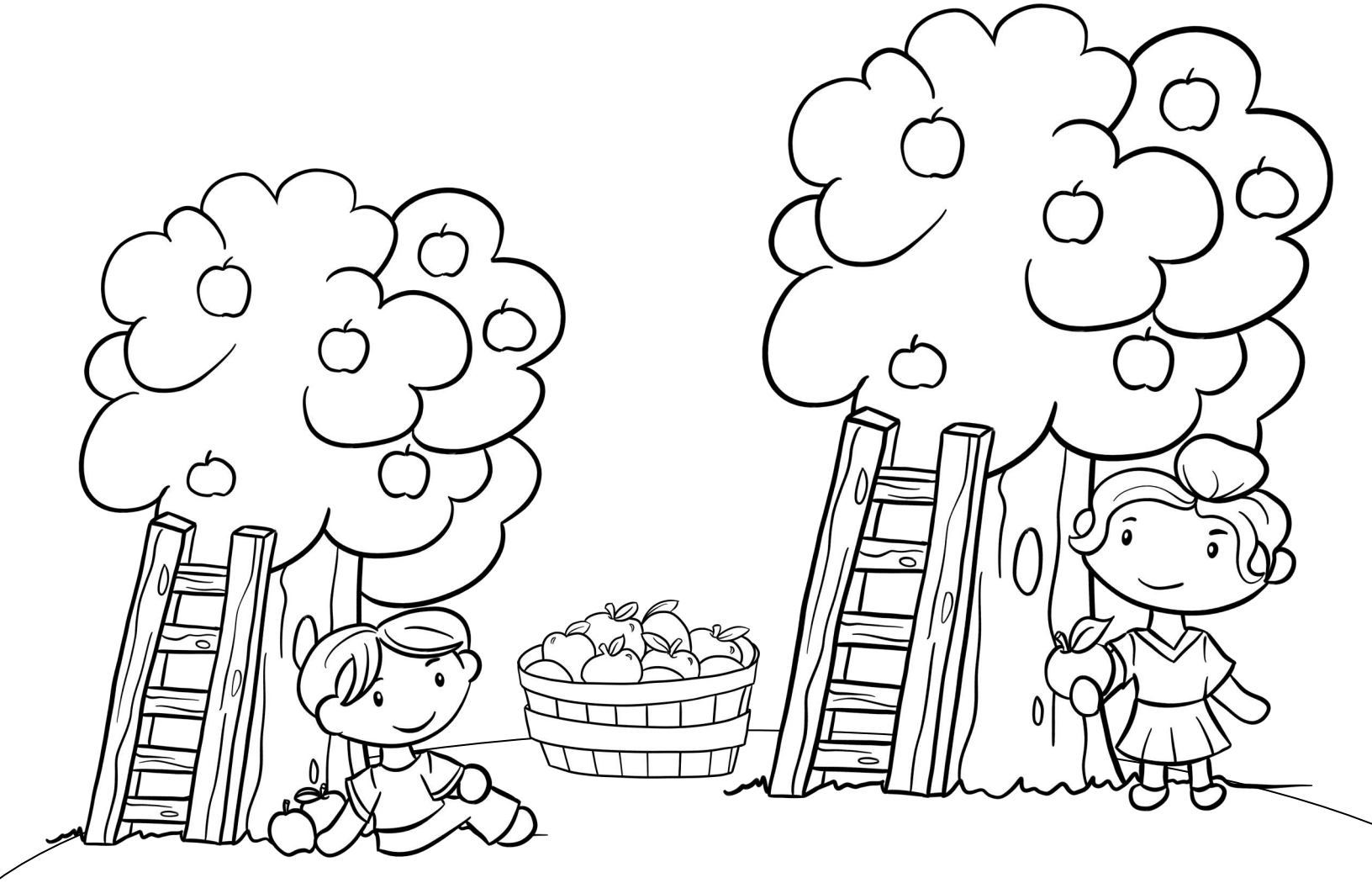
Apple Science STEM Pack



LITTLE BINS FOR LITTLE HANDS

APPLE SCIENCE & STEM PACK

INTRODUCTION:

Welcome to your Apple 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 neat apple theme activities, challenges, and experiments. 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. A new apple picking STEM story also awaits your budding readers! Bonus apple them fun pack included too.

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 pack instead of sharing files.

~ Thank you!

APPLE SCIENCE PACK:

What's Included:

- Handy science process pack posters to guide kids through the scientific process for different science experiments and activities
- Apple science journal pages (2 levels)
- Four apple science experiments and activities with supply lists, process steps, and basic science information

APPLE OOBLECK

SUPPLIES:

2 Cups of cornstarch
1 Cup of smooth applesauce
Cinnamon (optional)
Measuring Cup, bowl, spoon, and tray

PROCESS:

STEP 1: Start by adding cornstarch to the bowl. I always recommend having extra cornstarch on hand for experimentation with ratios of cornstarch to liquid or if the kids accidentally add too much liquid.

STEP 2: Next, add the applesauce and get ready to mix. Mixing oobleck can be messy, and your hands may be better than a spoon. Start with 1 cup of applesauce first and then add more as needed.

If you add too much cornstarch, go ahead and add back in some liquid and vice versa. A little can go a long way once you start incorporating the liquid into the mixture. Oobleck should be neither too soupy and runny or too stiff and dry! Can you pick up a clump but then it oozes back into the bowl? Yes? Then you have a good oobleck on your hands! Click here for more pictures.

QUICK SCIENCE:

Oobleck is a fun substance made from a mixture of cornstarch and water. It's a bit messy too!
A mixture is a material made up of two or more substances to form a new material which is our oobleck! Kids can also explore liquids and solids, which are states of matter.

Here you are combining a liquid and a solid, but the mixture doesn't become one or the other. What do the kids think?

A solid has a definite shape, whereas a liquid will take the shape of the container. Oobleck is a bit of both! That's why oobleck is called a non-Newtonian fluid.
A non-Newtonian fluid is neither a liquid nor a solid but a bit of both! You can pick up a clump of the substance like a solid and then watch it ooze back into the bowl like a liquid.
Make sure to try this! You can form it into a ball even! Touch the surface of the oobleck in the bowl lightly. It will feel firm and solid. If you apply more pressure, your fingers will sink into it like a liquid.

Apple Oobleck

Materials I Used:

What I think will happen:

What I did:

What I Saw:

Draw it:

What Happened:

Apple Oobleck

Draw what you think will happen.

Draw what you see happen.

APPLE VOLCANO

SUPPLIES:

Apples
Baking Soda
Vinegar
Container to catch the fizz
Knife to carve out a hole (for adults to do!)

PROCESS:

STEP 1: Place the apple on a dish, pie plate, or tray to catch the runoff. An adult should use a knife to cut a hole or vessel in the top of the apple about halfway down.

STEP 2: Next, put a couple of spoonfuls of baking soda into the hole. Add a drop of dish soap if you want a foamier eruption! Add a few drops of food coloring if desired.

STEP 3: Then, pour the vinegar into an easy to use cup. Additionally, you can provide eye droppers or turkey basters. Pouring straight from the cup into the apple will produce a more dramatic volcano effect. While using a baster or eyedropper will have a smaller eruption. Click here for short video and more pictures.

QUICK SCIENCE:

Chemistry is all about states of matter, including liquids, solids, and gasses. A chemical reaction occurs between two or more substances that change and form a new substance, a gas called carbon dioxide. The acid (liquid: vinegar) and the base (solid: baking soda) combine to make a gas called carbon dioxide. This gas helps produce the eruption you see.

The carbon dioxide escapes the mixture in the form of bubbles. Can even hear the fizzing? The bubbles are heavier than air, so the carbon dioxide collects at the surface of the apple or overflows the apple.

The dish soap is added to collect the gas and form bubbles for a robust lava like flow down the sides! We know more lava equals more fun! You don't have to add dish soap, but it's worth a try. You can even set up an experiment to see which eruption you like more.

Alternatively, you can use lemon juice in place of the vinegar and compare the results!

Apple Volcano

Materials I Used:

What I think will happen:

What I did:

What I Saw:

What Happened:

Draw it:

Apple Volcano

Draw what you think will happen.

Draw what you see happen.

DO APPLES FLOAT?

SUPPLIES:

Whole apple, knife, bowl, water, toothpicks, paper

PROCESS:

STEP 1: Fill a large bowl with water.

STEP 2: Have your kids predict what they think will happen when they place the apple in the water. Then, place the apple in the water. Was their prediction correct?

STEP 3: Have an adult cut the apple into sections. Again, have the kids predict if the sections of apple will float or sink? Place sections in the water! What happens?

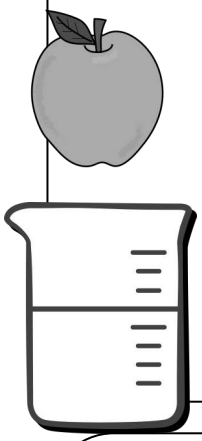
STEP 4: Turn the apple pieces into small boats if desired using toothpicks and paper sails.

QUICK SCIENCE:

An apple is buoyant! Do you know why? The apple has air inside, and that air helps to keep it from sinking. Apples are less dense than water. You can easily test out other fruits and vegetables for a fun experiment. Try this experiment with an orange, with and without its peel! How about a small pumpkin?

Do Apples Float?

Materials I Used:



What I think will happen:

What I did:

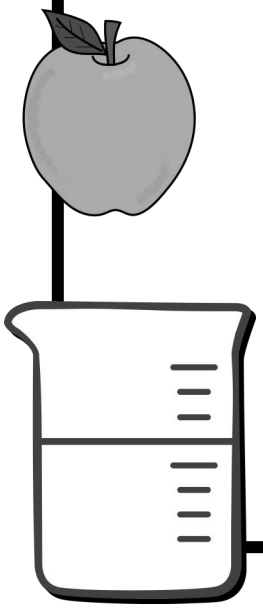
What I Saw:

Draw it:

What Happened:

Do Apples Float?

Draw what you think will happen.



Draw what you see happen.

DANCING APPLE SEEDS (RAISINS)

SUPPLIES:

Tall Jar or Glass {mason jars work well}
Raisins (use for "apple seeds")
2 tbsp of baking soda
1 cup of vinegar (use as needed)
2 cups of water

ALTERNATIVE ACTIVITY:

Instead of baking soda and vinegar, you can try this activity with a clear soda or club soda!

PROCESS: Adjust the amounts used depending on the size of your container. Tip: Put your jar or glass on a cookie tray or baking dish to catch any overflow.

STEP 1: Fill the jar or glass with the water .

STEP 2: Next, add about two tablespoons of baking soda. Stir well to mix thoroughly.

STEP 3: Add a tablespoon or so of raisins.

STEP 4: Then, add the vinegar slowly. You do not need to add all of it as you may end up with a bit of an eruption. Wait and watch what happens!

QUICK SCIENCE:

Chemistry is all about states of matter, including liquids, solids, and gasses. A chemical reaction occurs between two or more substances that change and form a new substance. In this case, the acid (liquid: vinegar) and the base (solid: baking soda) combine to make a gas called carbon dioxide, which also makes fizzy bubbles.

The secret to the dancing raisins is the baking soda and vinegar chemical reaction. The carbon dioxide bubbles lift the raisins. When the bubbles reach the surface, they pop, and the raisins fall back down! You can repeat this experiment over and over again. We watched the raisins "dance" for 30 minutes!

Dancing Apple Seeds

Materials I Used:

What I think will happen:

What I did:

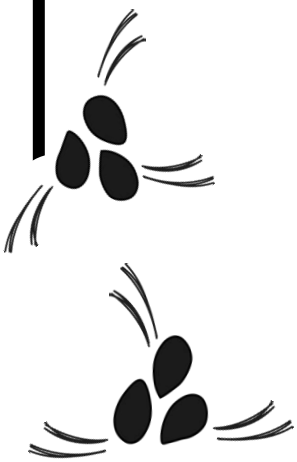
What I Saw:

What Happened:

Draw it:

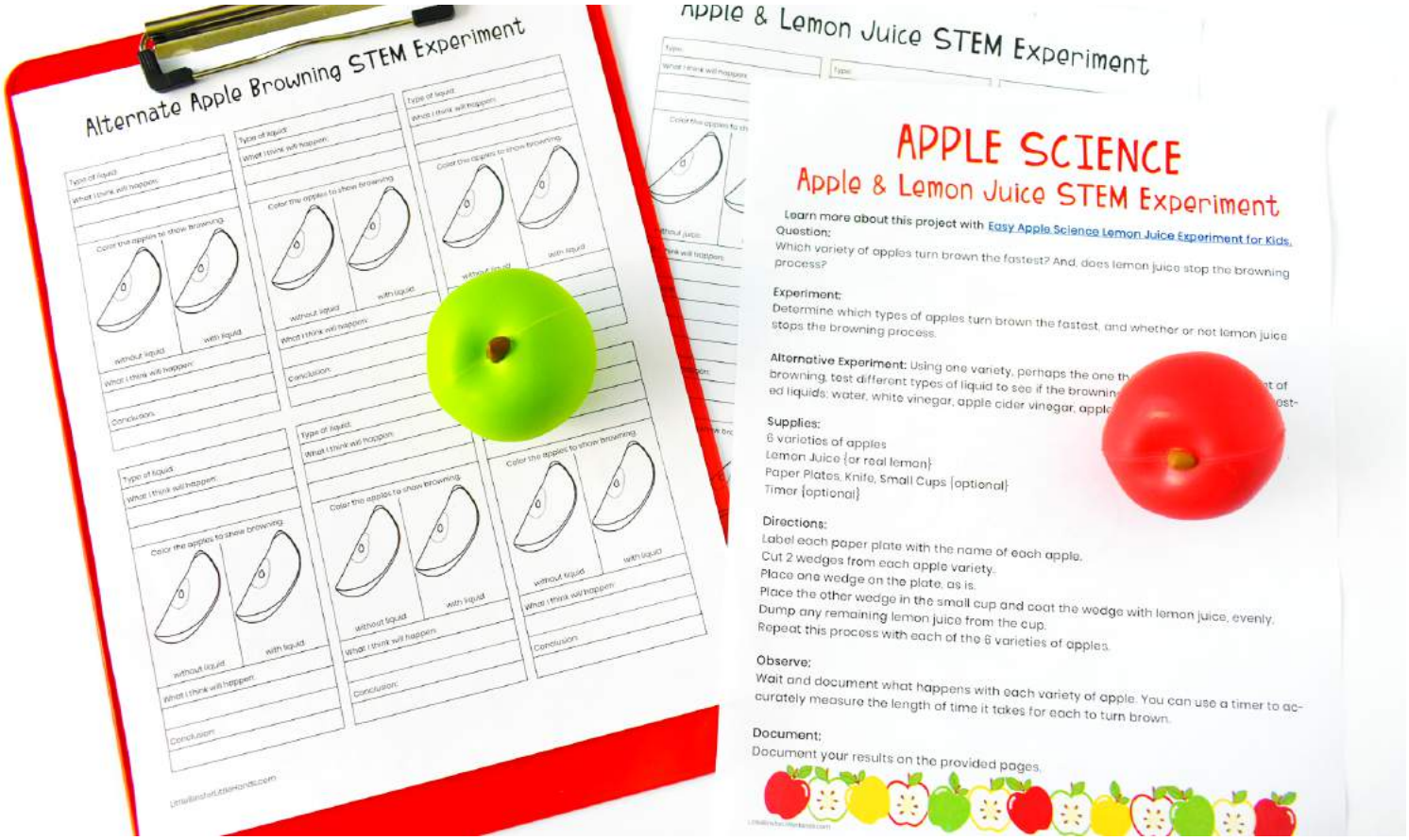
Dancing Apple Seeds

Draw what you think will happen.



Draw what you see happen.

APPLE: OXIDATION EXPERIMENT



SUPPLIES:

Favorite apple or variety of apple species
Knife for slicing (adults only)
Lemon juice
Other liquids
Printable sheets

SIMPLE SCIENCE:

Lemon juice helps keep the apple from turning brown because it is full of ascorbic acid (Vitamin C) and it has a low (acidic) pH level. Ascorbic acid works because oxygen will react with it before it reacts with the polyphenol oxidase enzyme in the fruit. You can also test a variety of liquids to see if they prevent apples from turning brown or slow the process.

APPLE EXPERIMENT RESULTS:

Which apple turned first?
Did they all turn equal shades of brown?
Does the apple slice coated in lemon juice taste different than the plain apple slice?
Does the brown apple slice taste all that bad?
Did the lemon juice work?

APPLE SCIENCE

Apple & Lemon Juice STEM Experiment

Learn more about this project with [Easy Apple Science Lemon Juice Experiment for Kids.]

Question:
Which variety of apples turn brown the fastest? And, does lemon juice stop the browning process?

Experiment:
Determine which types of apples turn brown the fastest, and whether or not lemon juice stops the browning process.

Alternative Experiment: Using one variety, perhaps the one that had the least amount of browning, test different types of liquid to see if the browning process is different. Suggested liquids; water, white vinegar, apple cider vinegar, apple juice.

Supplies:
6 varieties of apples
Lemon Juice {or real lemon}
Paper Plates, Knife, Small Cups {optional}
Timer {optional}

Directions:
Label each paper plate with the name of each apple.
Cut 2 wedges from each apple variety.
Place one wedge on the plate, as is.
Place the other wedge in the small cup and coat the wedge with lemon juice, evenly.
Dump any remaining lemon juice from the cup.
Repeat this process with each of the 6 varieties of apples.

