard, cardstock, foil, brads, strips of cloth, wooden planks, skewers, toothpicks



Fold a Love Letter into a Paper Airplane

Possible Supplies:
paper, stickers, paperclips, ruler, cardstock



Design & Build LEGO® Hearts

Possible Supplies:
LEGO® bricks



Build Cupid's Bow & Arrow

Possible Supplies:
Toothpicks, string, brads, paper clips, cardstock, glue



Build a Cup Tower



VALENTINE STEM Tinker Supply List

- Airheads candies
- Aluminum foil
- Baggies
- Beads
- Bows
- Buttons
- Candy Hearts
- Cloth
- Clothes pins
- Coffee filters
- Cookie cutters
- Cotton balls
- Cotton swabs
- Dollies
- Dried cereal
- Dried pasta
- Feathers
- Felt
- Flat marbles
- Funnel
- Gems
- Glitter
- Glitter glue
- Glow stars
- Glow sticks
- Glue
- Golf tees
- Google eyes
- Gummy Bears
- Leaves
- LEGO® bricks
- Lollipop sticks
- Magnets
- Marbles
- Marshmallows
- Measuring cups
- Mint tins
- Ooze tube candy
- Paint
- Paper
- Paper clips
- Pinecones
- Pipe cleaners
- Pom-poms
- Popsicle sticks
- Pretzel Sticks
- Raffia
- Ribbon
- Rubber Bands
- Scissors
- Sequins
- Shells
- Shredded paper
- Skewers
- Spice jars
- Sponges
- Stapler
- Strainer
- Straws
- String
- Styrofoam balls
- Suckers
- Sugar cubes
- Tape
- Tea lights
- Toilet paper rolls
- Toothpicks
- Twist ties
- Water beads
- Washi tape
- Wire
- Wooden planks
- Yarn
- Zip ties

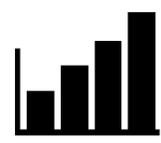
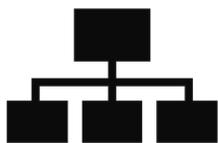
Valentine's Day



STEM



**Challenges
&
Engineer's
Notebook**



My STEM Challenge:



? ASK

What is the problem?



Collect Information

What information & resources will I need?

Imagine

How can I solve the problem?



Plan

What materials do I have/need?
What steps do I take?



Create

I will test my solution,
and take or draw notes.



Improve

What changes can I make
to improve my plan?





My Research Notes

<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	



Large blank area for drawing.



Draw It

Large blank area for drawing.



My Next Plan

<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	

VALENTINE

STEM Tinker Supply List

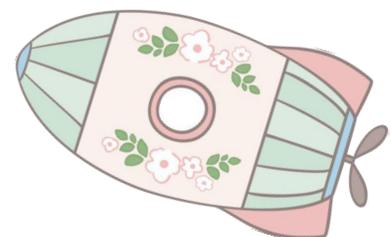
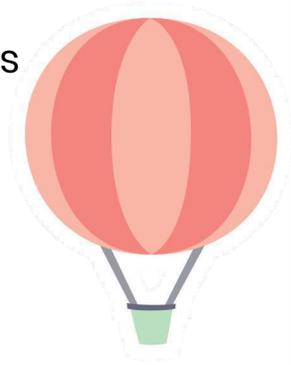
Airheads candies
Aluminum foil
Baggies
Beads
Bows
Buttons
Candy Hearts
Cloth
Clothes pins
Coffee filters
Cookie cutters
Cotton balls
Cotton swabs
Doilies
Dried cereal
Dried pasta
Feathers
Felt
Flat marbles
Funnel
Gems
Glitter
Glitter glue
Glow stars
Glow sticks
Glue



Golf tees
Google eyes
Gummy Bears
Leaves
LEGO® bricks
Lollipop sticks
Magnets
Marbles
Marshmallows
Measuring cups
Mint tins
Ooze tube candy
Paint
Paper
Paper clips
Pinecones
Pipe cleaners
Pom-poms
Popsicle sticks
Pretzel Sticks
Raffia
Ribbon
Rubber Bands
Scissors
Sequins
Shells



Shredded paper
Skewers
Spice jars
Sponges
Stapler
Strainer
Straws
String
Styrofoam balls
Suckers
Sugar cubes
Tape
Tea lights
Toilet paper rolls
Toothpicks
Twist ties
Water beads
Washi tape
Wire
Wooden planks
Yarn
Zip ties



Build the Tallest Candy Heart Tower

Possible Supplies:

Candy hearts, gummy candies, Airhead candies, Ooze tube candy



Build a Candy Box

Possible Supplies:

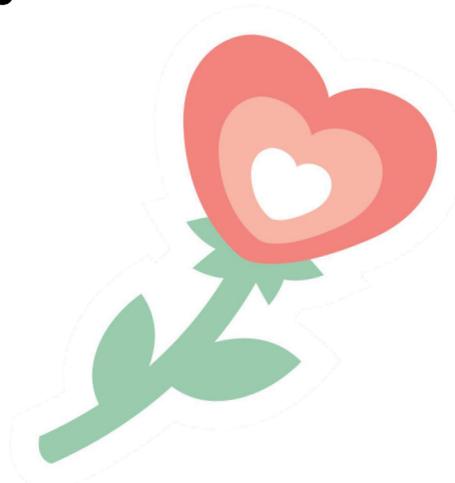
paper, cardstock, glue, toothpicks, cardboard, Stickers, glitter glue, sequins, ribbon



Build a Flower with Recycled Materials

Possible Supplies:

paper, zip ties, pipe cleaners, cardboard, glue, glitter glue, sequins, stickers, toothpicks, skewers, Washi tape



Design & Build LEGO® Hearts

Possible Supplies:

LEGO® bricks



Build Cupid's Bow & Arrow

Possible Supplies:

Skewers, Toothpicks,
paper, string, brads,
popsicle sticks, cardstock,
foil, rubber bands



Build a Heart Shaped Cup Tower

Possible Supplies:

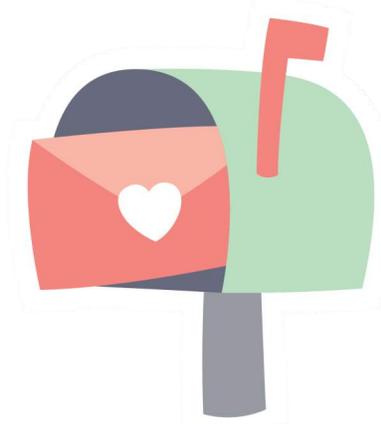
plastic or paper cups



Build a Mailbox to Hold a Letter

Possible Supplies:

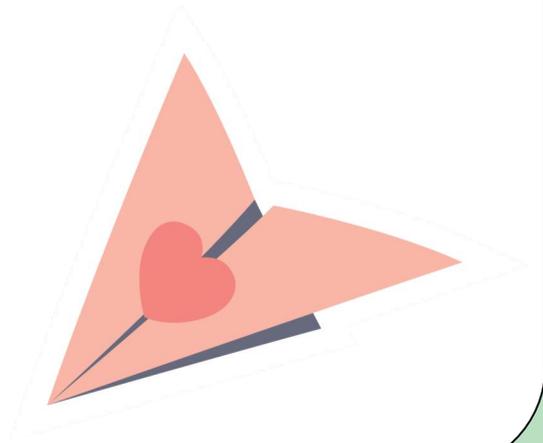
cardboard, cardstock, foil,
brads, strips of cloth,
wooden planks, skewers,
toothpicks



Fold a Love Letter into a Paper Airplane

Possible Supplies:

paper, stickers, paperclips,
ruler, cardstock



Design a Love Bug Robot

Possible Supplies:

Foil, Washi tape, cups, paper,
cardstock, string, pipe cleaners,
LEGO bricks, tins



SCREEN FREE CODING

Screen-free coding is a fun and easy way to introduce computer coding concepts to young kids! Explore the binary alphabet and create a heart with pipe cleaners and beads, or discover how an algorithm works! Click here to see our hearts!

WRITE LOVE IN BINARY CODE

WRITE ROSE IN BINARY CODE

WRITE CANDY IN BINARY CODE

WRITE CUPID IN BINARY CODE

ALPHABET IN BINARY CODE

A	01000001	J	01001010	S	01010011
B	01000010	K	01001011	T	01010100
C	01000011	L	01001100	U	01010101
D	01000100	M	01001101	V	01010110
E	01000101	N	01001110	W	01010111
F	01000110	O	01001111	X	01011000
G	01000111	P	01010000	Y	01011001
H	01001000	Q	01010001	Z	01011010
I	01001001	R	01010010		

YOUR NAME IN CODE

 PRINTABLE 
VALENTINE ALGORITHM CODING GAME
FOR KIDS
3 LEVELS OF DIFFICULTY

 **LITTLE BINS**
BY LITTLE HANDS 

BINARY CODE

Valentine's Day coding ornaments are the perfect craft activity for the kid who doesn't care too much for crafts! Screen-free coding and ornament making as you explore the binary code.

SUPPLIES

- 3 Colors of Beads
- Pipe Cleaners
- Printable Binary Code Sheet

Choose one color bead for the number 1 and another color bead for the number 0. Choose a 3rd color bead to use as a spacer between letters.

Bend your pipe cleaner into any winter theme shape such as an icicle, snowflake, or tree.

Choose a word or your name to be represented with the binary code. Use the printable sheet to write down the code.

If your word is too long for one pipe cleaner, simply attach another! Use ribbon or another type of fastener to hang in your window or tune into a keychain!

The computer doesn't read the letter A like we read the letter A. It reads it in a series of 1's and 0's. Each letter has its own code of 1's and 0's. This code is called the ASCII Binary Alphabet.

The binary number system is a base-2 number system. This means it only has two numbers: 0 and 1. The number system that we normally use is the decimal number system. It has 10 numbers: 0-9.