Observe:
Wait and document what happens with each variety of apple. You can use a timer to accurately measure the length of time it takes for each to turn brown.

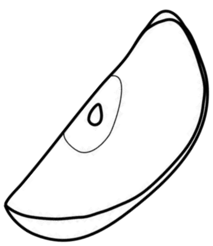
Document:
Document your results on the provided pages.

Apple & Lemon Juice STEM Experiment

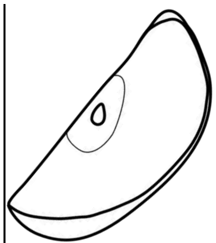
Type:

What I think will happen:

Color the apples to show browning.



without juice



with juice

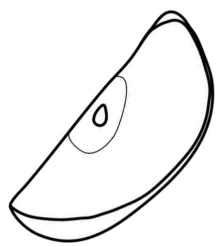
What I think will happen:

Conclusion:

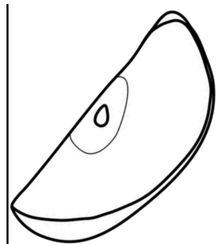
Type:

What I think will happen:

Color the apples to show browning.



without juice



with juice

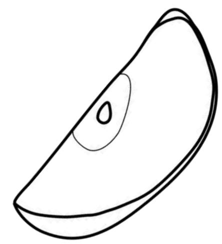
What I think will happen:

Conclusion:

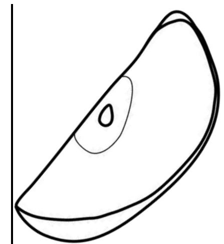
Type:

What I think will happen:

Color the apples to show browning.



without juice



with juice

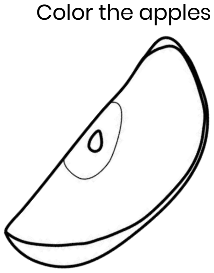
What I think will happen:

Conclusion:

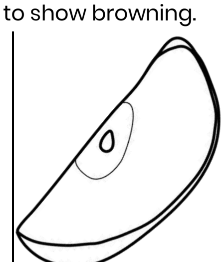
Type:

What I think will happen:

Color the apples to show browning.



without juice



with juice

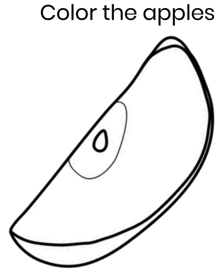
What I think will happen:

Conclusion:

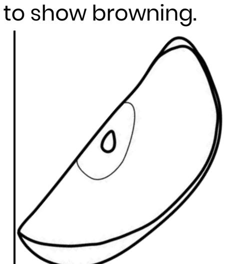
Type:

What I think will happen:

Color the apples to show browning.



without juice



with juice

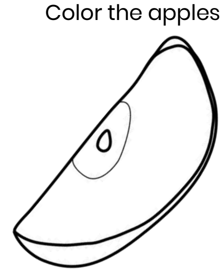
What I think will happen:

Conclusion:

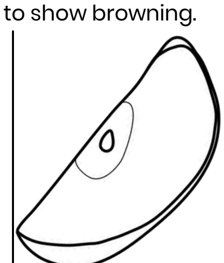
Type:

What I think will happen:

Color the apples to show browning.



without juice



with juice

What I think will happen:

Conclusion:

Scientific Process

Ask a Question

What do you want to learn or test?

Do Some Research

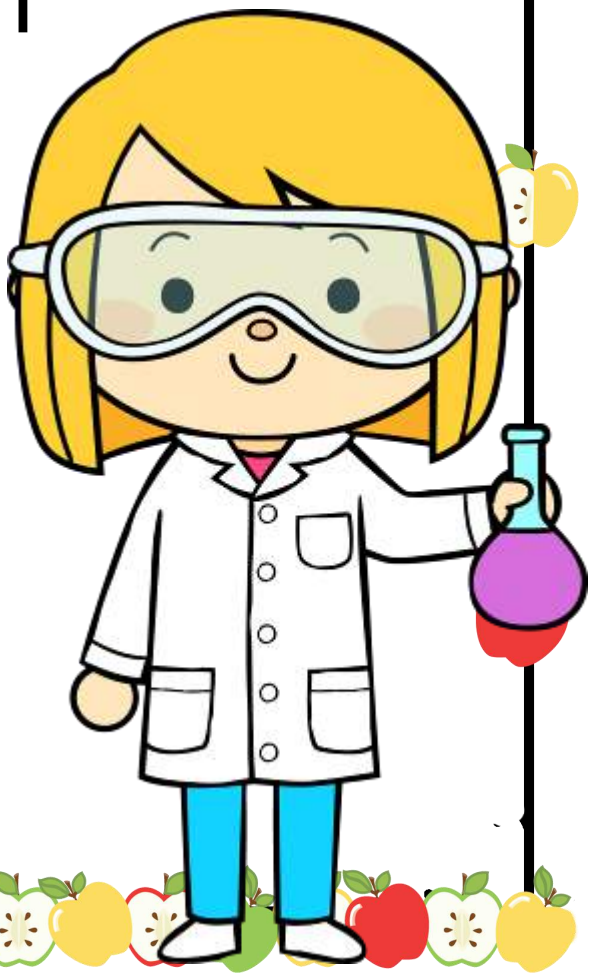
Gather information about what you want to learn.

Make a Hypothesis

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

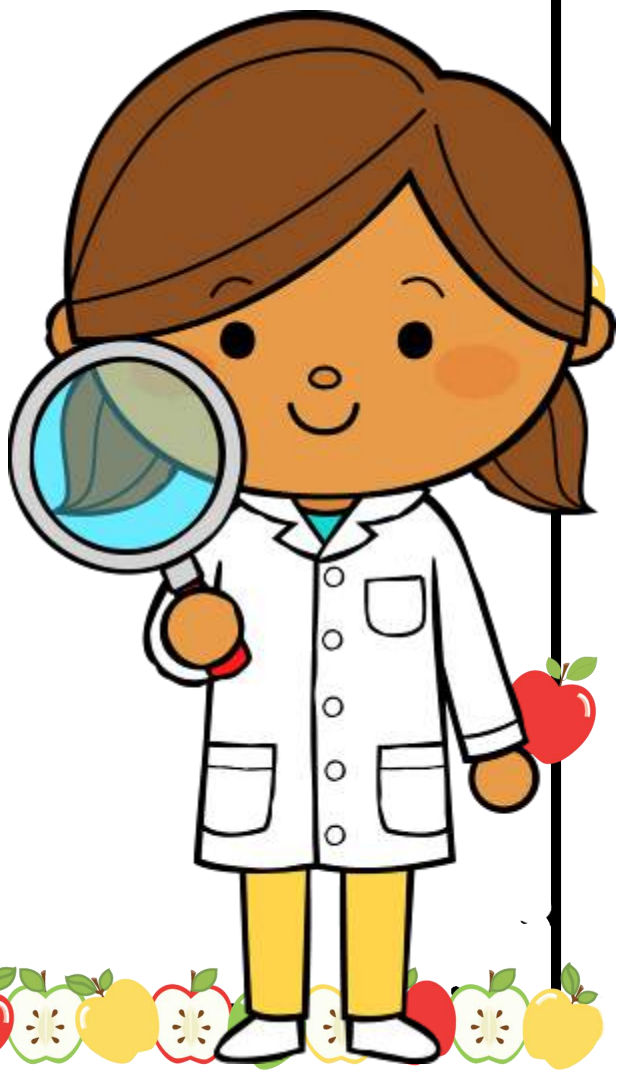
Set Up An Experiment

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



Record Data

Record what happens during the test or experiment.



Conclusions

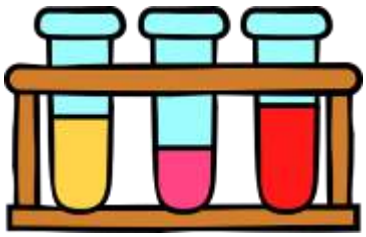
Analyze or review your data to see if your hypothesis was correct!

SCIENTIFIC METHOD

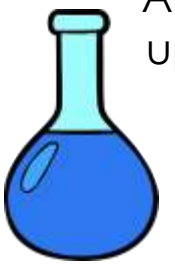
A method or procedure that uses an organized approach to solving a problem or answering a question through the use of a hypothesis, experimentation, observation, and data analysis.

HYPOTHESIS

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



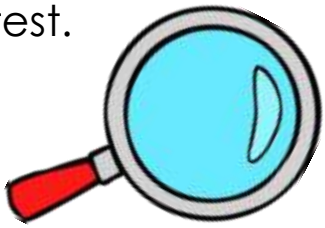
EXPERIMENT



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

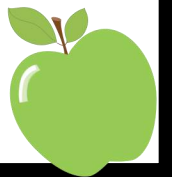
The control is the neither the independent nor the dependent variable. The control is what you will compare the results in your experiment.

My Science Investigation

My Question

My Hypothesis

Research Notes

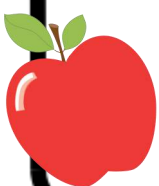


Supplies

Experiment

Observations

draw or write



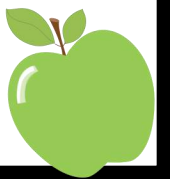
Conclusions

My Science Investigation

My Question

Hypothesis

What is the Control?

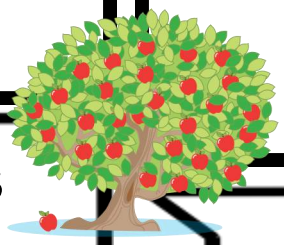


Supplies Needed

What is the Dependent Variable?

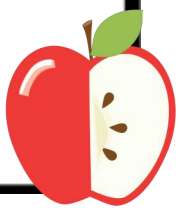
Experiment

What is the Independent Variable?



Observations

Conclusions



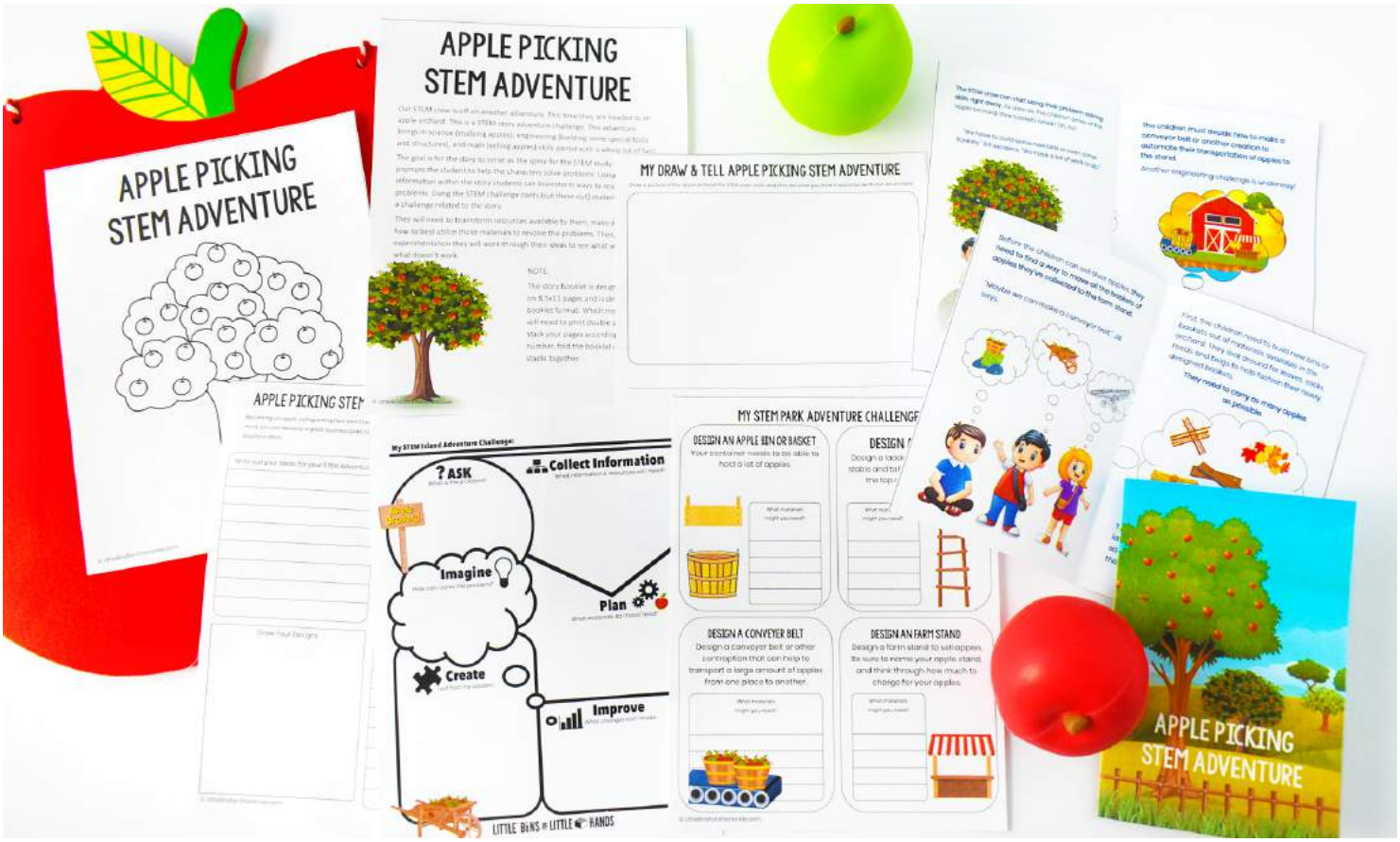
Graphics provided by LittleRedsTreehouse.com

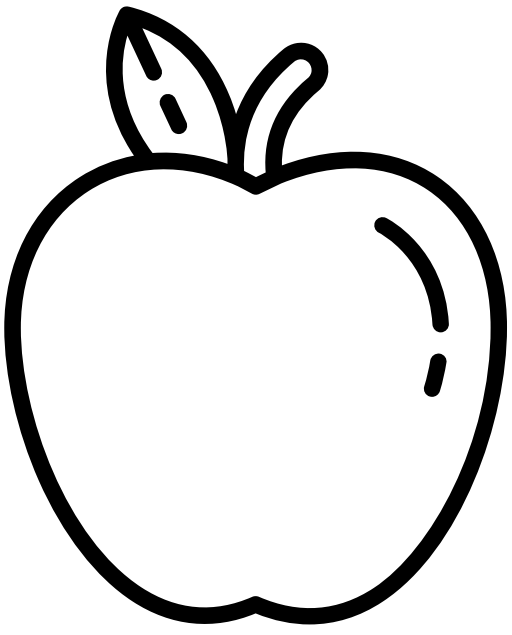
Apple Science STEM Pack

LITTLE BINS FOR LITTLE HANDS

STEM: STORY CHALLENGE

Go on a STEM filled adventure with this Apple Picking STEM Adventure pack! Read the story and solve the challenges.

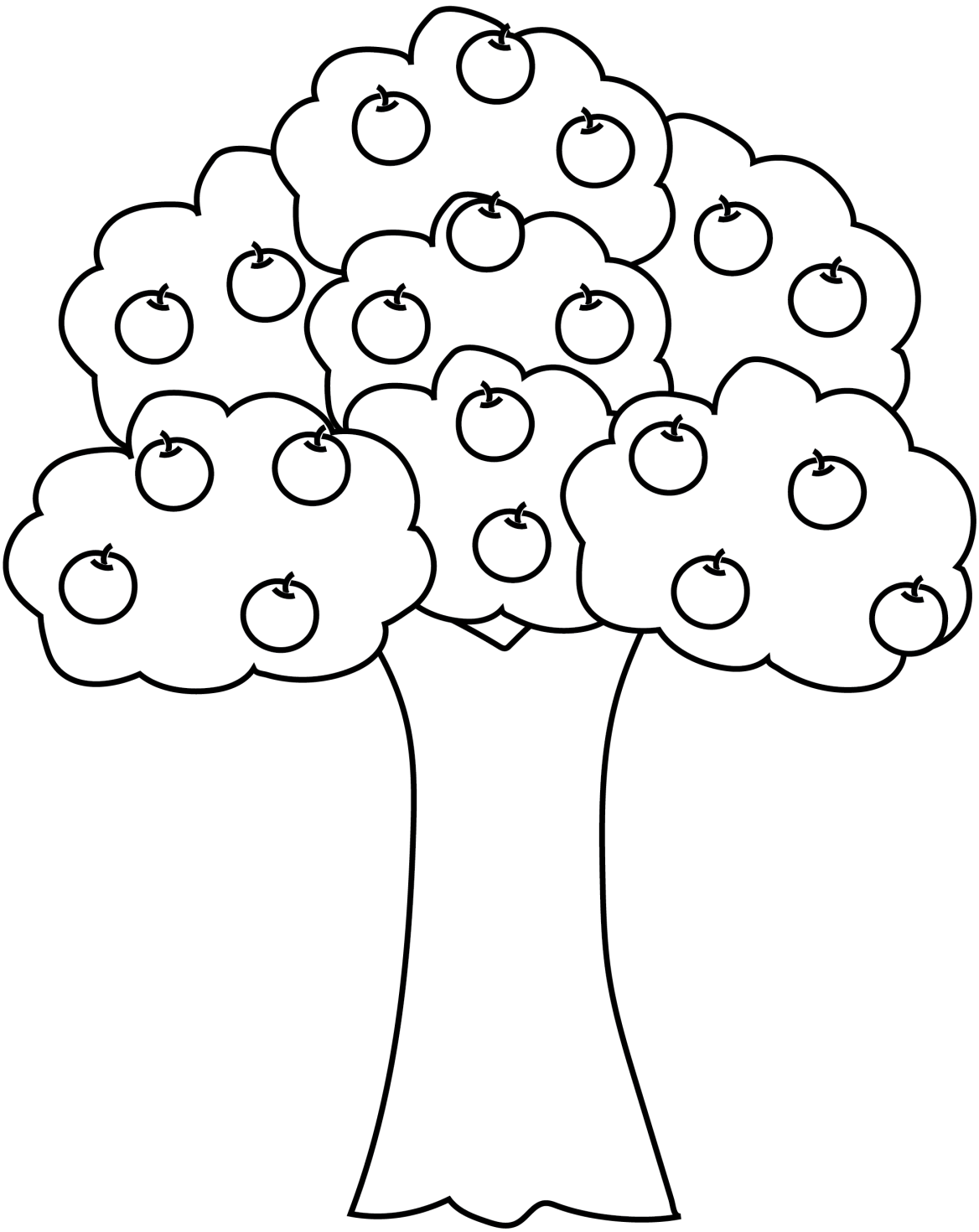




What's Included:

- Engaging STEM Story
- STEM Challenges
- STEM Journal Pages
- STEM Supply List
- STEM Drawing Page

APPLE PICKING STEM ADVENTURE



APPLE PICKING STEM ADVENTURE

Our STEM crew is off on another adventure. This time they are headed to an apple orchard. This is a STEM story adventure challenge. This adventure brings in science (studying apples), engineering (building some special tools and structures), and math (selling apples) skills paired with a whole lot of fun!

The goal is for the story to serve as the spine for the STEM study. The story prompts the student to help the characters solve problems. Using information within the story students can brainstorm ways to resolve the problems. Using the STEM challenge cards (cut these out) students are given a challenge related to the story.

They will need to brainstorm resources available to them, make decisions on how to best utilize those materials to resolve the problems. Then, through experimentation they will work through their ideas to see what works and what doesn't work.

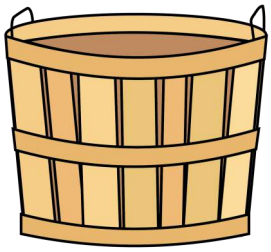
NOTE:

The story booklet is designed to print on 8.5x11 pages and is designed in booklet format. Which means you will need to print double sided. Then stack your pages according to page number, fold the booklet in half, and staple together.

MY STEM PARK ADVENTURE CHALLENGES

DESIGN AN APPLE BIN OR BASKET

Your container needs to be able to hold a lot of apples.



What materials might you need?

DESIGN A LADDER

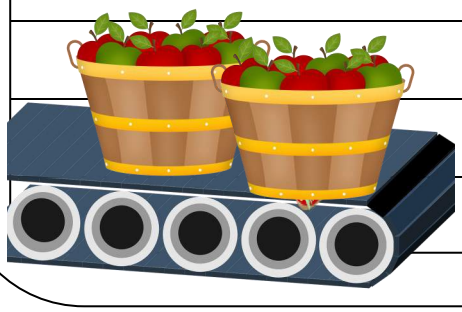
Design a ladder that will be both stable and tall enough to reach to the top of an apple tree.

What materials might you need?

DESIGN A CONVEYER BELT

Design a conveyer belt or other contraption that can help to transport a large amount of apples from one place to another.

What materials might you need?



DESIGN AN FARM STAND

Design a farm stand to sell apples. Be sure to name your apple stand, and think through how much to charge for your apples.

What materials might you need?

APPLE PICKING STEM ADVENTURE PLANNING PAGE

Becoming an apple selling entrepreur won't be easy. But, with a little creativity, and using your engineering mind you can develop a great business plan. Use this form to write out and design your apple selling business ideas.

Write out your ideas for your STEM Adventure

Draw Your Designs

Draw Your Designs

What books are you using for research?

My STEM Island Adventure 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?

Create
I will test my solution,

Improve
What changes can I make

MY DRAW & TELL APPLE PICKING STEM ADVENTURE

Draw a picture of the apple orchard the STEM crew visits, and then tell what you think it would be like to run an orchard.

Wow! What an amazing trip the apple orchard. Once again, the STEM crew has solved problems using science, technology, math, and engineering while enjoying a fun, engaging adventure!

APPLE PICKING STEM ADVENTURE

Our STEM crew, Annie, Bill, George, and Jill are off on another adventure. This time they're headed to the apple orchard. They are so excited about picking apples, climbing trees, and even selling apples!

"I love apples!" Jill shouts.

Finally, the STEM crew can sell their apples using their excellent math skills.

How many apples will the STEM crew sell?

"Think of all the apple pie we can make and eat," George says. "I could even eat some apples for a snack!"

Annie was thinking of the business venture.

"I can't wait to sell some apples," she says.

The STEM crew can start using their problem-solving skills right away. As soon as the children arrive at the apple orchard, their baskets break! Oh, no!

"We have to build some new bins or even some baskets," Bill exclaims. "We have a lot of work to do!"

The children must decide how to make a conveyor belt or another creation to automate their transportation of apples to the stand.

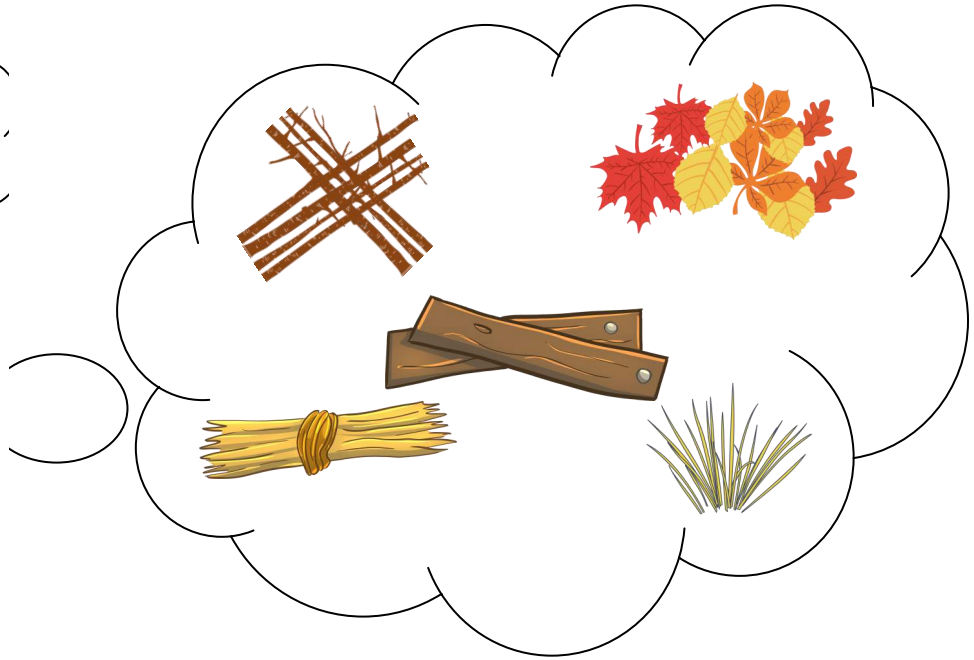
Another engineering challenge is underway!

Before the children can sell their apples, **they need to find a way to move all the baskets of apples they've collected to the farm stand.**

"Maybe we can make a conveyor belt," Jill says.

First, the children need to build new bins or baskets out of materials available in the orchard. They look around for leaves, sticks, reeds and twigs to help fashion their newly designed baskets.

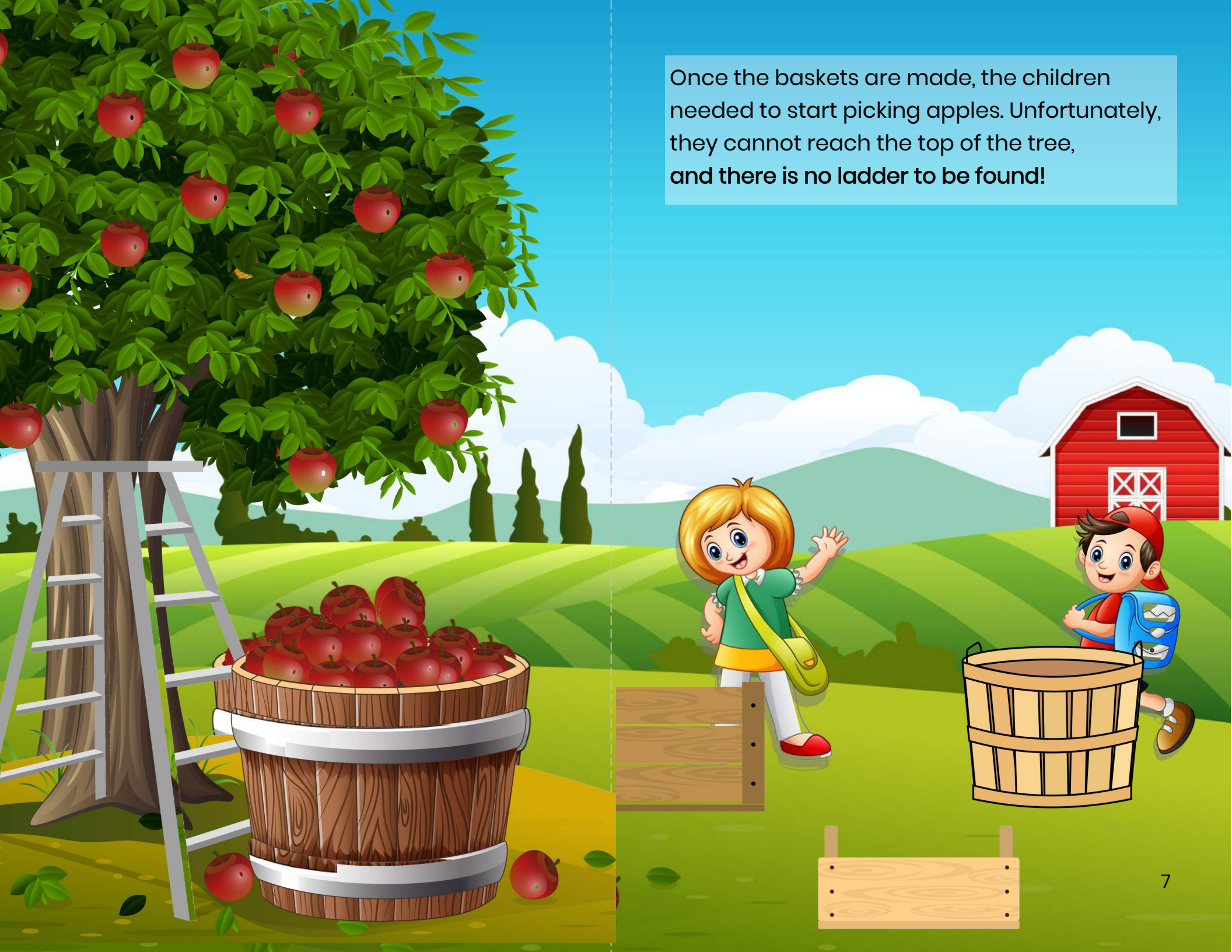
They need to carry as many apples as possible.



The children work together to come up with ideas. They may decide to come up with some different designs for each basket, but they'll all work together to reach their goals.

Once the children are able to build a ladder and pick the

The STEM crew become entrepreneurs and create the best stand around to get



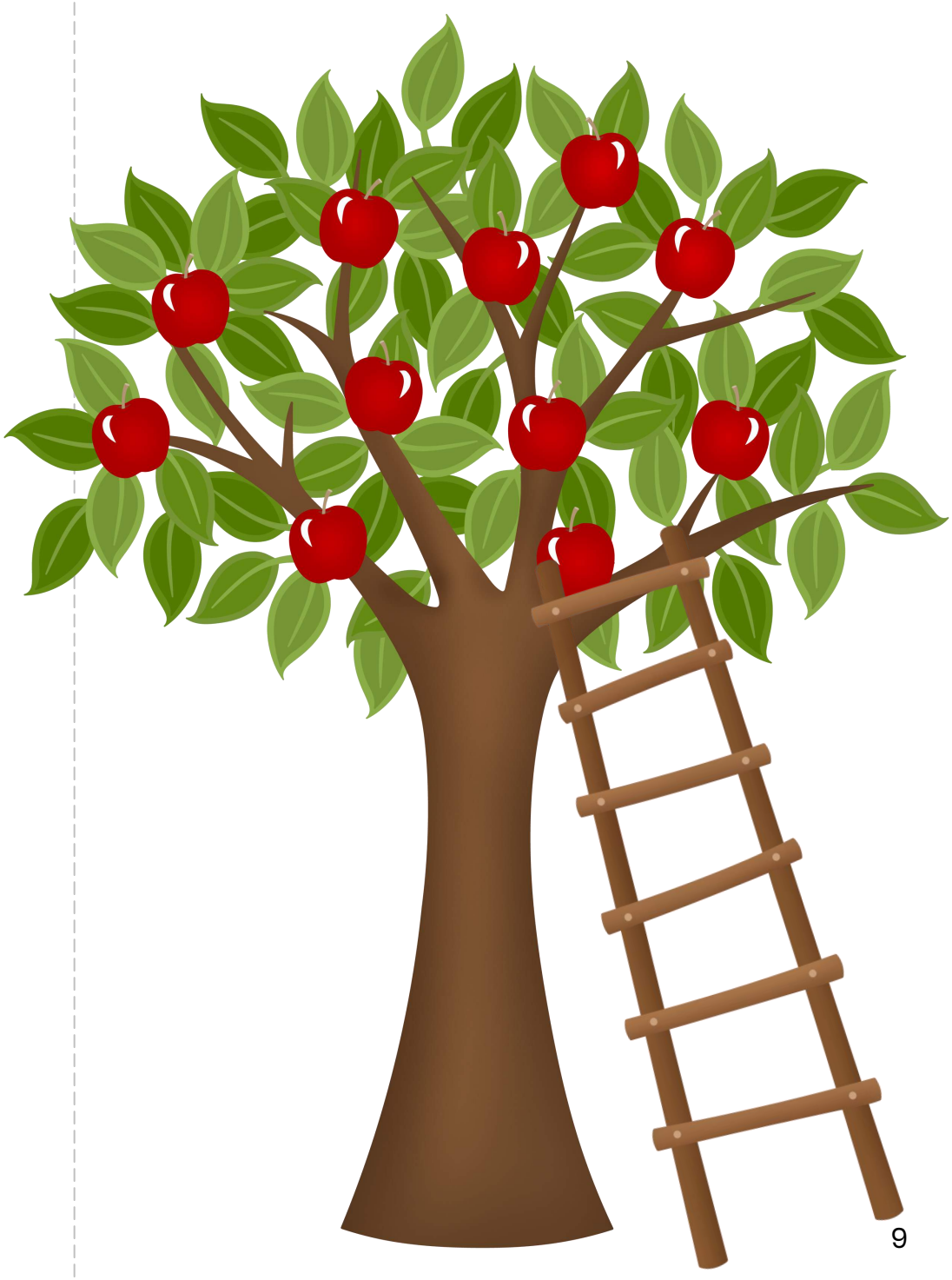
Once the baskets are made, the children needed to start picking apples. Unfortunately, they cannot reach the top of the tree, **and there is no ladder to be found!**

Next, the children have to build a ladder to reach the very top of the tree where all the best apples are. Again, they look around the orchard for materials they could use to build a ladder that can hold their body weight as well as the weight of the apples in the basket.

The more sturdy the material, the better the ladder, and the more apples that can be picked and carried.