Computers work best with an "on" and "off" system and that is just what the binary code is all about. 1 is "on" and 0 is "off".

**WRITE LOVE IN
BINARY CODE**

**WRITE ROSE IN
BINARY CODE**

**WRITE CANDY IN
BINARY CODE**

**WRITE CUPID IN
BINARY CODE**



PRINTABLE

VALENTINE

ALGORITHM

CODING GAME



FOR KIDS

3 LEVELS OF DIFFICULTY

LITTLE BINS
FOR LITTLE HANDS





Screen-free coding with a winter theme! Learn about algorithms as you play games.



SET UP & PLAY

Print out one of the sets of grids to set up your board. Choose a blank grid with either the mitten or hot cocoa. Cut out the corresponding snowflakes, snowmen, and arrows for your pieces.

Place the snowmen and snowflakes on the board in some of the blank spaces (not every space). You can play where the flakes are obstacles to move around and/or the snowmen need to be collected.

Your arrows are your direction cards and how you write the code to solve the puzzle (around the snowmen or collect the snowflakes). Included are left, right, and straight arrow pieces. You can use and re-use the grids over and over again and even laminate the sheets.

Use a small figure as an object to move through the board or you can cut out a snowman to move through the board to get to mitten or cocoa or vice versa.



Use the directional cards to create an algorithm to reach the desired object. You can change the obstacle cards to create a new board each time. Use either the flakes or snowmen or both on the same board! Start simple using just a few and work your way up!

Easier version: Place out one directional card at a time as you move the object one square at a time with or without obstacles to go around.

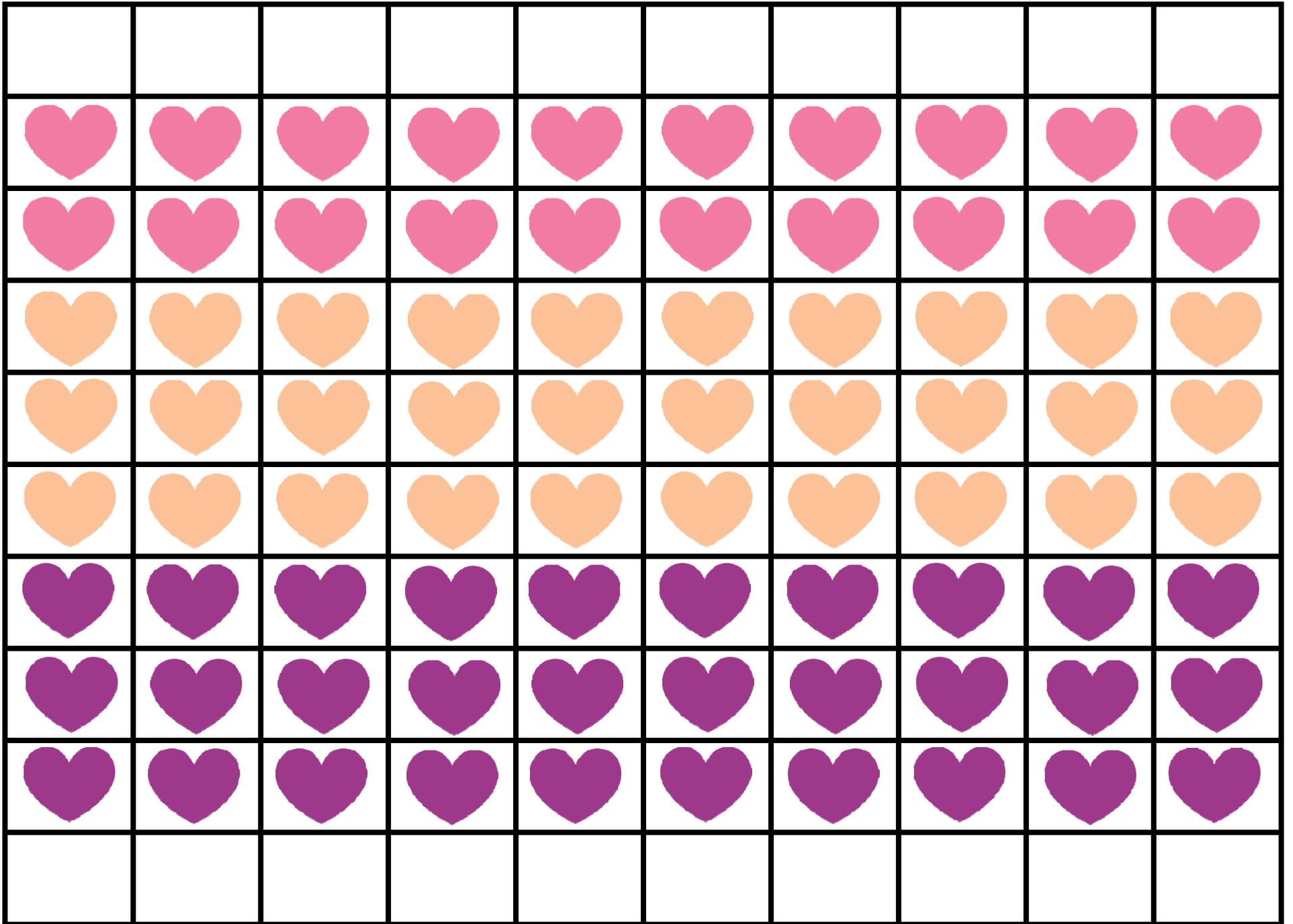
Harder version: Think out the sequence of actions ahead of time and place out a string of directional cards to show your program. Run your program (move your piece) according to your directions. Check your results. Did you make it? Do you need to fix a card?

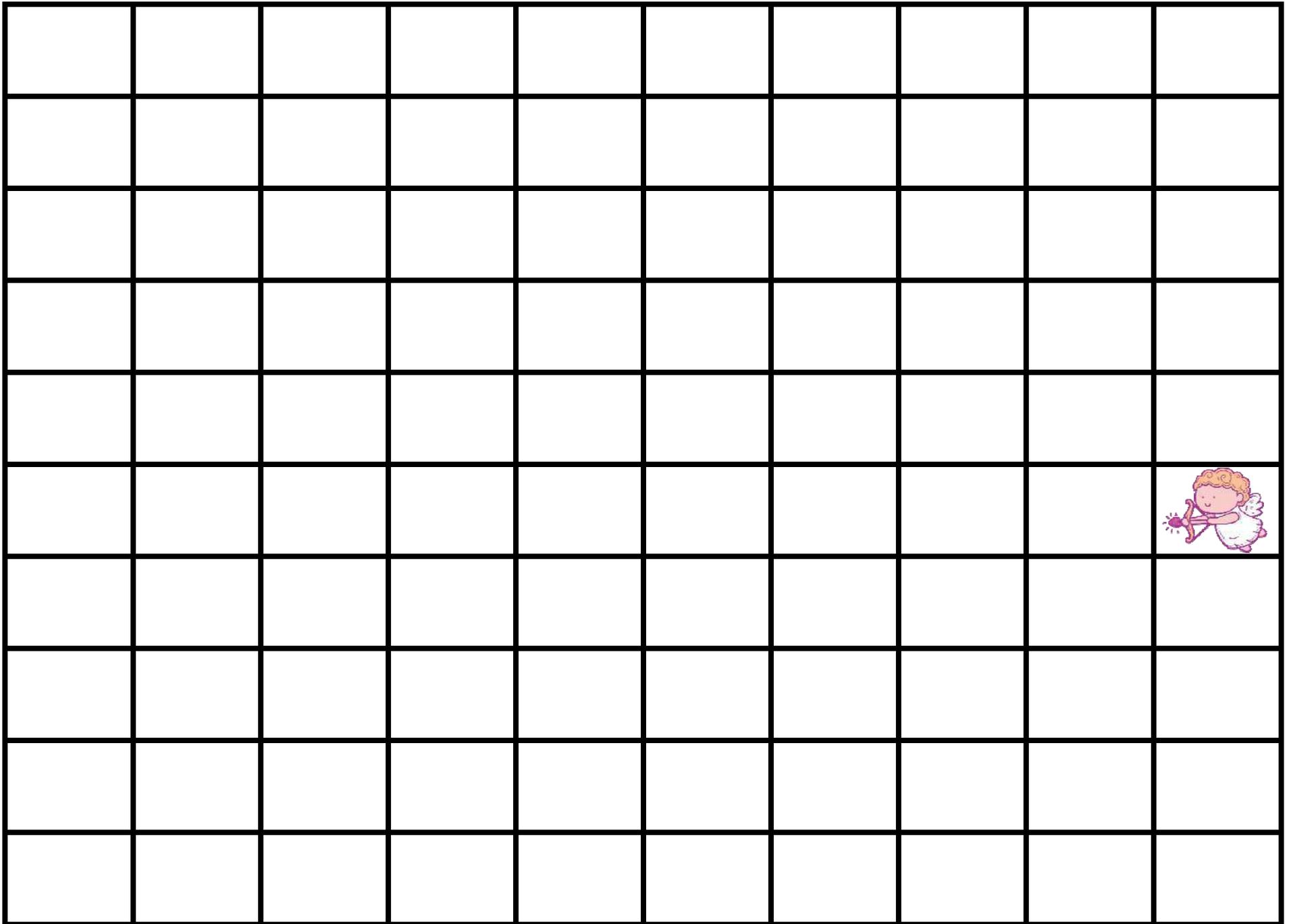
Go ahead and make up new obstacles if desired!

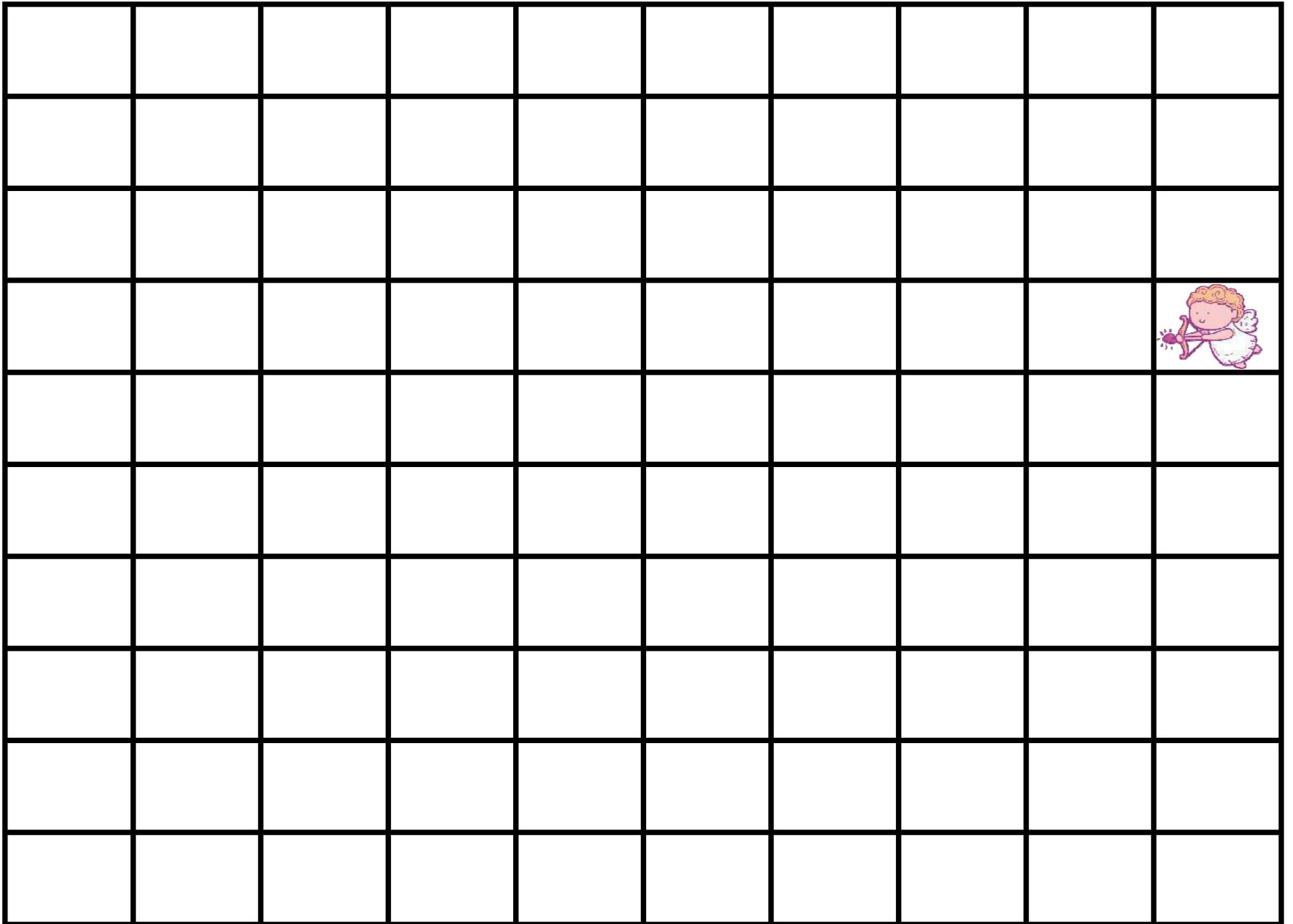


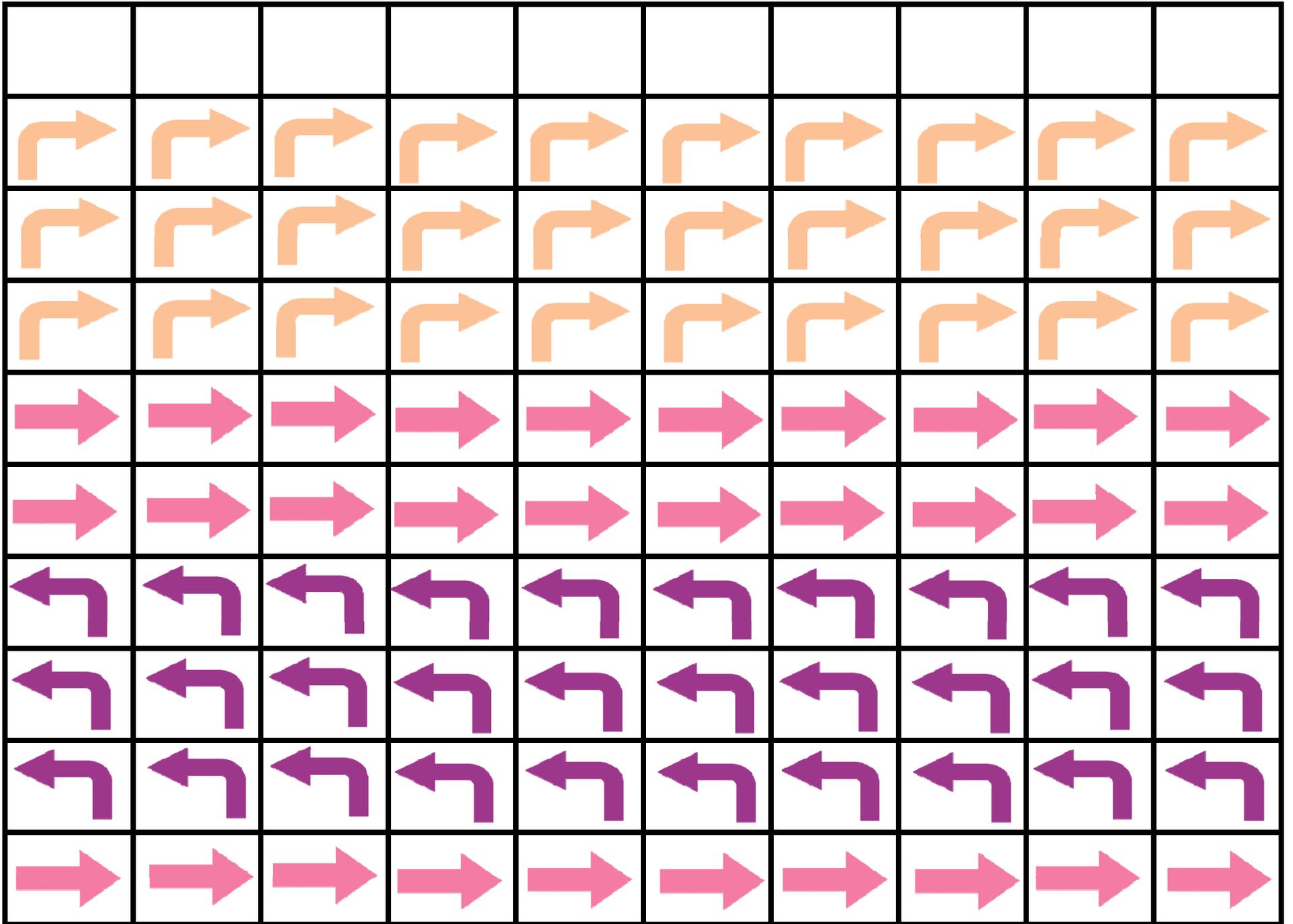
QUICK STEM

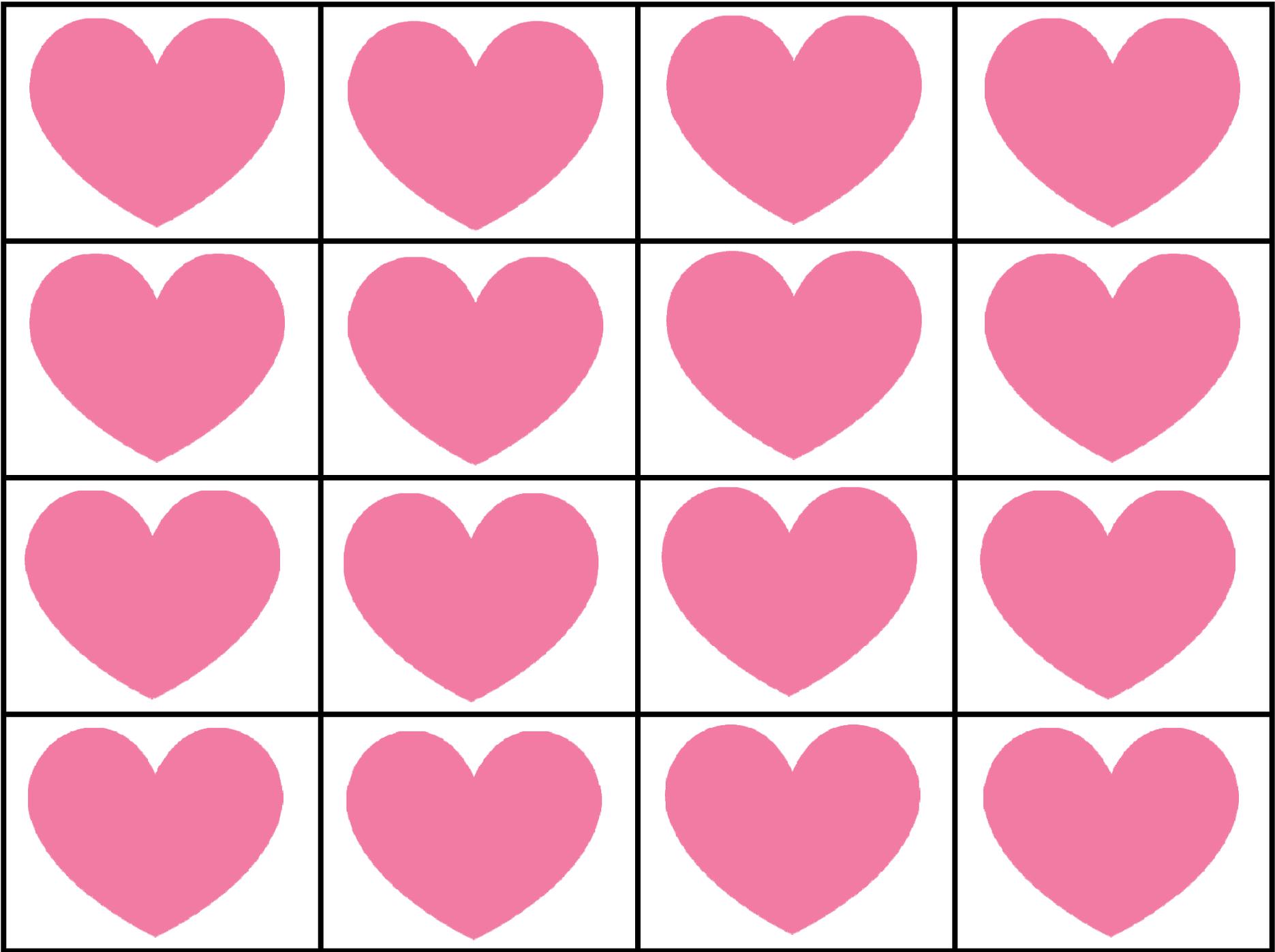
Coding is its own language. For programmers, it' s like learning a new language when they write code for a new program. An algorithm is a series