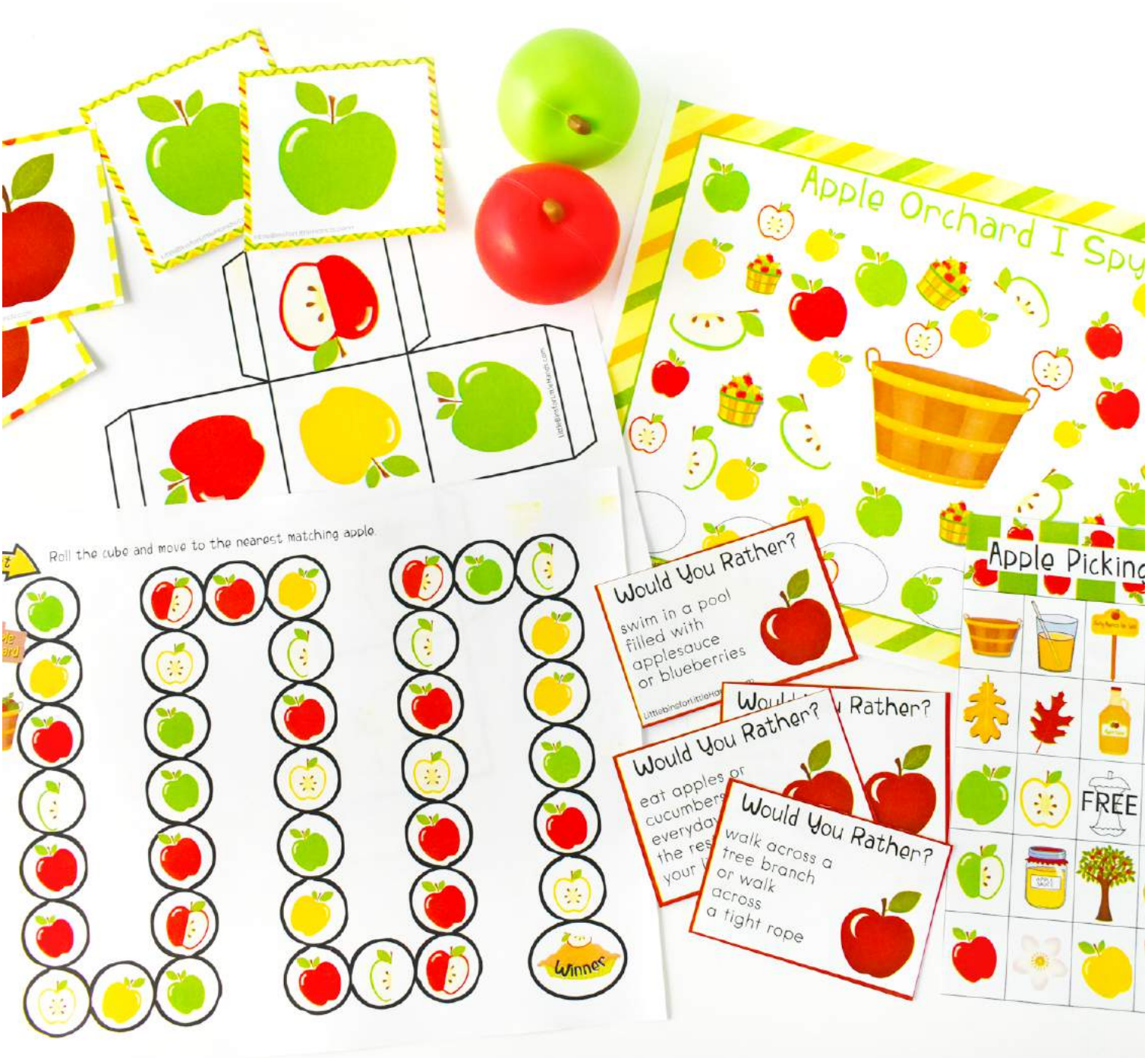
What should the children build the ladder with?

This is a problem that involves engineering and math. The children are ready for the challenge!



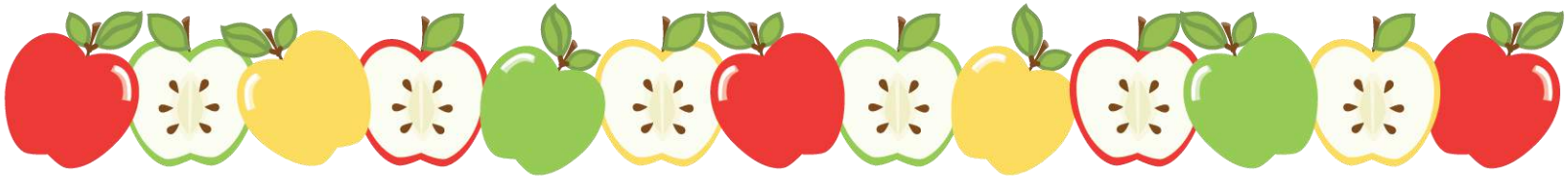
BONUS: APPLE FUN PACK

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



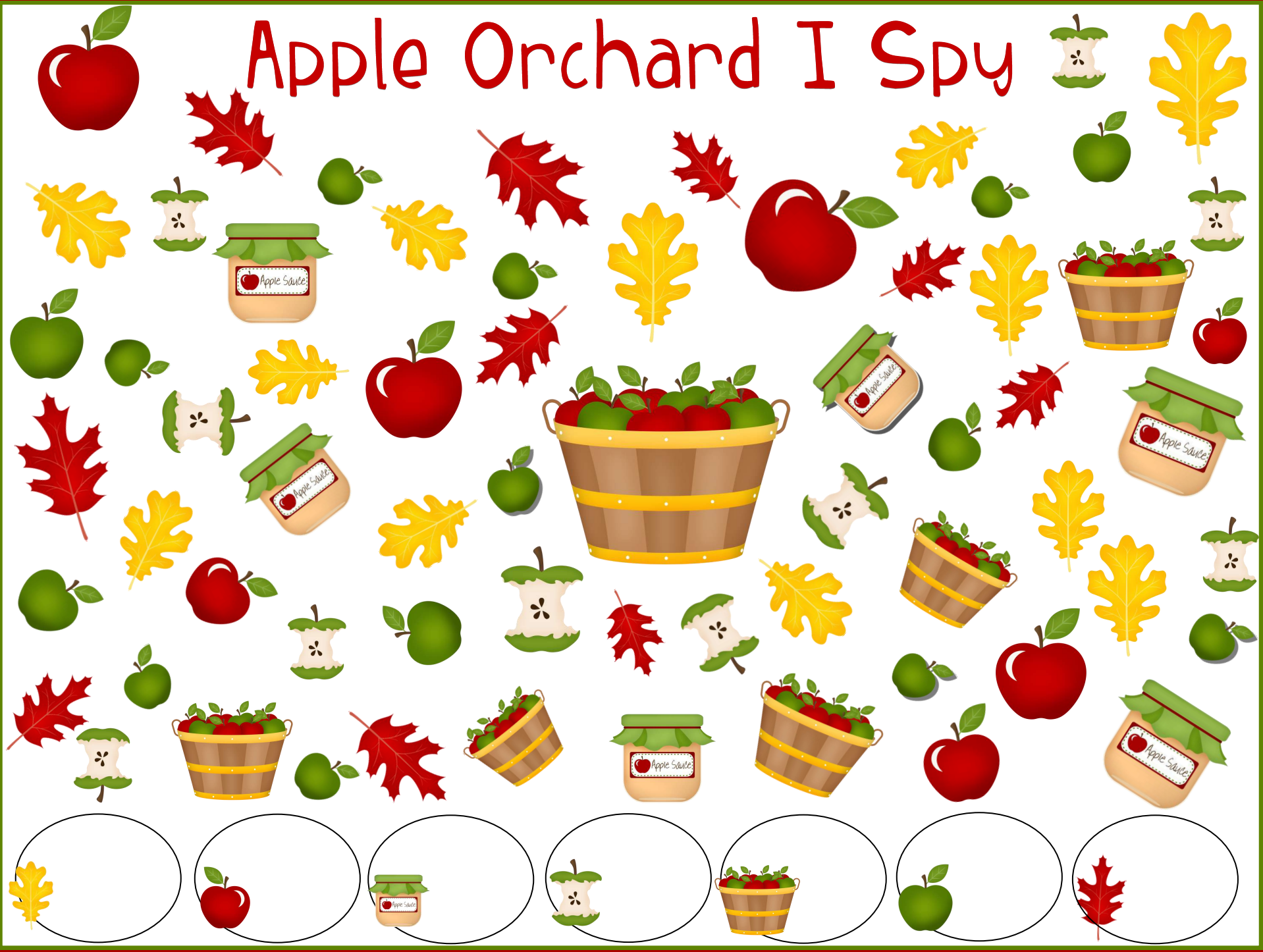
Apple Time Fun Pack

With 5 Apple Time Fun Activities



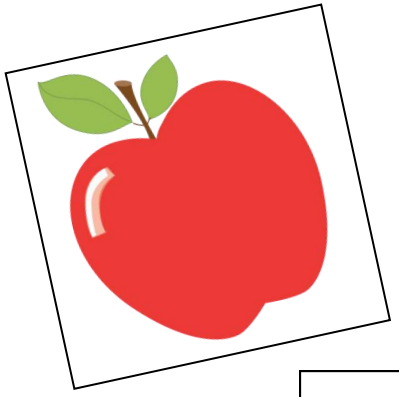
- I Spy
- BINGO
- Roll-a-Cube Board Game
- Would You Rather
- Match Game

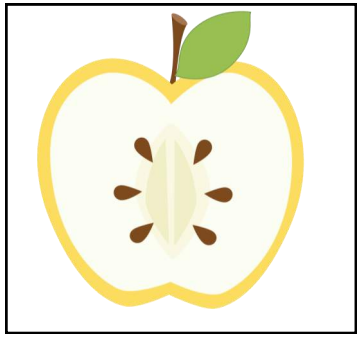
Apple Orchard I Spy

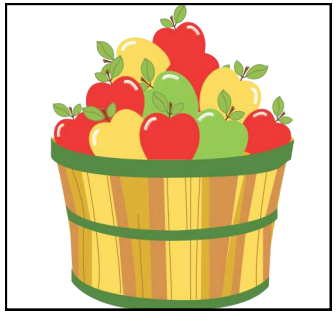


Apple Orchard I Spy

Apple Picking BINGO Game







Apple Picking BINGO

Apple Picking BINGO

Apple Picking BINGO

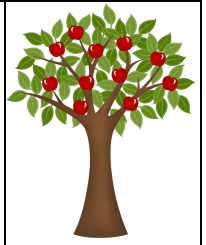
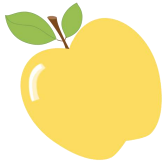
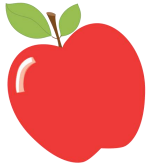
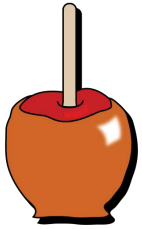
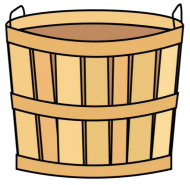






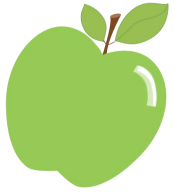








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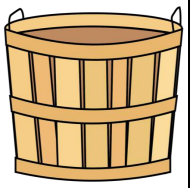
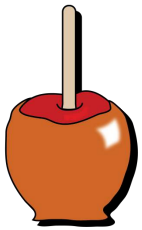
Apple Picking BINGO

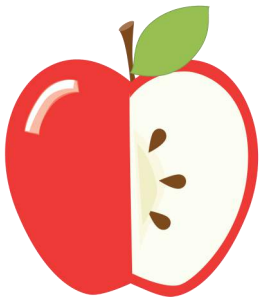


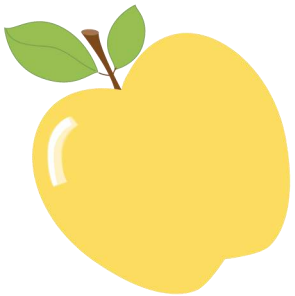


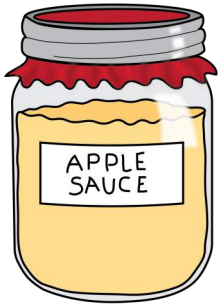


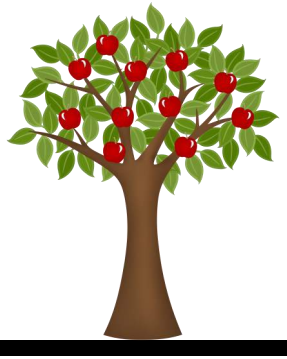



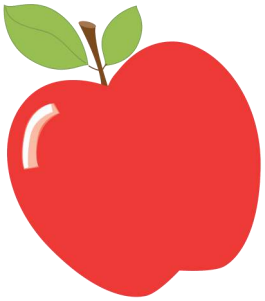



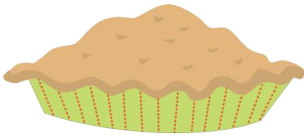



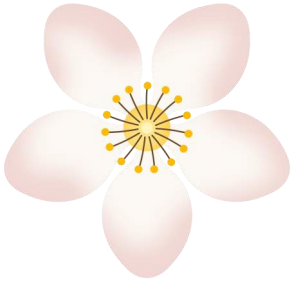


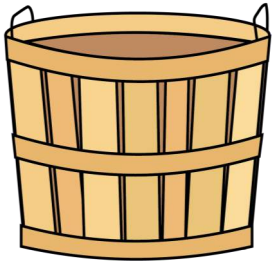


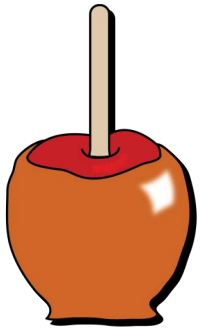


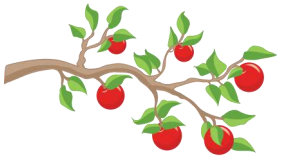


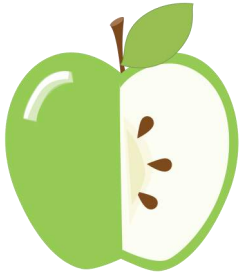




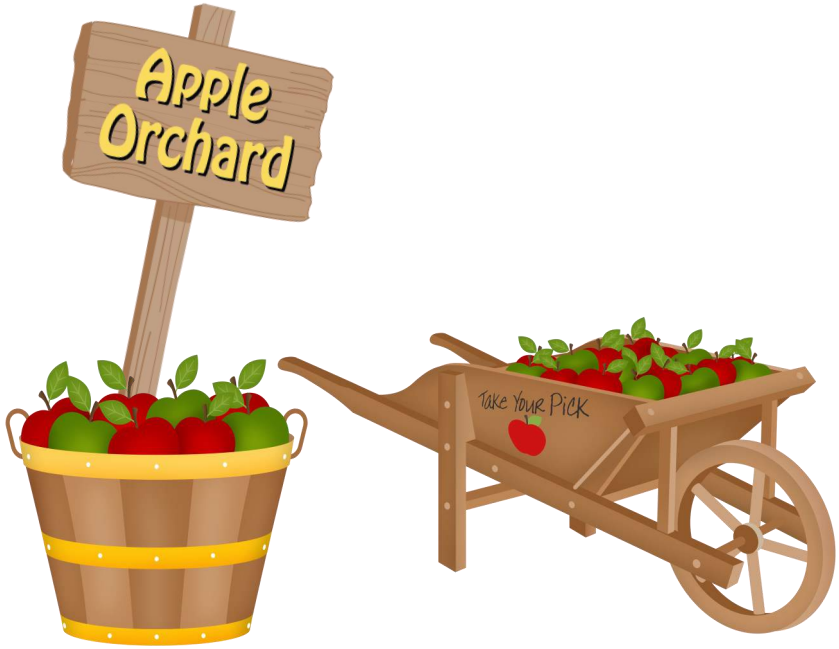


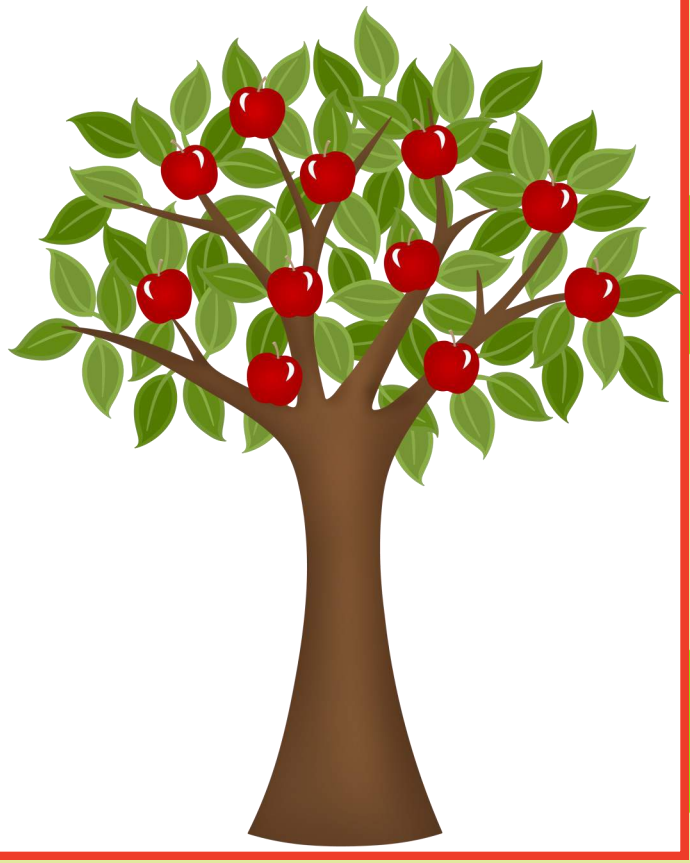






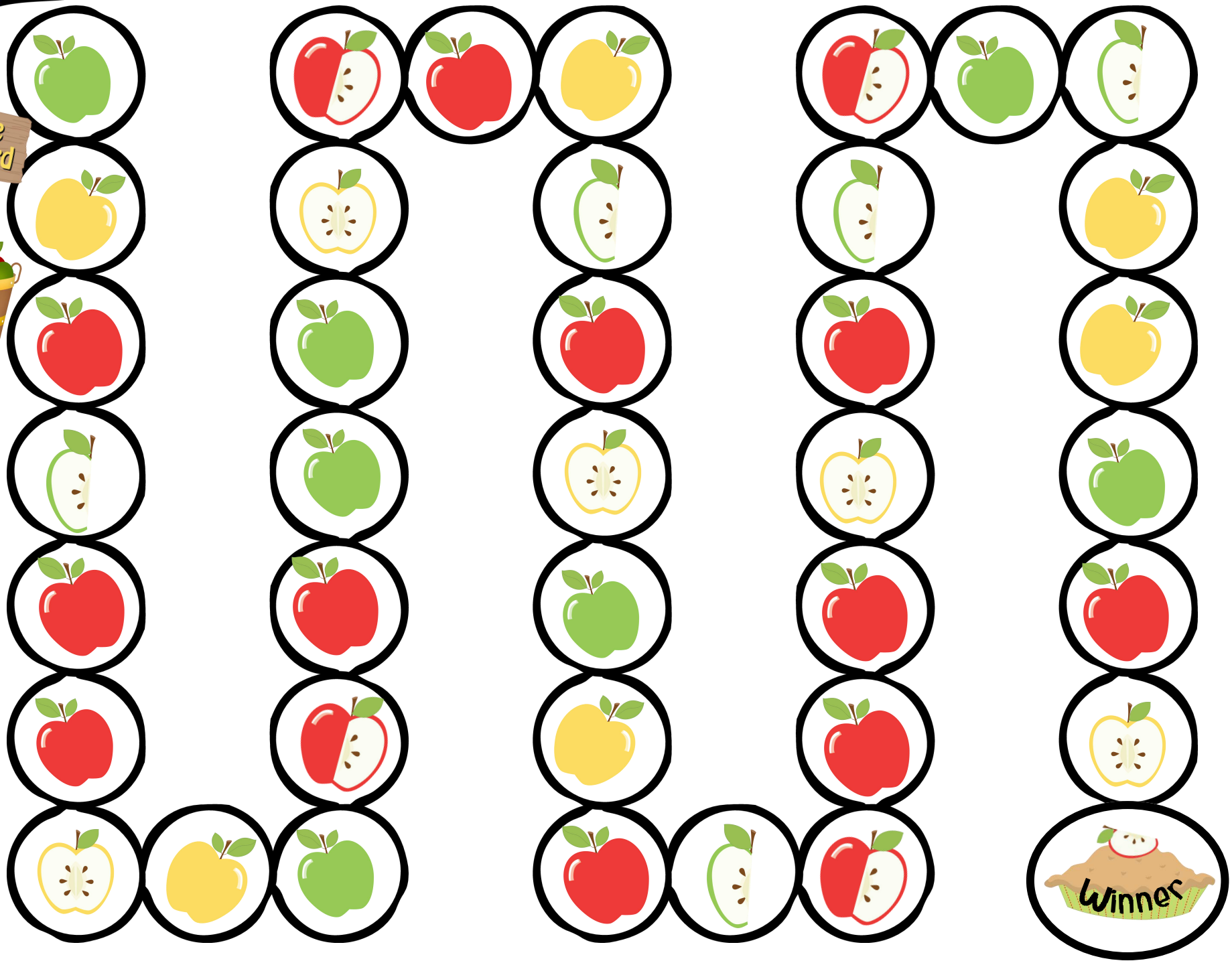
In the Apple Orchard Roll-a-Cube Board Game