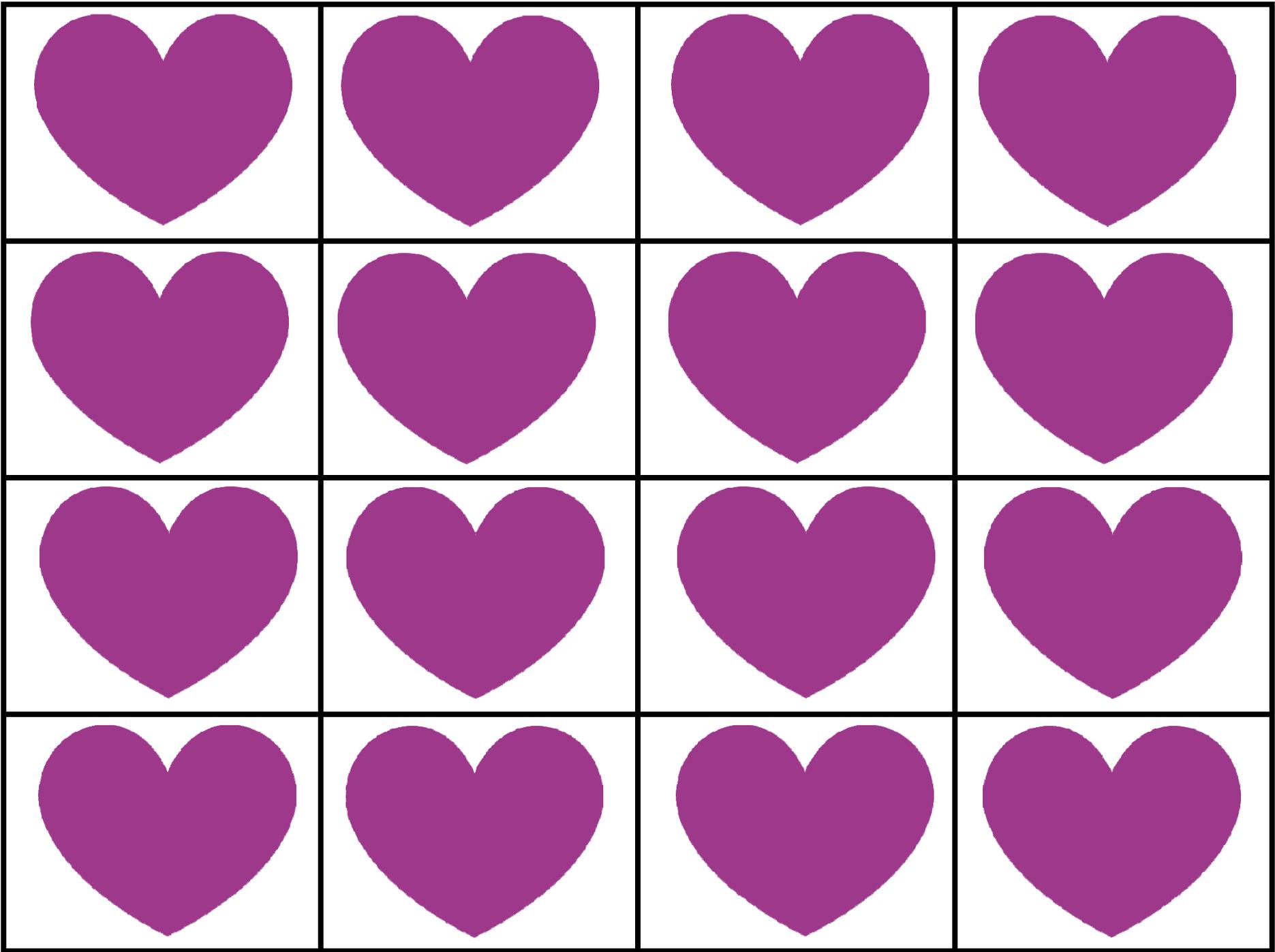






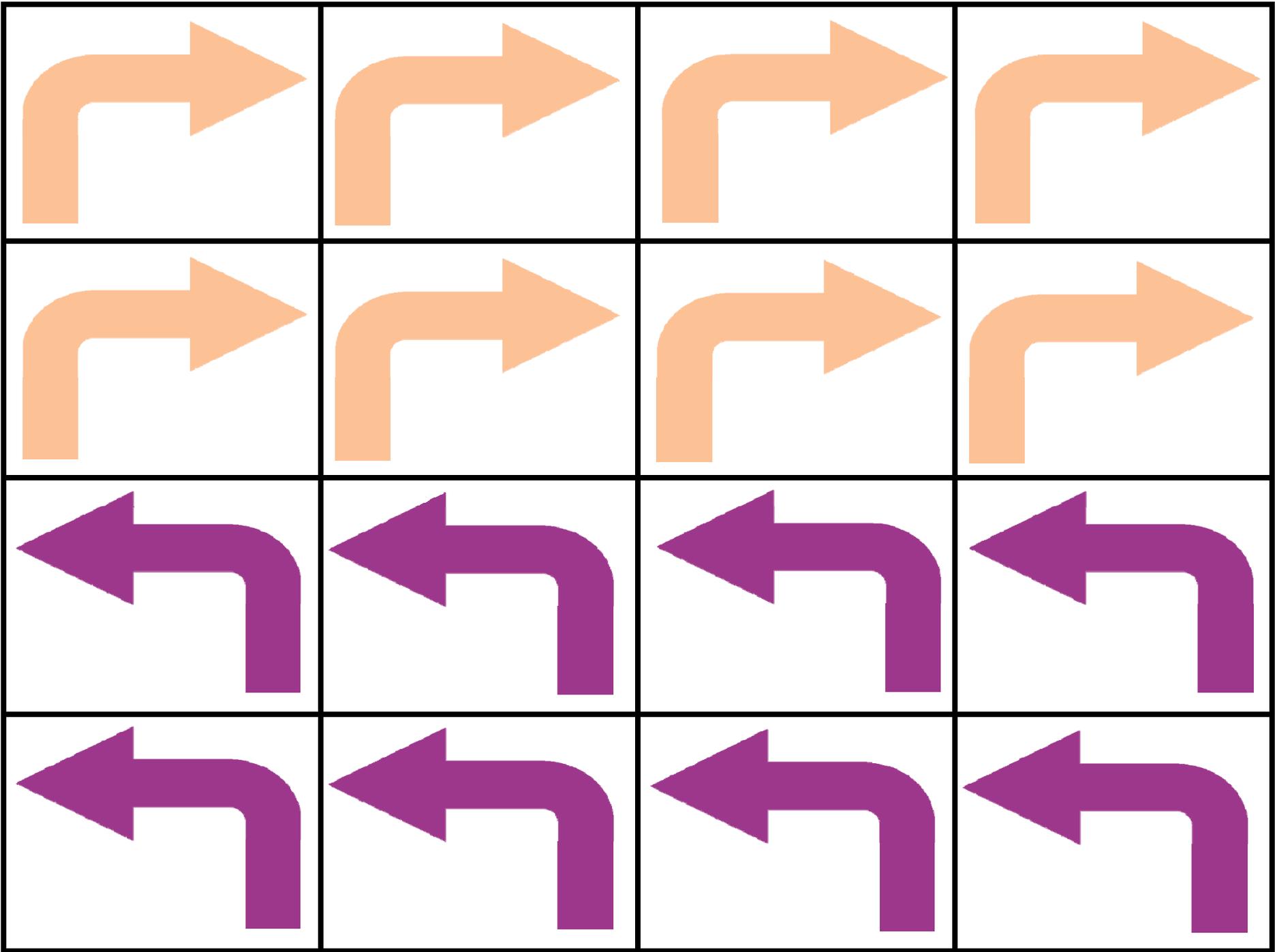


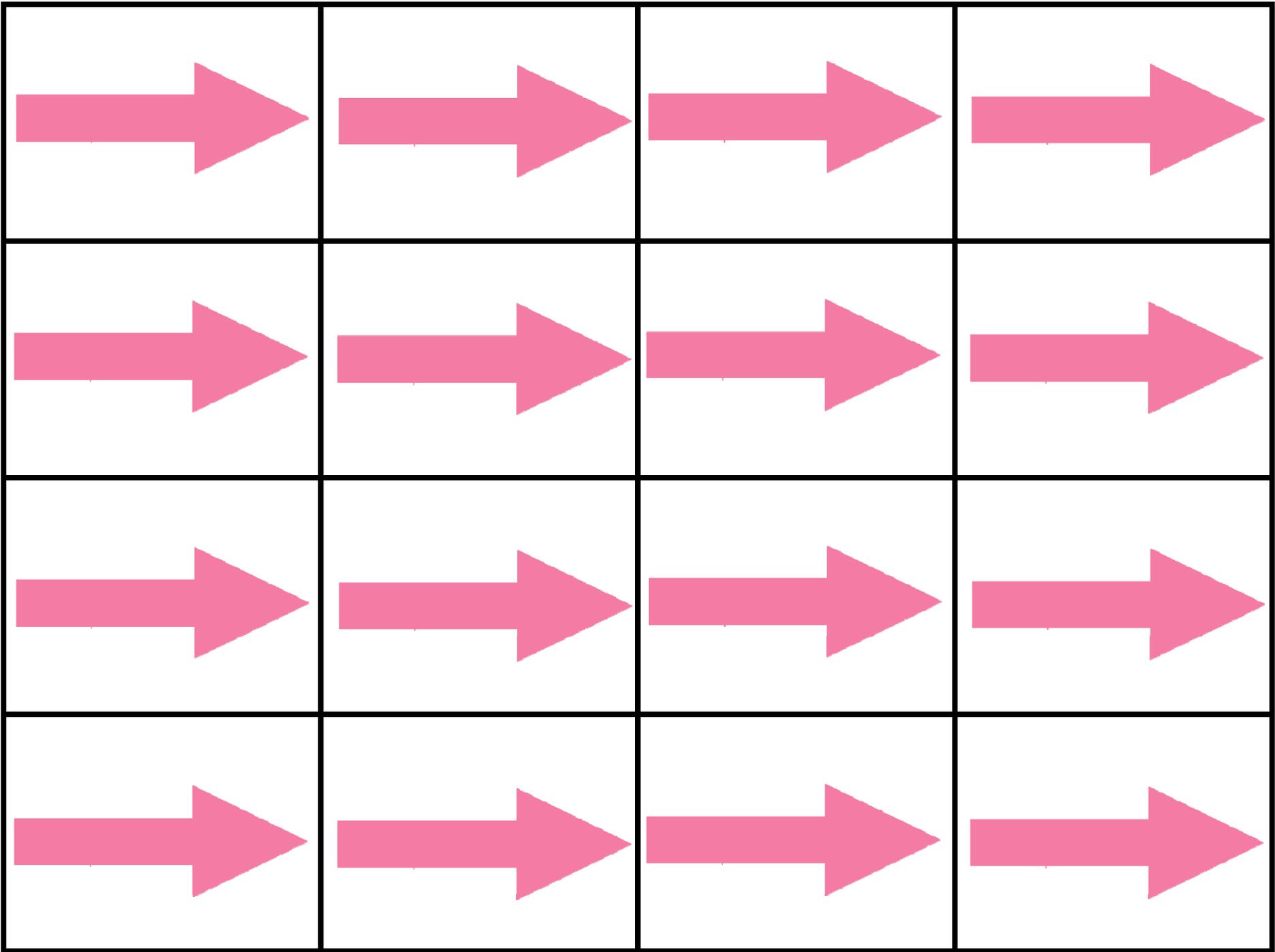


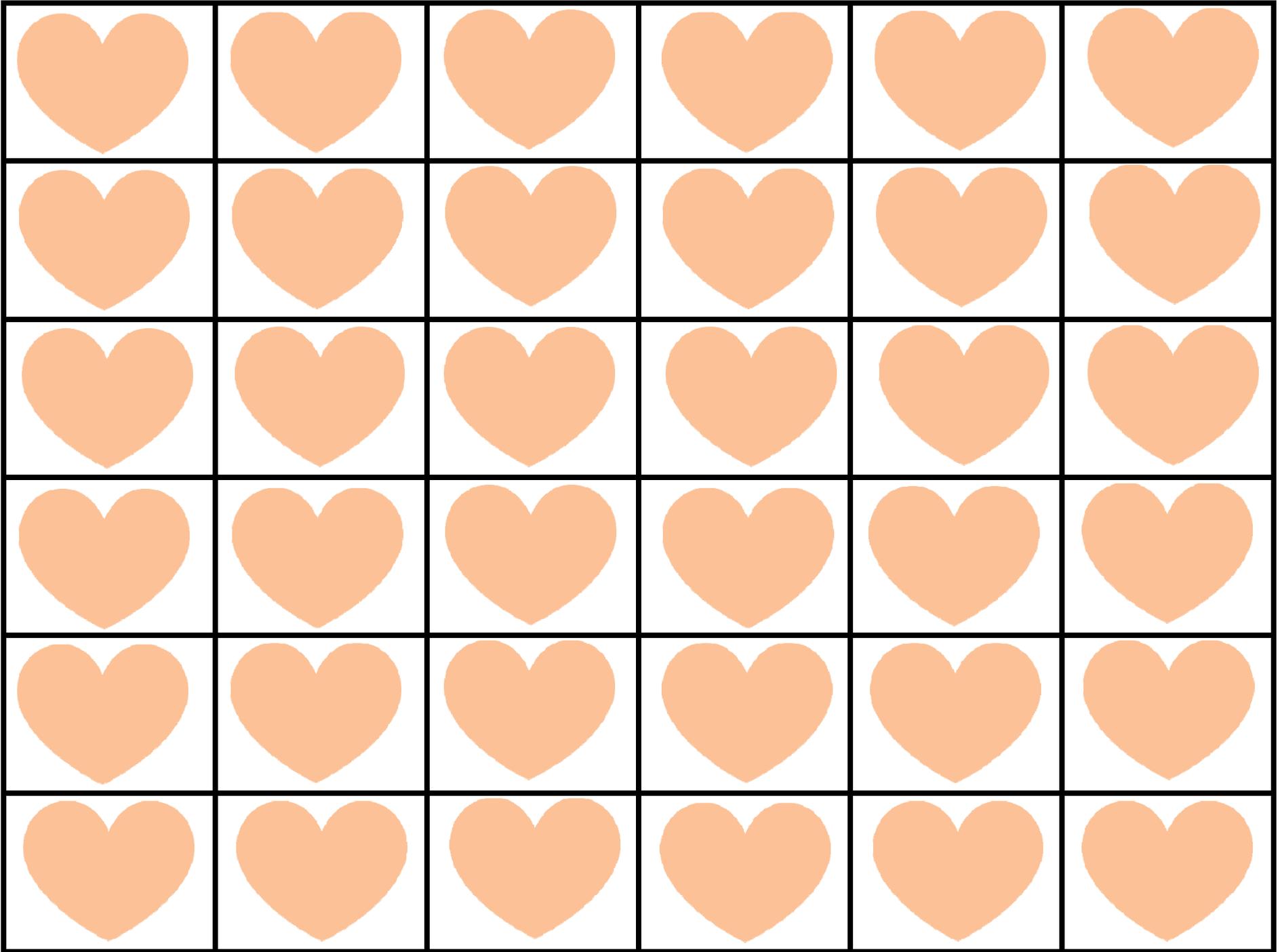


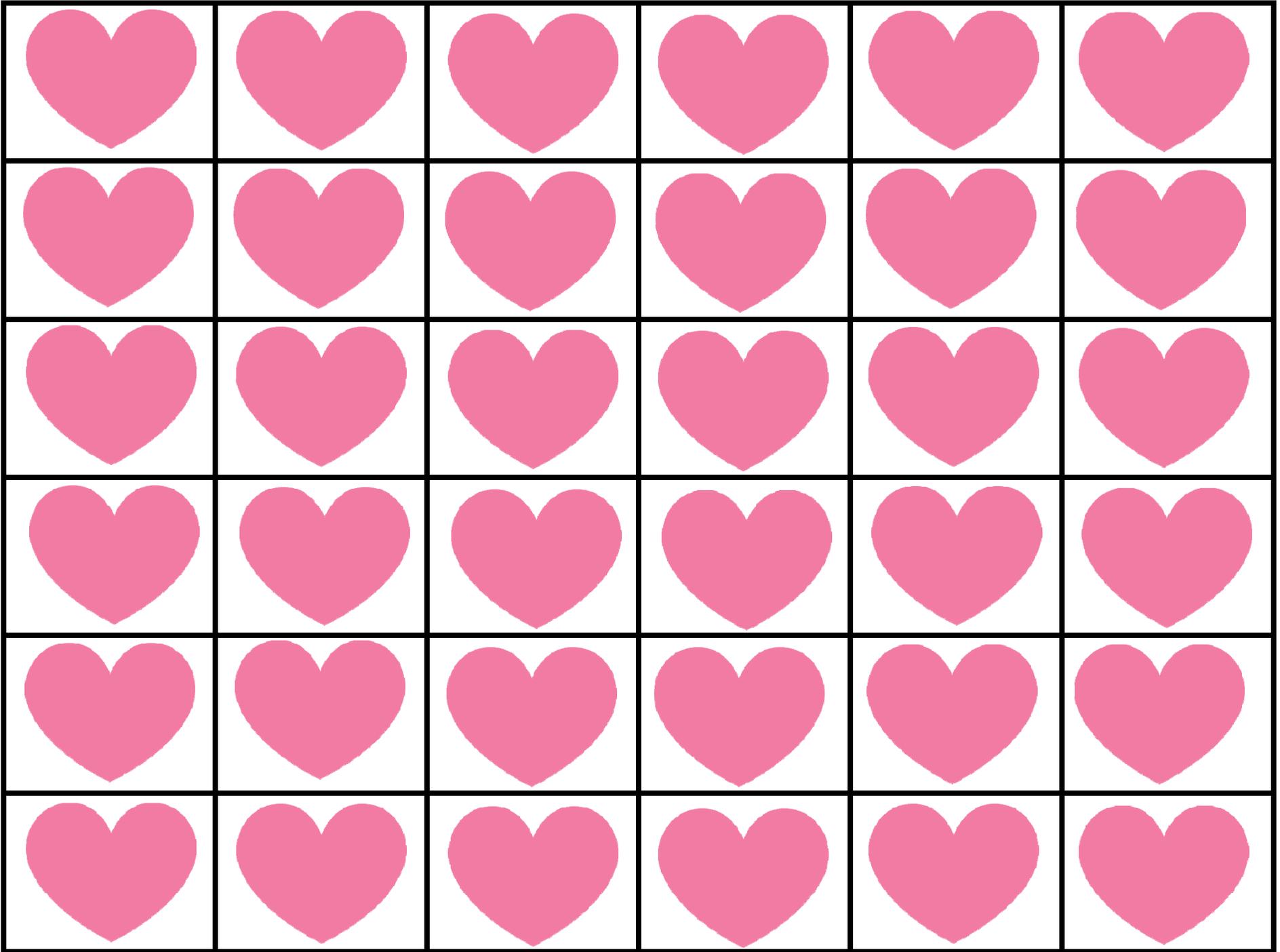
			

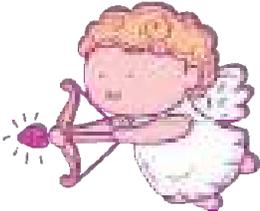


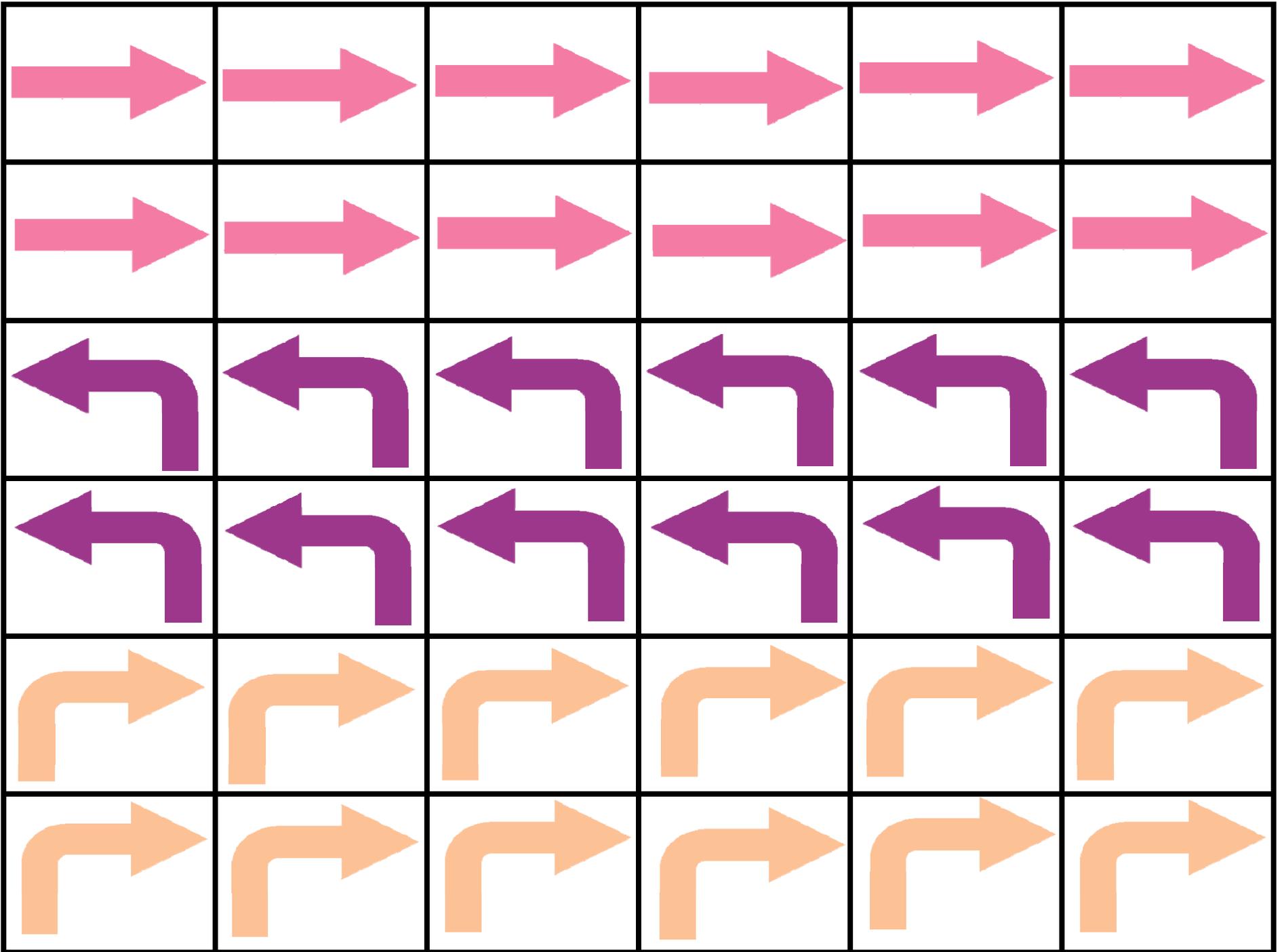










Scientific Process



Ask a Question

What do you want
to learn or test?



Do Some Research

Gather information
about what you
want to learn.



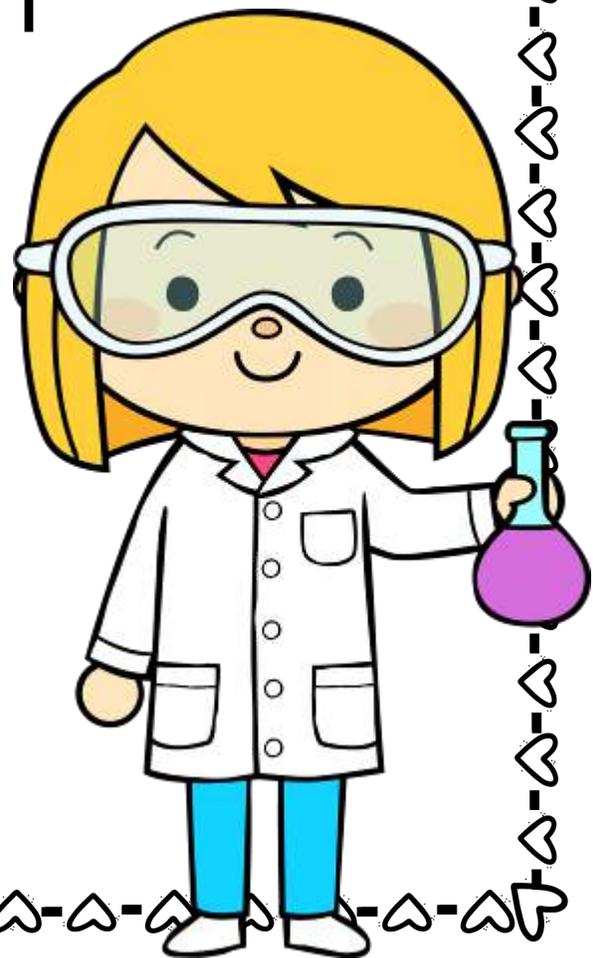
Make a Hypothesis

Try to predict the answer!
A hypothesis sounds like an
If I do this, then this will happen.
This being your experiment
and outcome.



Set Up An Experiment

Design a test or experiment to see if your hypothesis is correct!



Record Data

Record what happens during the test or experiment.



Conclusions

Analyze or review
your data to see if
your hypothesis
was correct!



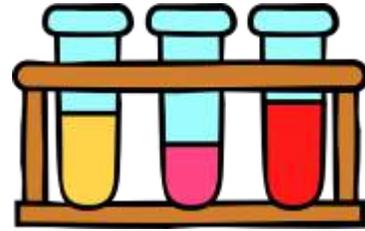
SCIENTIFIC METHOD



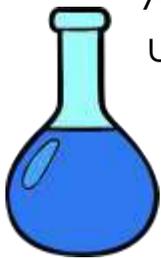
A method or procedure that uses an organized approach to solving a problem or answering a question through the use of a hypothesis, experimentation, observation, and data analysis.

HYPOTHESIS

An educated guess or simple explanation made as a starting point for further investigation or experimentation.



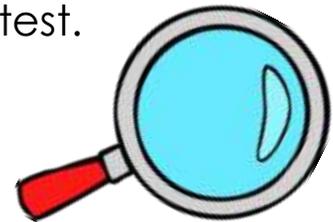
EXPERIMENT



A scientific procedure set up to test a hypothesis or make a discovery. It usually involves a dependent variable, independent variable, and a control. The outcome is not necessarily known.

INDEPENDENT VARIABLE

The independent variable is the part of your experiment that you want to test.



DEPENDENT VARIABLE

The dependent variable is the outcome that occurs in your experiment and a response to the changing independent variable.



CONTROL

The control is the neither the independent nor the



dependent variable. The control is what you will compare the results in your experiment.

My Science Investigation

My Question

My Hypothesis

Research Notes



Supplies



Experiment

Observations

draw or write

Conclusions



My Science Investigation

My Question

Hypothesis



What is the Control?