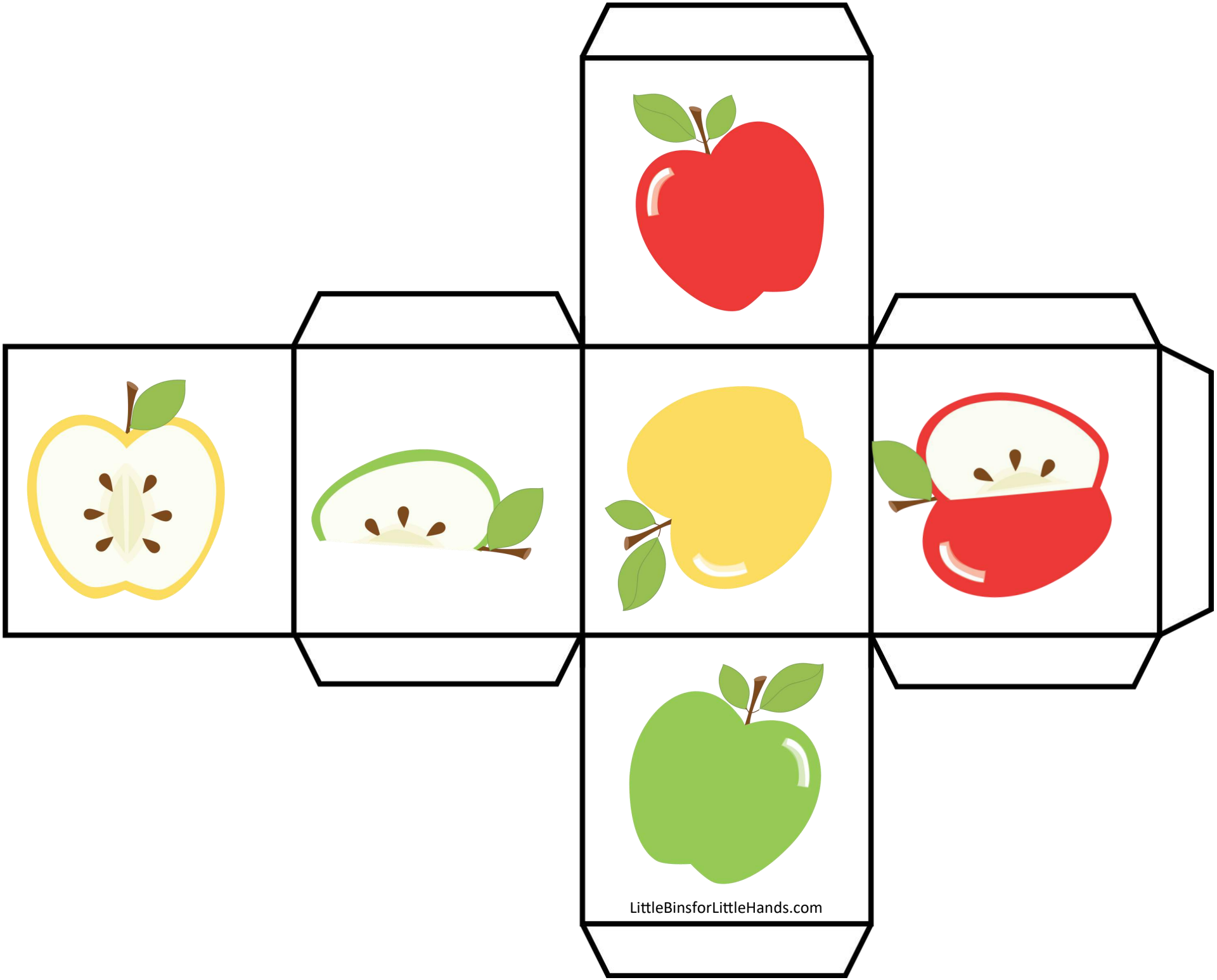




Start

Roll the cube and move to the nearest matching apple.

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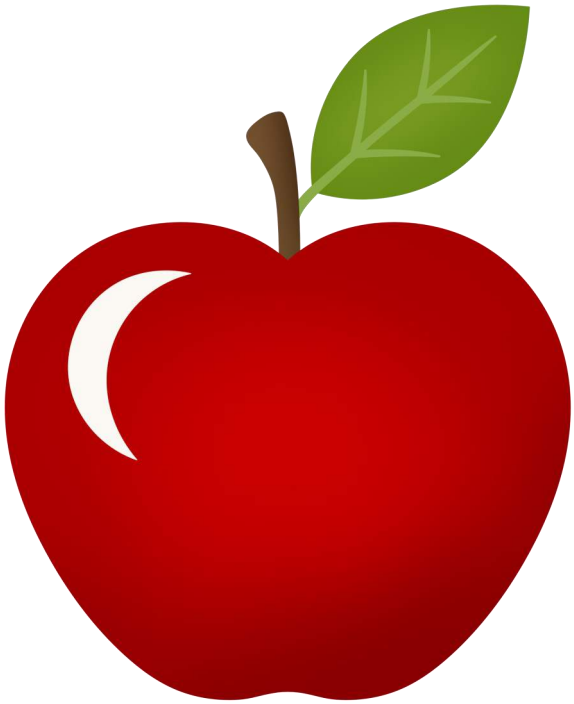
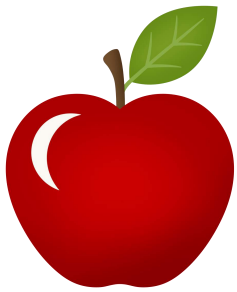
Would You Rather? Conversation Starters



Apple Picking Time

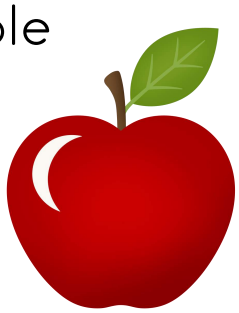
Would You Rather?

climb to the top of an apple tree to get apples or stick your hand in a bee hive to get honey



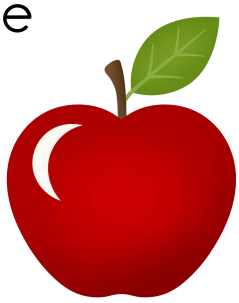
Would You Rather?

bite into an apple and see a worm or bite into an apple that is rotten



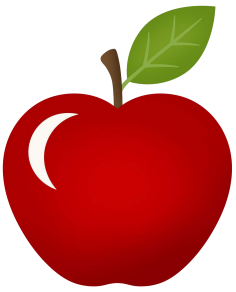
Would You Rather?

eat applesauce or eat apple pie



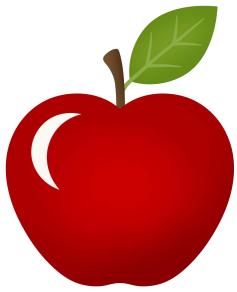
Would You Rather?

have everything you eat taste like apples or like bananas



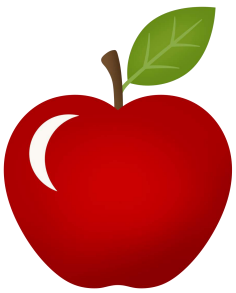
Would You Rather?

walk across a tree branch or walk across a tight rope



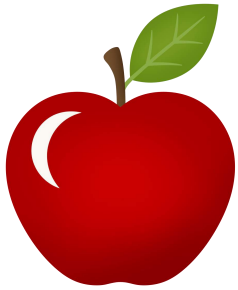
Would You Rather?

stumble upon a bear in the orchard or a swarm of bees



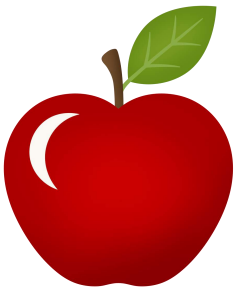
Would You Rather?

eat apples or cucumbers everyday for the rest of your life



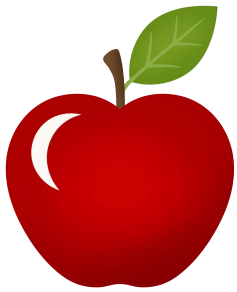
Would You Rather?

swim in a pool filled with applesauce or blueberries



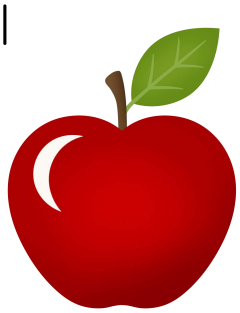
Would You Rather?

live in a giant apple or in a tiny cave



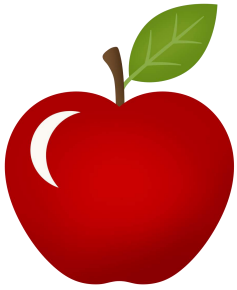
Would You Rather?

have a basketful of tart apples or full of sour gummies



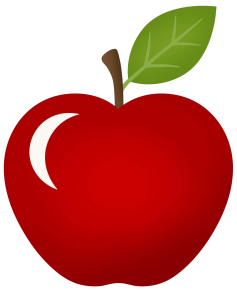
Would You Rather?

walk 75 miles to the apple orchard or never eat an apple again



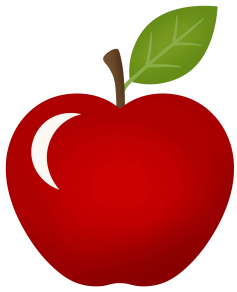
Would You Rather?

have everything you eat taste like apples or like bananas



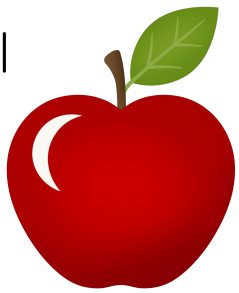
Would You Rather?

walk across a tree branch or walk across a tight rope



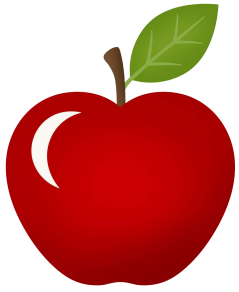
Would You Rather?

spend the day peeling a bushel of apples or picking apples



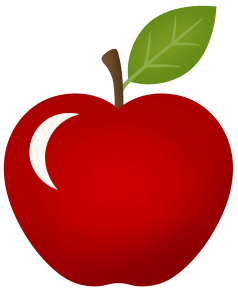
Would You Rather?

take a bite of an apple and see a whole worm or half a worm



Would You Rather?

never eat an apple again or never eat ice cream again



Apple Match Game

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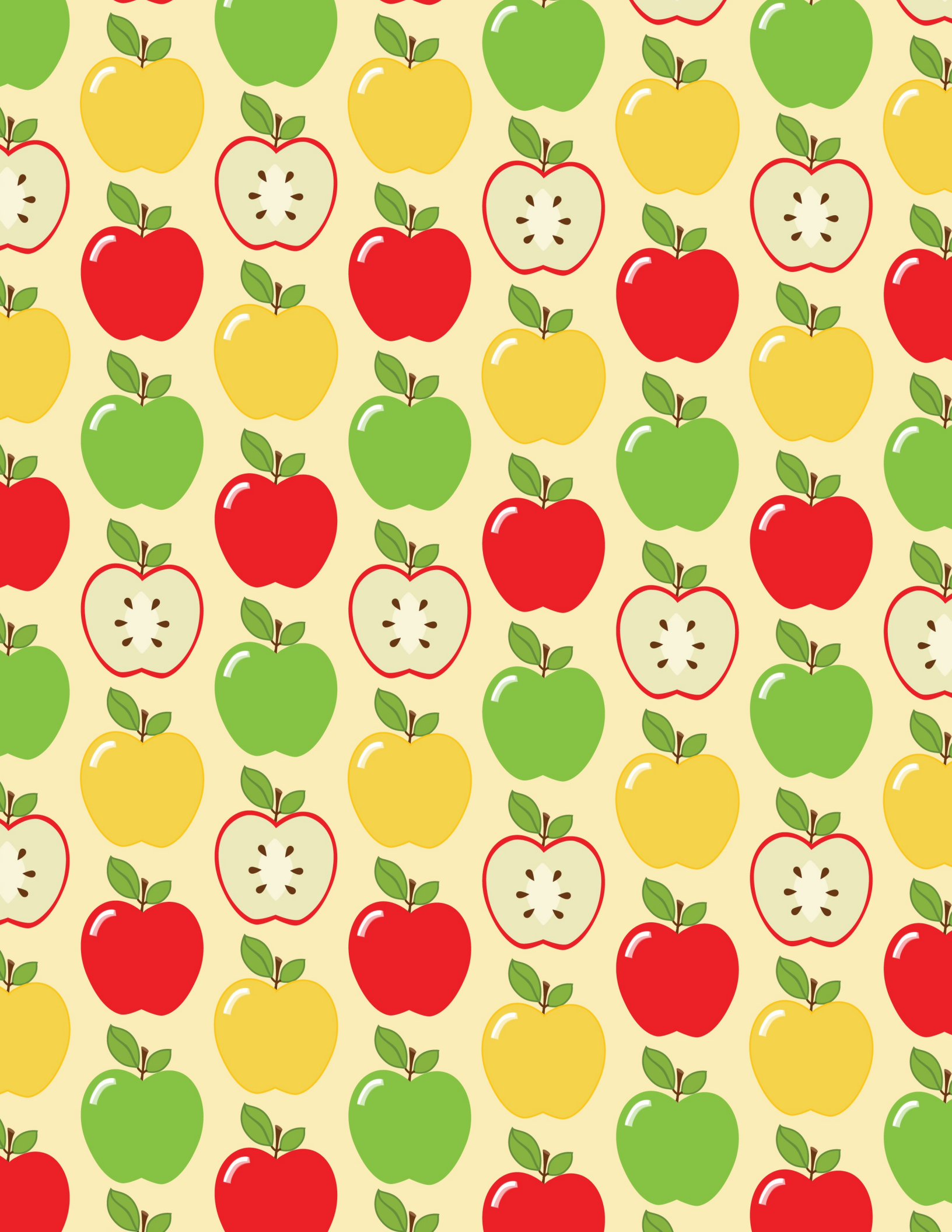

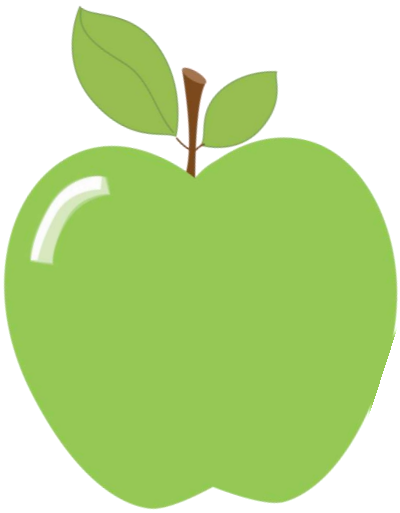

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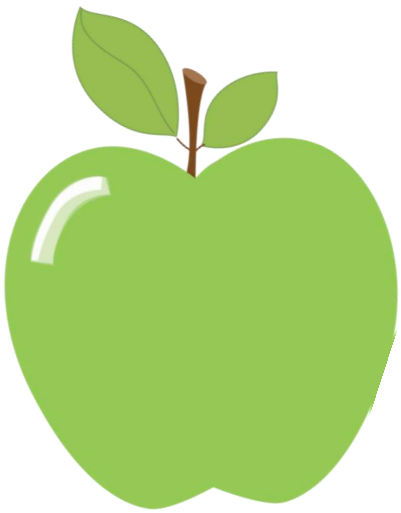