Supplies Needed

**What is the
Dependent Variable?**



Experiment

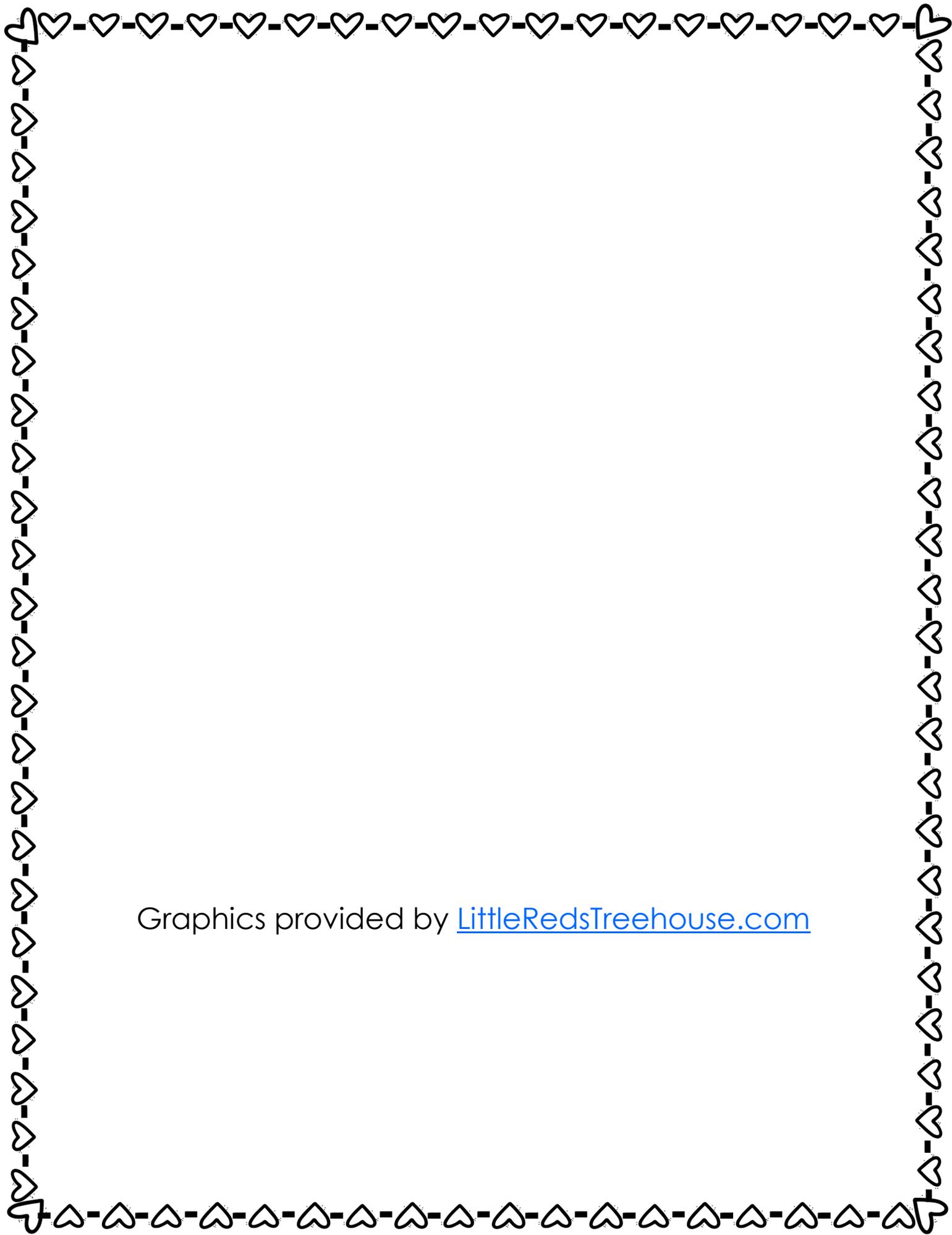


**What is the
Independent Variable?**

Observations

Conclusions

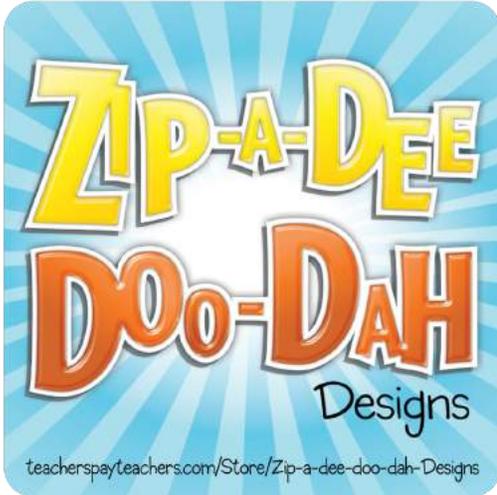




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<http://www.teacherspayteachers.com/Store/Zip-a-dee-doo-dah-Designs>



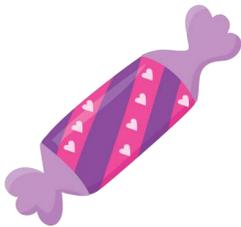
Valentine's Day STEM



CHALLENGES



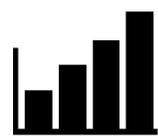
&



ENGINEER'S



NOTEBOOK



FLYING HEARTS

Build a catapult to launch hearts or candies sending them flying to the target. Test your catapult by measuring the distance of each heart you launch. You can even make use a paper target and test your launching accuracy. Record your data on the provided data chart.

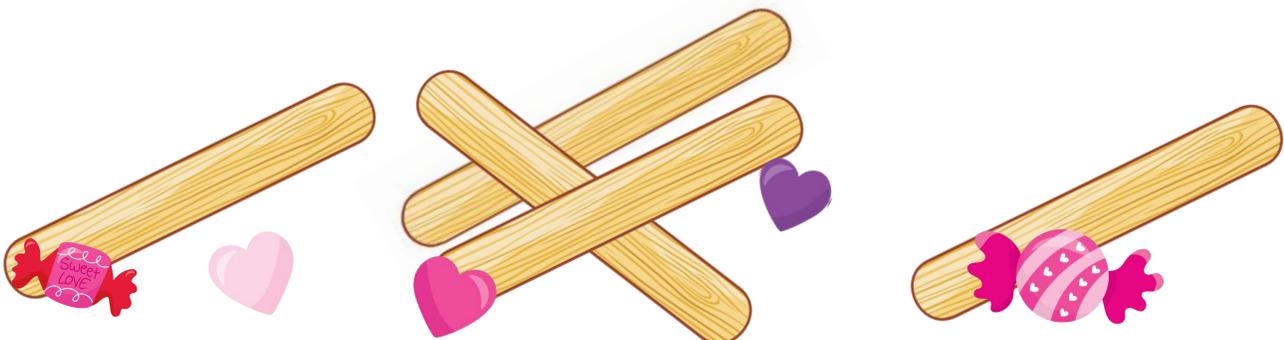


STEPS:

1. Use a pair of scissors to make two v notches on either side of two jumbo craft sticks towards the ends of the sticks.
2. Take the remaining 8 craft sticks and stack them on top of the other. Wind a rubber band tightly around each end of the stack.
3. Push one of the notched sticks through the stack under the top stick of the stack. Flip the stack over so that the stick you just pushed in is on the bottom of the stack.
4. Lay the second notched stick on top of the stack and secure the two popsicle sticks together with a rubber band as shown below. The V notches that you cut help to keep the rubber band in place.

Supplies:

10 jumbo popsicle sticks, 3 rubber bands, firing power (pompoms, marshmallows, candies, hearts), plastic bottle cap, adhesive



KNOW IT, TEST IT, WRITE IT

This is an example of Newton's three laws of motion!



1. An object at rest stays at rest until a force is applied.
2. An object stays in motion until something creates an imbalance in the motion.
3. For every action causes an equal and opposite reaction.

When you pull down the lever arm of the catapult, all the potential energy gets stored up!

Release it and that potential energy changes over to kinetic energy.

Variations on the Experiment:

What happens if you move the stack?

Try pushing the stack closer to the tip or moving it back. What changes?

What happens when you launch differently weighted objects?