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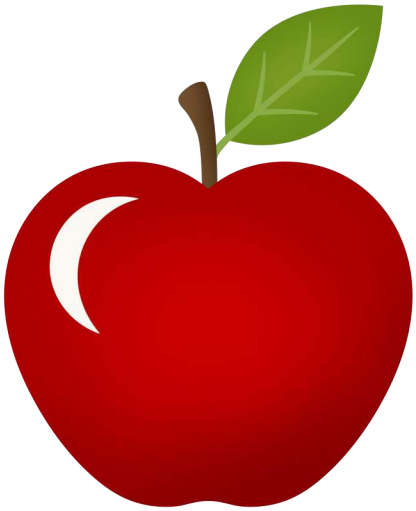
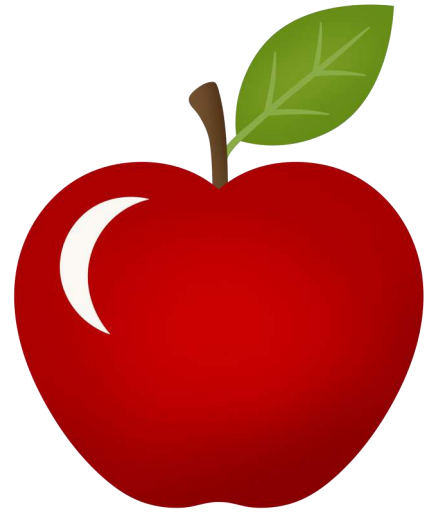
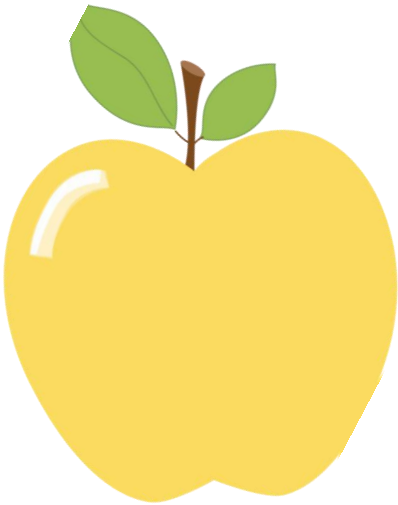




LittleBinsforLittleHands.com



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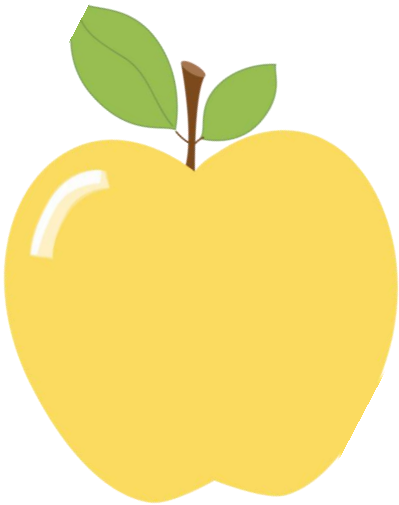

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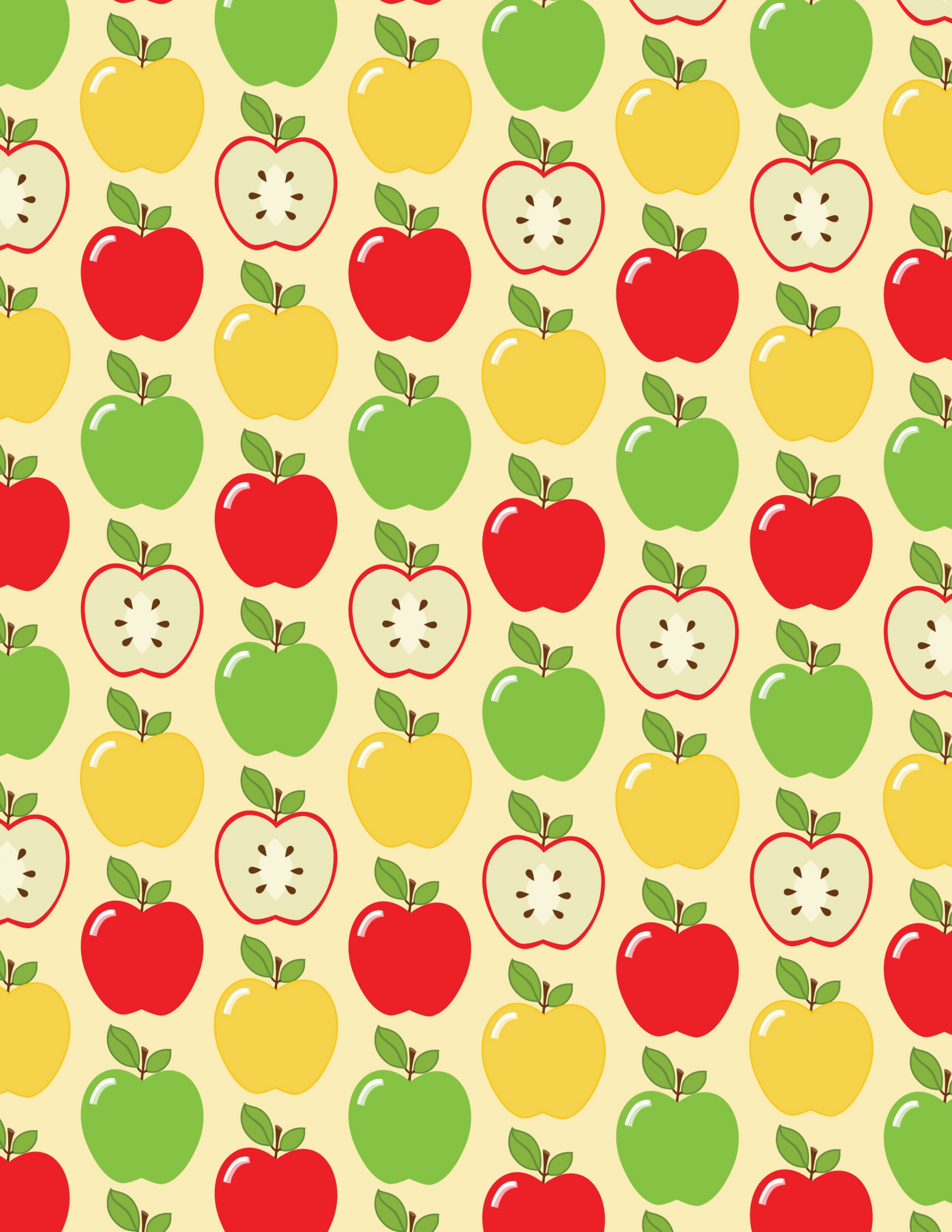

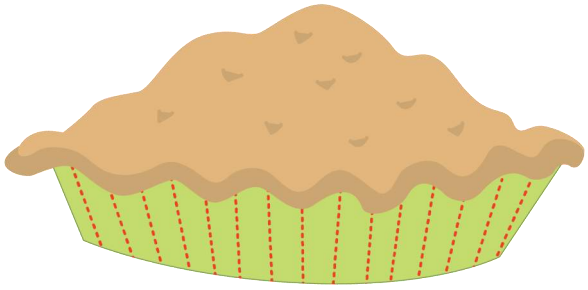

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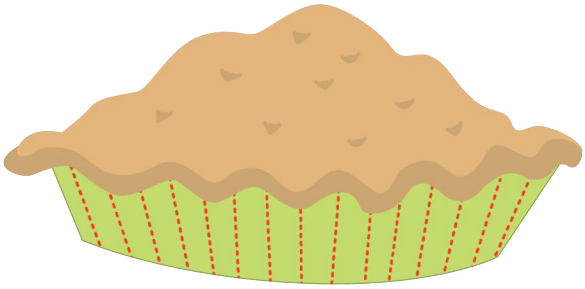

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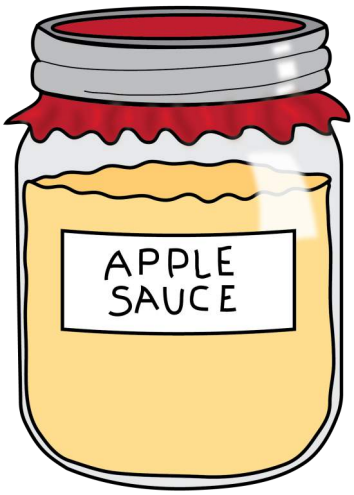

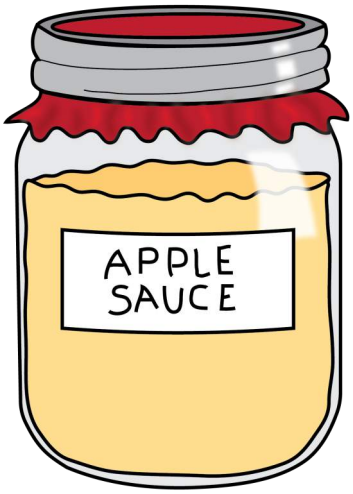

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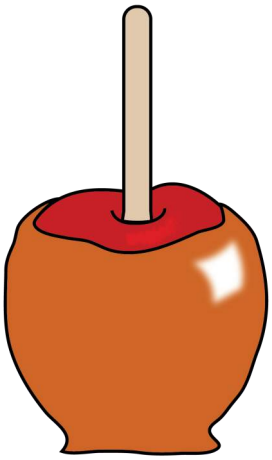

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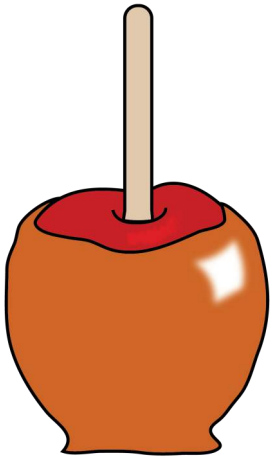

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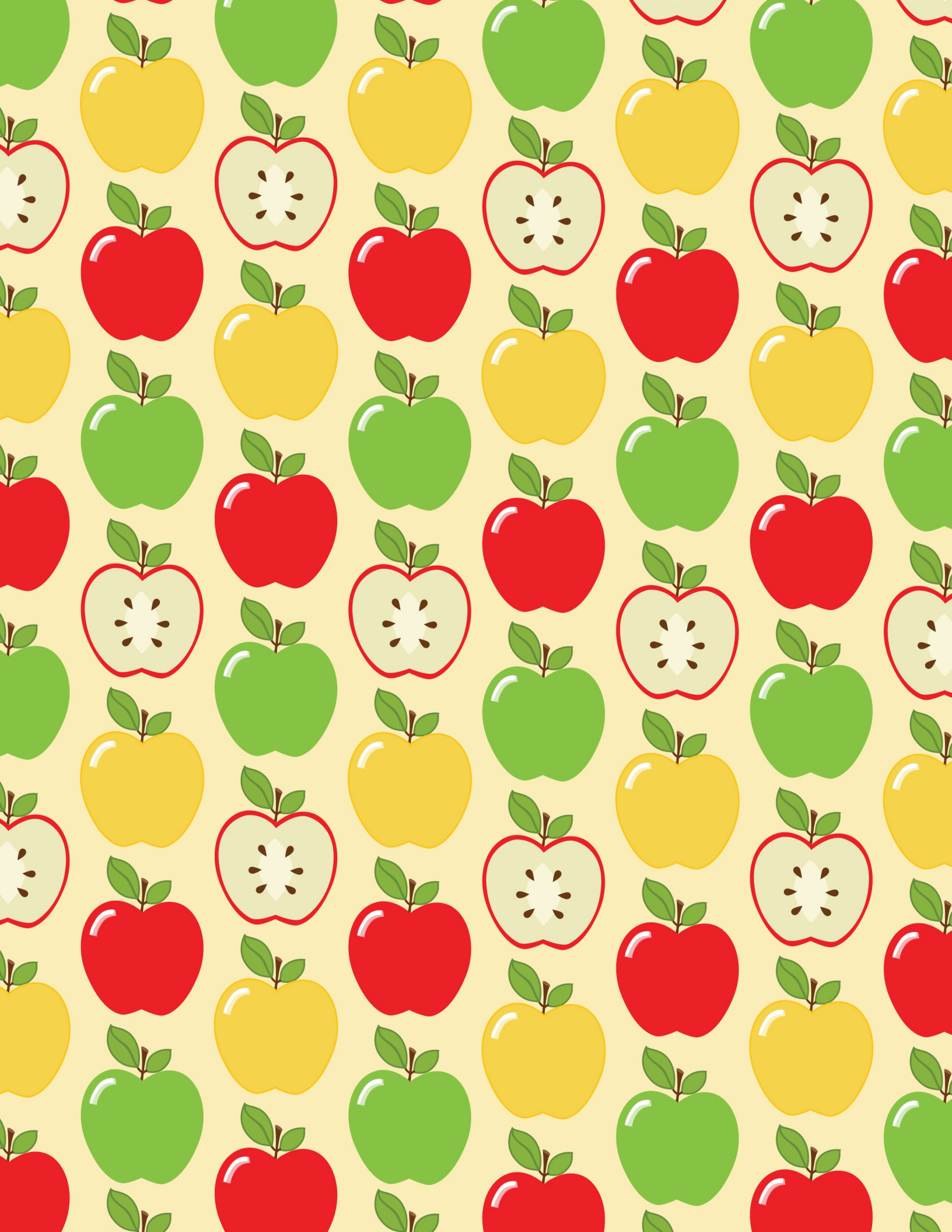

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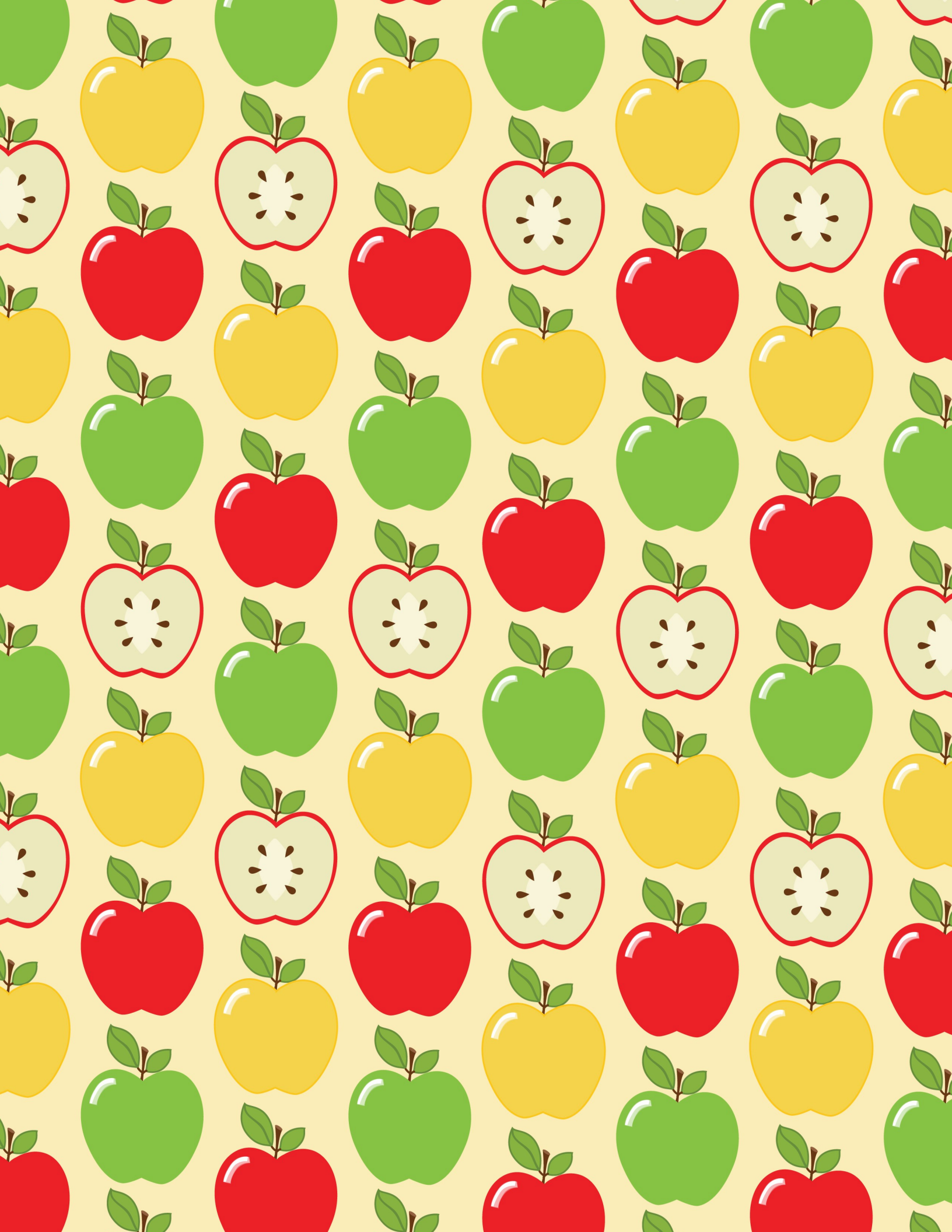
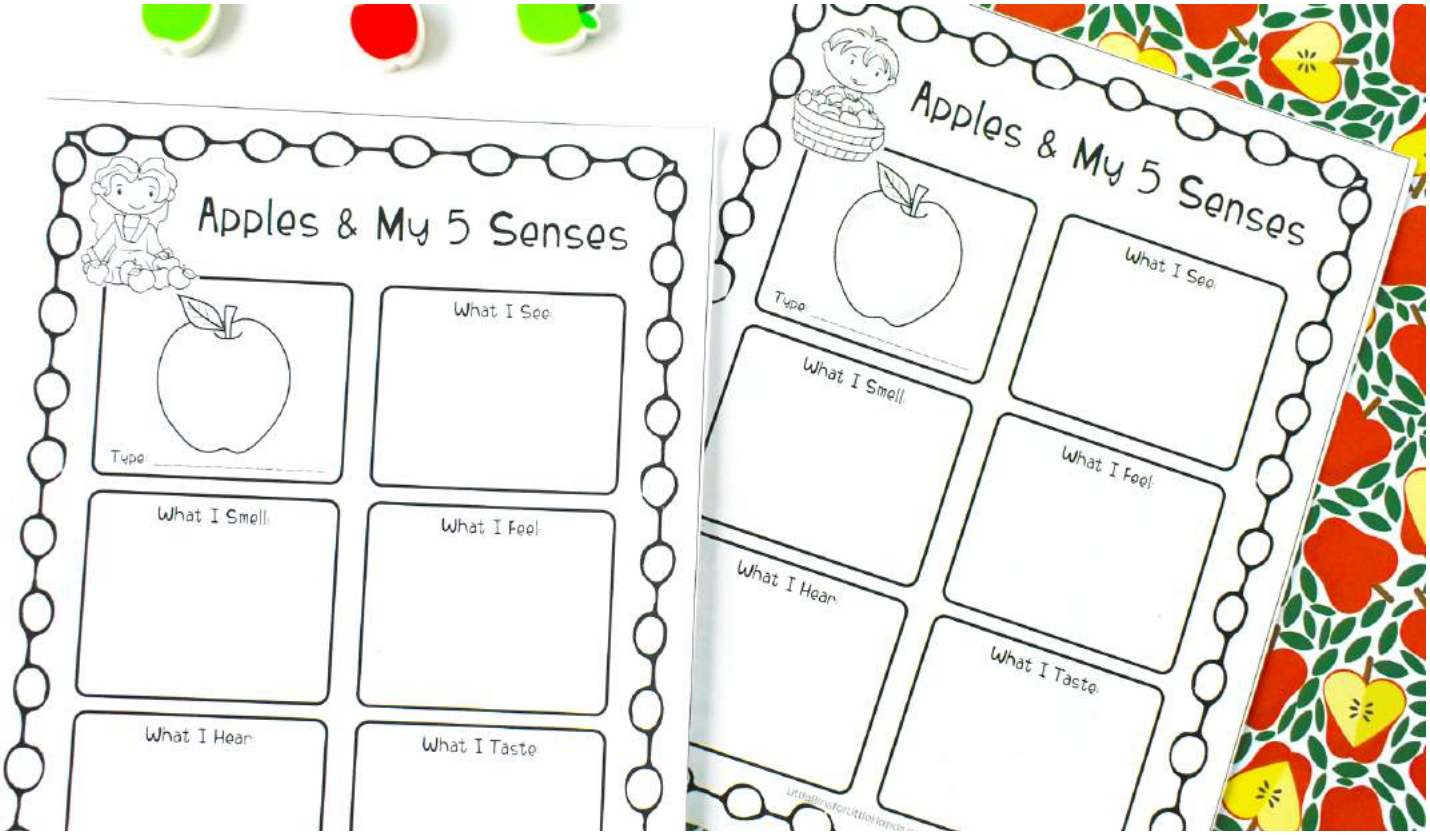