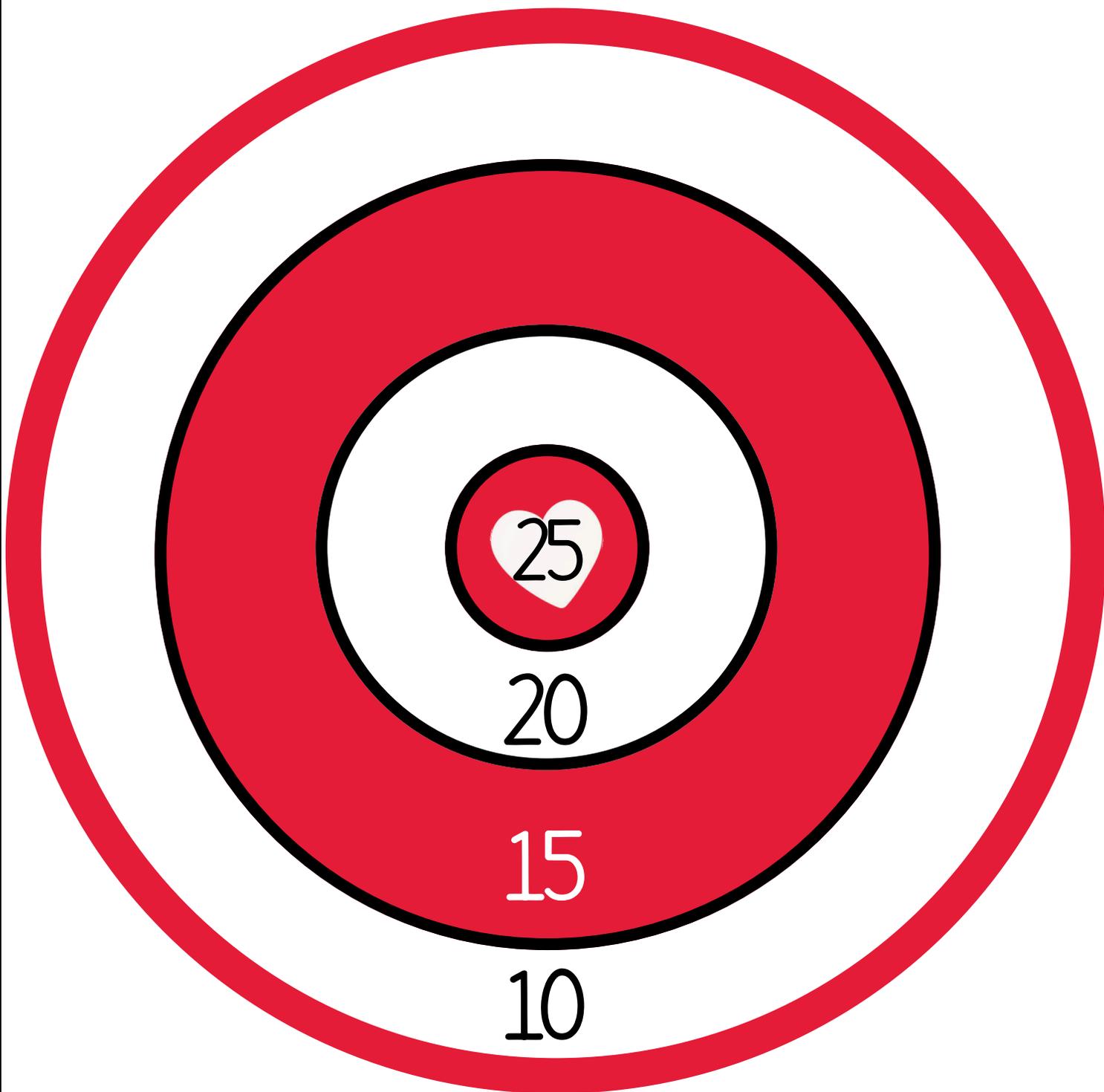


KNOW IT, TEST IT, WRITE IT

Test it: Test your catapult. Using the data chart below record your trials and measure the distance you launch each item. Repeat the test and try for accuracy using a preset target.

Try your experiment multiple times.	Distance	Accuracy
Trial #1		
Trial #2		
Trial #3		
Trial #4		
Trial #5		
Trial #6		

After you've completed your testing have a contest with your friends to see who can get the most points after launching 3 times each.



VALENTINE'S DAY STEM CHALLENGES SUPPLY LIST

Acrylic paint
Aluminum foil
Baking soda
Baggies
Bamboo sticks
Beads
Bows
Buttons
Candy
Candy
Hearts
Cloth
Clothes pins
Coffee filters
Cookie cutters
Cotton balls
Cotton swabs
Craft sticks (wide)
Doilies
Dried cereal
Dried pasta
Duct tape
Feathers
Felt
Flat marbles
Funnel
Gems
Glitter
Glitter glue
Glow stars
Glow sticks
Glue
Golf tees



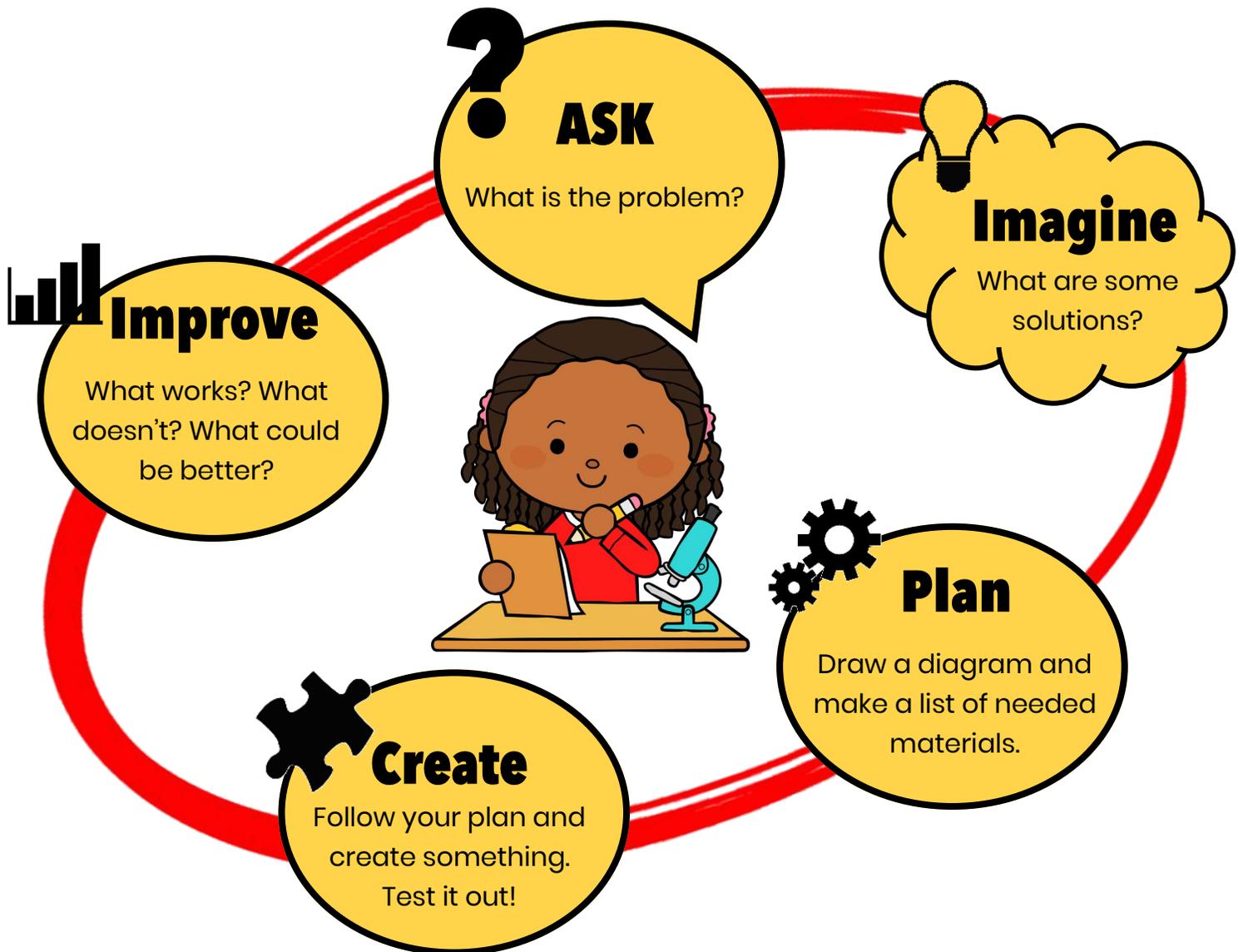
Google eyes
Gumdrops
Gummy Bears
Hammer
Hinges
K'nex®
Leaves
LEGO® bricks
Lollipop sticks
M&Ms®
Magnets
Marbles
Marshmallows
Measuring cups
Mint tins
Nails
Needle & thread
Nuts & bolts
Paint
Paper
Paper clips
Paper cups
Paper plates
Pencils
Pipe cleaners
Plastic bowls
Plastic spoons
Plastic wrap
Pom-poms
Popsicle sticks
Pretzel Sticks
Raffia
Ribbon



Rubber Bands
Scissors
Screwdriver
Skewers
Sequins
Shells
Shredded paper
Skewers
Soil
Spice jars
Sponges
Stapler
Strainer
Sticks
Straws
String
Styrofoam balls
Suckers
Sugar cubes
Tape
Tape measure
Tea lights
Timer
Toilet paper rolls
Toothpicks
Twine
Twist ties
Water beads
Washi® tape
Wire
Wooden planks
Yarn
Zip ties



Engineering Design Process



Engineering Design Process



ASK

What is the problem?
What do I need to know?
How can I solve the problem?



Imagine

What information will I need?
What are some solutions?
How can I solve the problem?



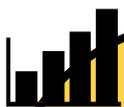
Plan

What things do I need to use?
Draw a diagram and make a list
of needed materials.



Create

Follow your plan and create
something.
Test it out!



Improve

What changes can
I make to make it better?

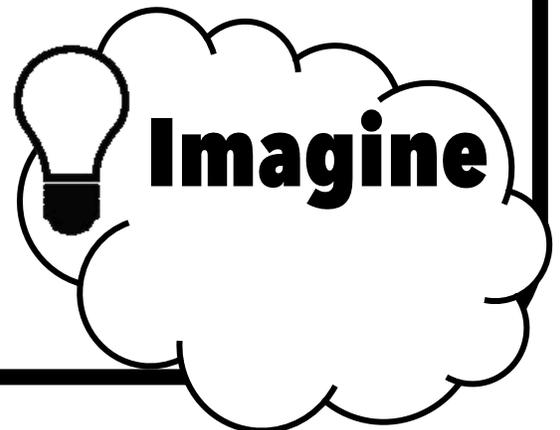
My STEM Challenge:



ASK

What's the problem?

BRAINSTORM AND RECORD possible solutions, as many as you can.



Imagine

My STEM Challenge:



Plan

Draw a diagram and make a list of needed materials.

My STEM Challenge:



Create

Look at the materials provided for use in creating your models.

My STEM Challenge:



Improve

Create a new drawing incorporating your ideas as well as the feedback you received on your prototype. Create an improved version of your original model.

Questions for Reflection

Use these questions for reflection with your kids after they have completed the STEM challenge to encourage discussion of results and critical thinking.

1. What were some of the challenges you discovered along the way?
2. What worked well and what did not work well?
3. What part of your model or prototype do you really like? Explain why.
4. What part of your model or prototype needs improvement? Explain why.
5. What other materials would you like to use if you could do this challenge again?
6. What would you do differently next time?
7. What parts of your model or prototype are similar to the real world version?