APPLE 5 SENSES



SUPPLIES:

Favorite apple
Knife for slicing (adults only)

PROCESS:

STEP 1: Start by observing and examining the whole apple! What do you see?

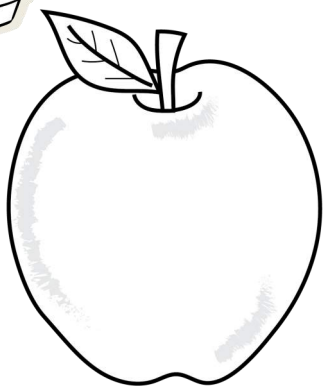
STEP 2: Have an adult slice the apple into multiple sections.

Encourage the kids to use their senses to explore their favorite apples.

STEP 3: Have the kids write descriptive words about their apples in the spaces provided. Think about the crunch you hear when you bite the apple, the shiny color of the skin you can see, the juiciness of the flesh you can touch, and the smell of the sweet fruit. Of course, you can't forget the best senses of all, taste! How does the apple taste?

Tip: Younger kids can talk with you about the different senses instead. You can help them by asking open-ended questions to get them thinking!

Apples & My 5 Senses



Type: _____

What I See:

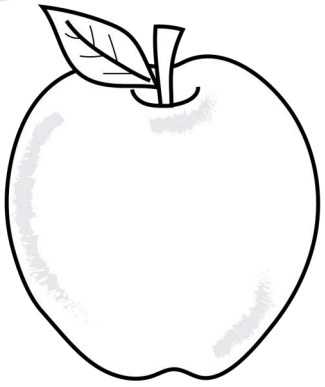
What I Smell:

What I Feel:

What I Hear:

What I Taste:

Apples & My 5 Senses



Type: _____

What I See:

What I Smell:

What I Feel:

What I Hear:

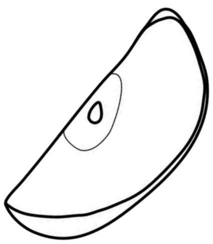
What I Taste:

Alternate Apple Browning STEM Experiment

Type of liquid:

What I think will happen:

Color the apples to show browning.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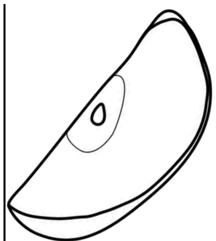

with liquid

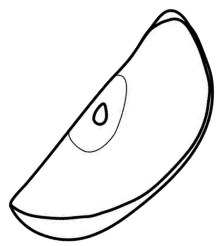
What I think will happen:

Conclusion:

Type of liquid:

What I think will happen:

Color the apples to show browning.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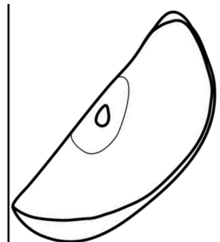

with liquid

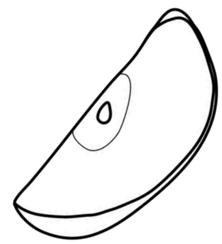
What I think will happen:

Conclusion:

Type of liquid:

What I think will happen:

Color the apples to show browning.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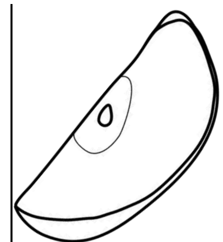

with liquid

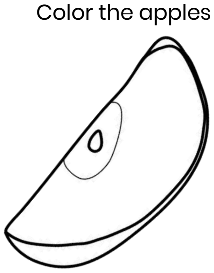
What I think will happen:

Conclusion:

Type of liquid:

What I think will happen:

Color the apples to show browning.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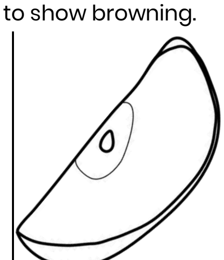

with liquid

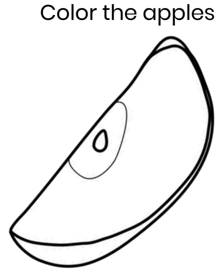
What I think will happen:

Conclusion:

Type of liquid:

What I think will happen:

Color the apples to show browning.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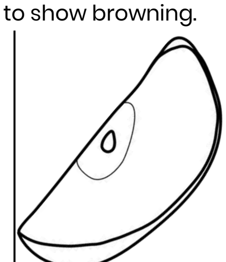

with liquid

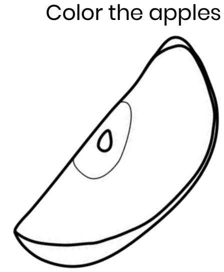
What I think will happen:

Conclusion:

Type of liquid:

What I think will happen:

Color the apples to show browning.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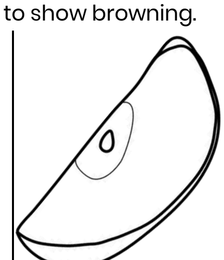
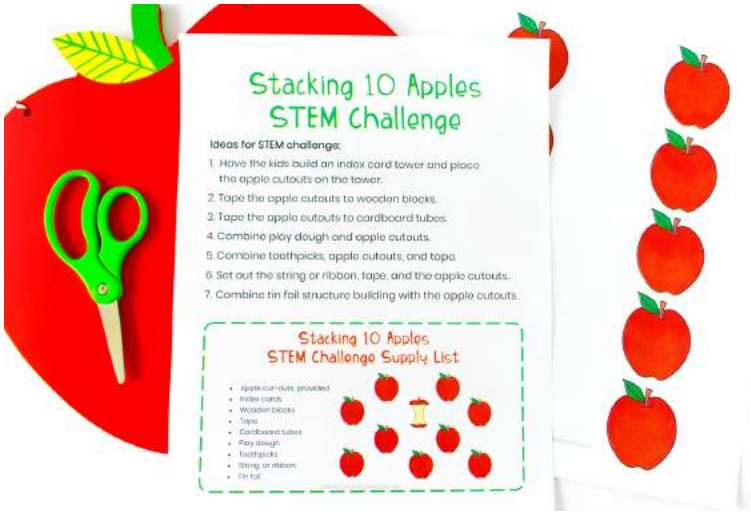

with liquid

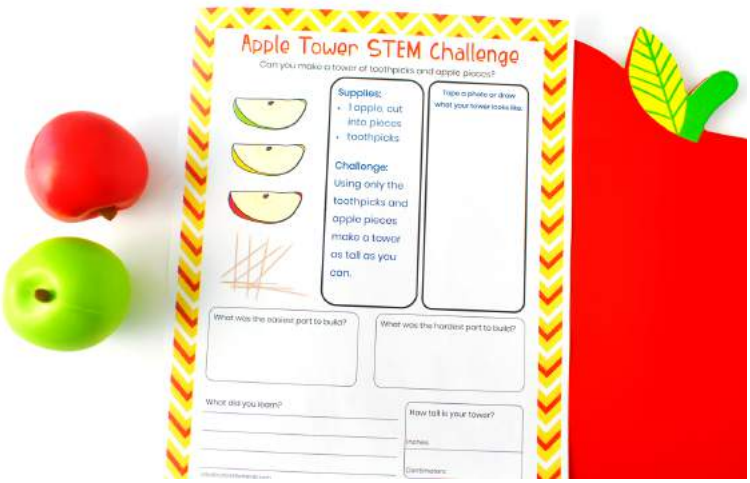
What I think will happen:

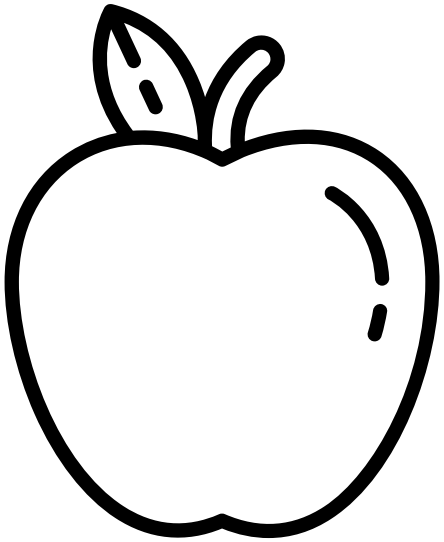
Conclusion:

STEM: APPLE CHALLENGES

Add these apple theme 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.







What's Included:

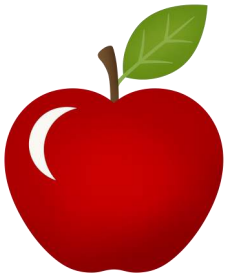
- Apple STEM Challenges
- STEM Design Process
- STEM Supply List
- 10 Apples STEM Challenges with Paper Apple Printable
- Spaghetti Tower Challenge

Balancing Apple STEM Challenge

Can you balance a paper apple on your finger?

Supplies:

Cardstock or Paper Plates
Colored Pencils or Crayons
Clothespins
Printable Template



Challenge:

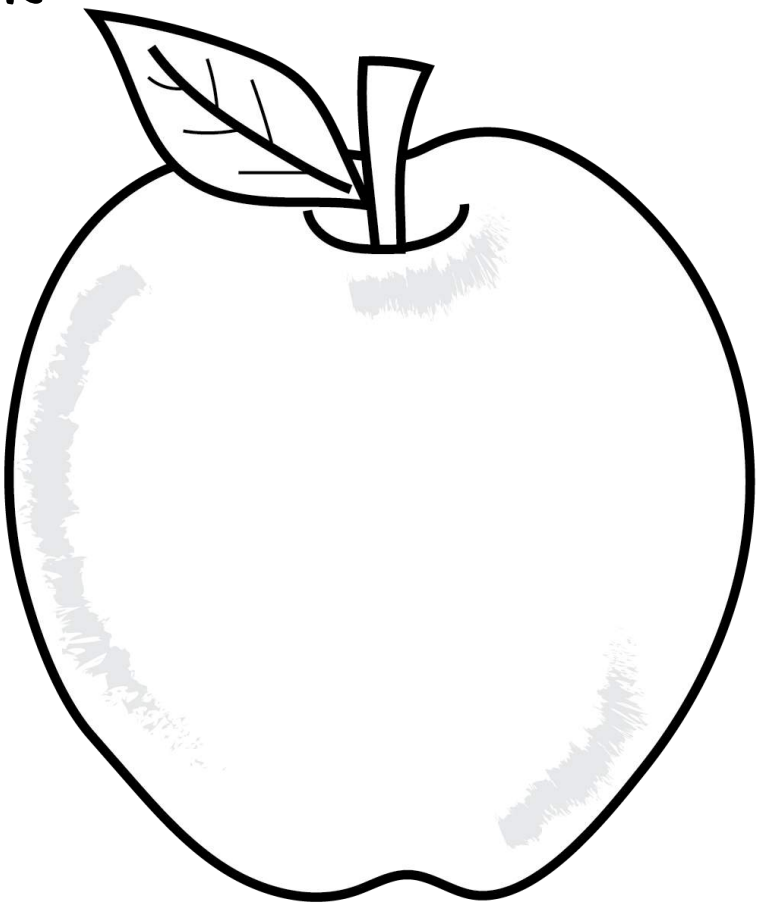
Using the apple templates on the next page print onto cardstock paper. Then color the apple however you like. Next using clothespins see if you can evenly distribute the weight so that the apple will remain upright while balanced on your finger.

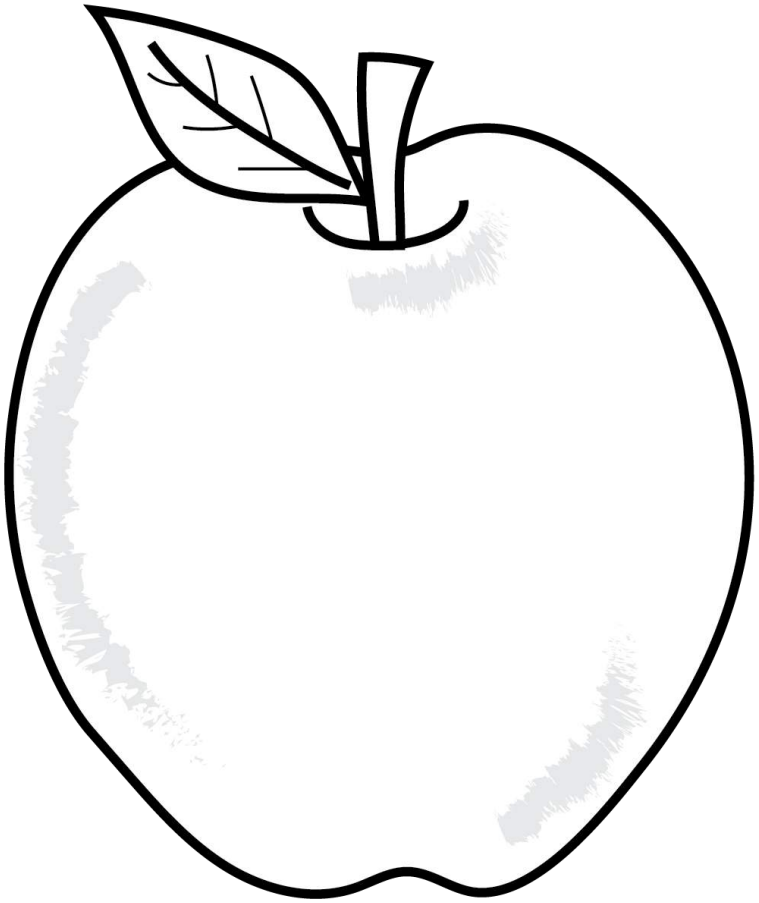
Use the chart below to share your hypothesis as to what will happen and your conclusions following the challenge.

Learn more about this project Balancing Apple STEM Activity.

What I think will happen.	What did happen

Balancing Apple





Print on cardstock. Color and cut out.

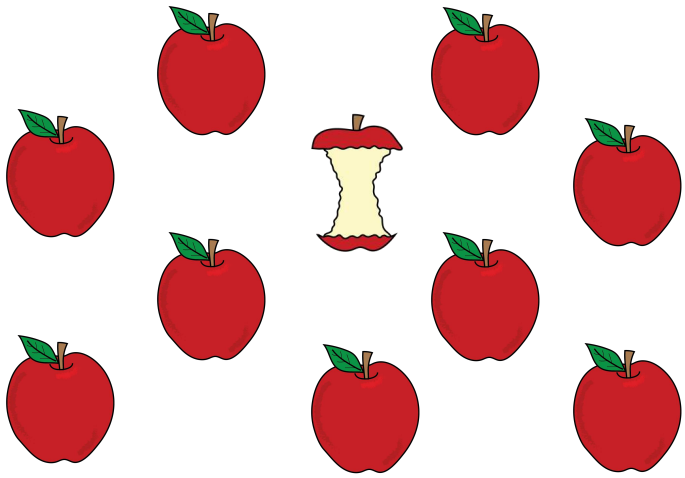
Stacking 10 Apples STEM Challenge

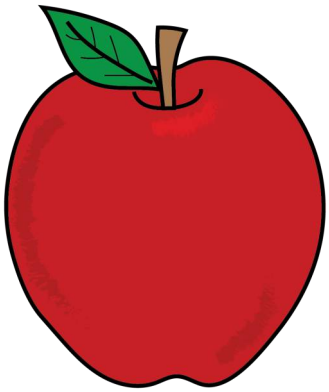
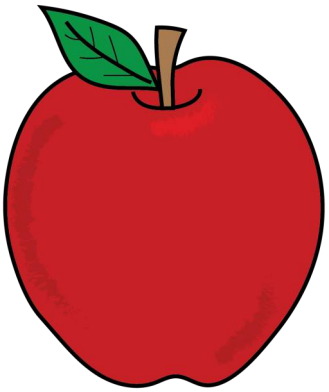
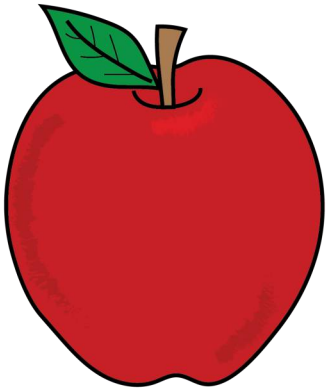
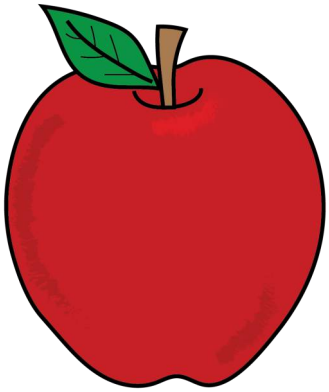
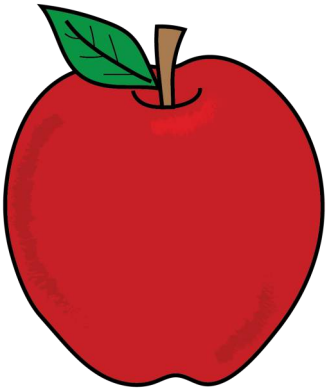
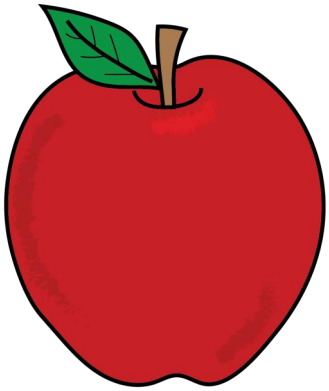
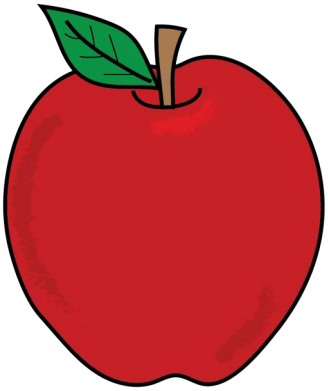
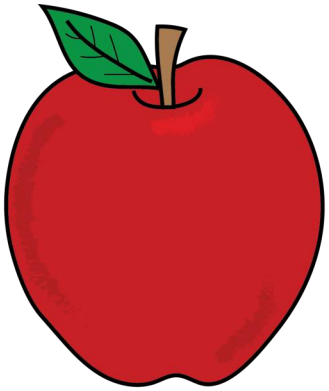
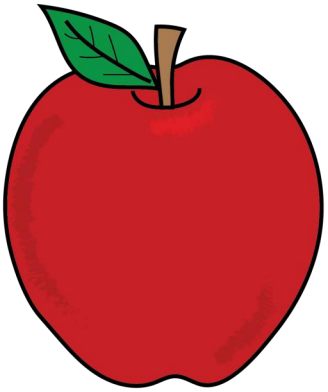
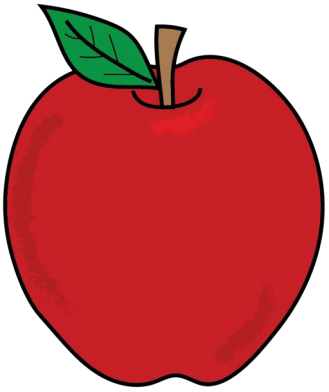
Ideas for STEM challenge:

1. Have the kids build an index card tower and place the apple cutouts on the tower.
2. Tape the apple cutouts to wooden blocks.
3. Tape the apple cutouts to cardboard tubes.
4. Combine play dough and apple cutouts.
5. Combine toothpicks, apple cutouts, and tape.
6. Set out the string or ribbon, tape, and the apple cutouts.
7. Combine tin foil structure building with the apple cutouts.

Stacking 10 Apples STEM Challenge Supply List

- Apple cut-outs, provided
- Index cards
- Wooden blocks
- Tape
- Cardboard tubes
- Play dough
- Toothpicks
- String, or ribbon
- Tin foil



The Great Apple and Spaghetti Tower

Can you make a tower of spaghetti noodles that will hold a plastic apple?

Supplies:

- 20 sticks of dry spaghetti
- 1 yard or 3 feet of string
- 1 yard or 3 feet of tape
- 1 plastic, or foam apple

Challenge:

In 18 minutes make the tallest tower possible from the materials supplied. The apple must be able to sit on top without falling off.

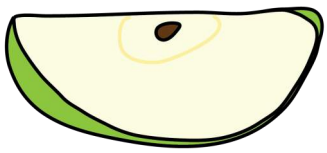
Measure your tower.

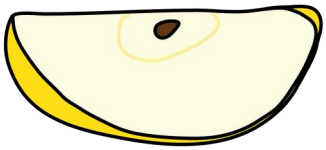
Number of Noodles	
English Measurement	
How tall is it?	
How wide is it?	
How long is it?	
Metric Measurement	
How tall is it?	
How wide is it?	
How long is it?	

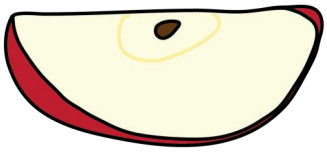
Notes

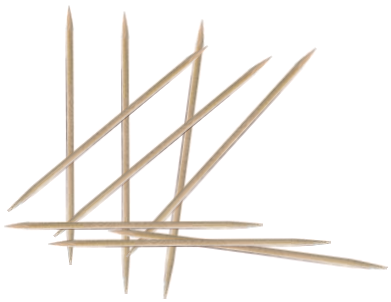
Apple Tower STEM Challenge

Can you make a tower of toothpicks and apple pieces?









Supplies:

- 1 apple, cut into pieces
- toothpicks

Challenge:

Using only the toothpicks and apple pieces make a tower as tall as you can.

Tape a photo or draw what your tower looks like.

What was the easiest part to build?

What was the hardest part to build?

What did you learn?

How tall is your tower?

Inches:

Centimeters:

APPLE STEM CHALLENGE SUPPLY LIST

Acrylic paint
Aluminum foil
Apples
Baggies
Bicycle tubing
Bushel baskets
Cardboard
Casters
Cat tails (dried)
Chicken wire
Clothes pins
Coffee filters
Cotton balls
Cotton swabs
Craft paper
Craft sticks
Doilies
Dryer tubing
Duct tape
Fabric
Felt
Flat marbles
Foam board
Food coloring
Funnel
Gears
Glow stars
Glue
Golf tees
Google eyes
Headphones
Knobs
Leaves
LEGO® bricks
Magnets
Marbles
Measuring cups
Metal tubing
Needle and thread
Nuts and bolts
Paint brushes
Paper
Paper cups
Paper clips
Paper tubing
Pencil
Pinecones
Pipe cleaners
Plastic cups
Plastic spoons
Plastic wrap
Popsicle sticks
Raffia
Ribbon
Rope
Rubber Bands
Scissors
Screws
Screwdriver
Shredded paper
Skewers
Sponges
Springs
Stapler
Straws
Sticks
Styrofoam balls
Tape
Tape measure
Timers
Tin can
Toilet paper rolls
Tongue depressors
Toothpicks
Toy apples
Twine
Twist ties
Washi Tape
Water
Wire
Wooden planks
Yarn
Zip ties

Design & Build an Apple Basket

Your apple picking basket is broken but you need to harvest the apples right away, design and build a new basket that will hold 10 real apples!

Possible Supplies:
Wood slats, popsicle sticks, rubber bands, rope, toothpicks, cat tails, chicken wire, leaves, twigs, glue, tape,

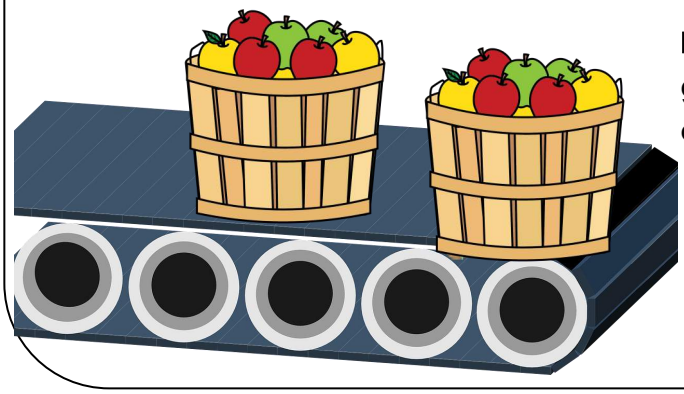
Design & Build a Ladder

You forgot to bring a ladder to the apple orchard, but you must collect the apples from the top of the tree, design and build an apple picker!

Possible Supplies:
Wood slats, popsicle sticks, rubber bands, rope, toothpicks, twigs, glue, tape,

Design & Build a Conveyer Belt

How will you get the baskets of apples from the tree to the farm stand? Can you build a conveyor belt to move them along?

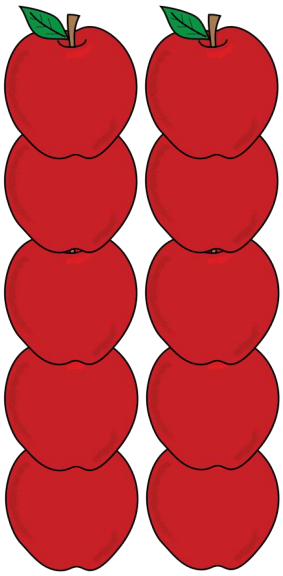


Possible Supplies:
gears, bicycle tubing, nuts & bolts, chicken wire, cardboard tubes, twist ties, tape, glue

Design & Build an Apple Stand

Time to set up an apple stand! You need to build a stand that will hold the weight of 10 real apples!

Possible Supplies:
Wood slats, popsicle sticks, rubber bands, rope, toothpicks, chicken wire, screws, nuts & bolts, hammer & nails, twigs, glue, tape, paint, brushes, gabric, decorative items



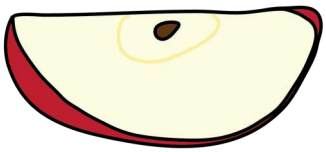
Apple Stack Challenge

The great apple stack challenge! Can you stack 10 apples on top of each other? Come up with alternatives for using real apples! Get creative!

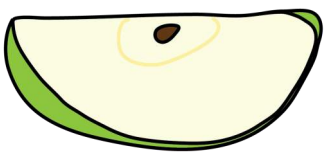
Possible Supplies:
Apples, toothpicks, popsicle sticks, tape, Styrofoam balls, needle & thread, ribbon, Washi tape.

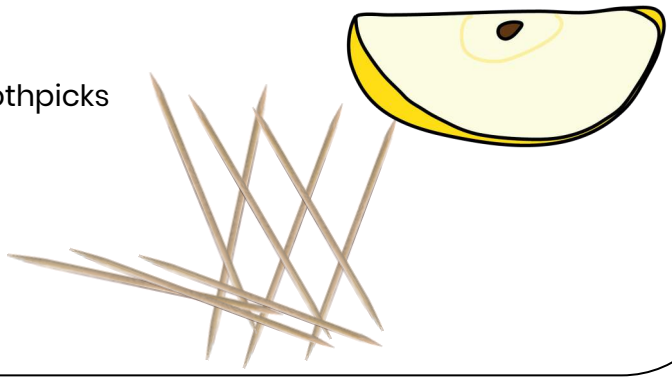
Build an Apple Tower & Structure

Have an adult cut an apple into small pieces. Using toothpicks, build and the tallest apple piece tower you can! Can you make it at least 1 foot or 12 inches tall?



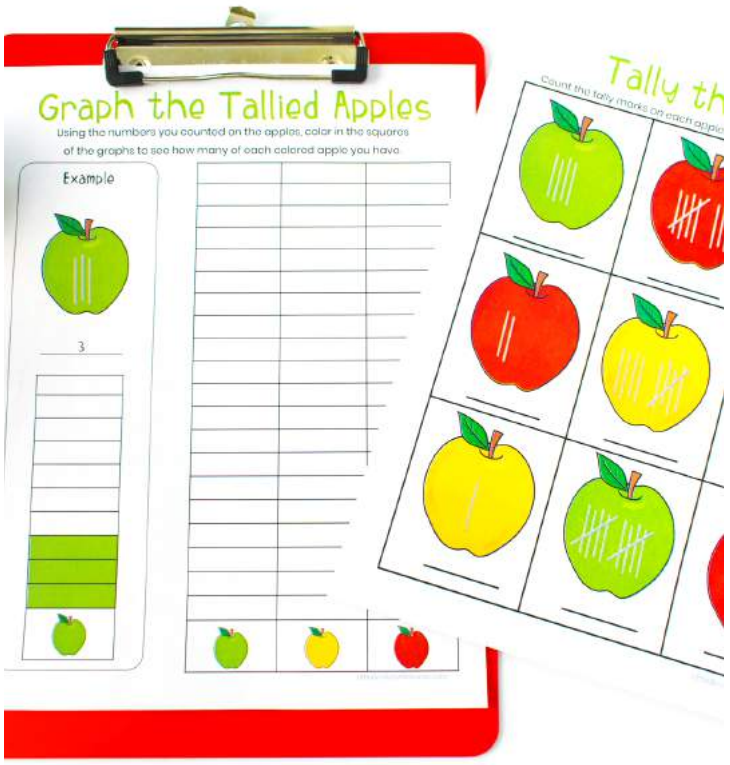
Supplies:
apples, toothpicks

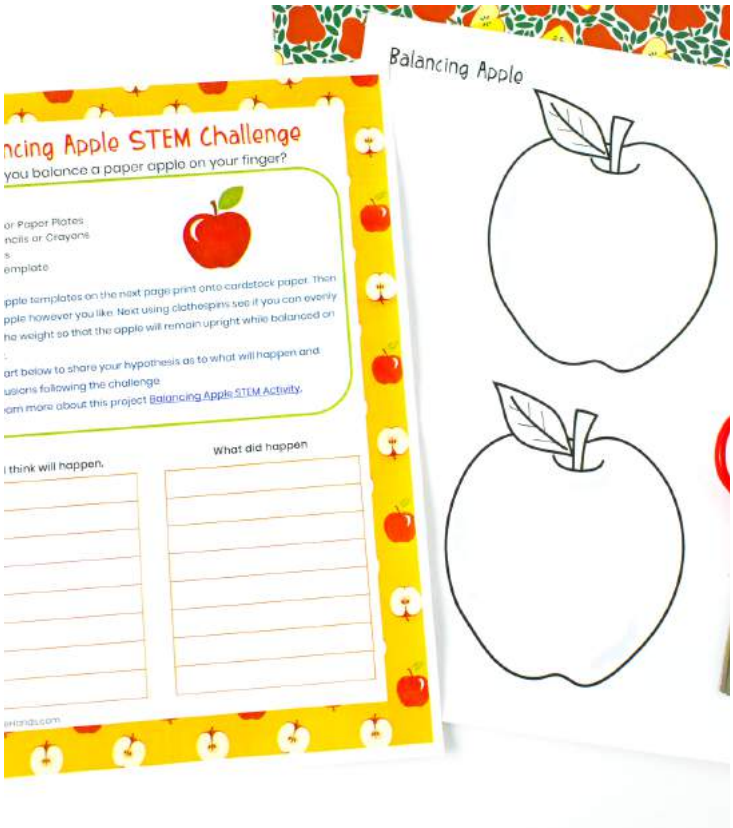




APPLE STEM PACK EXTRAS

Easy to use apple theme math and STEM!





5+7	9+3	4+8	3+10	5+7	9+4	1+11	5+7	1+11	4+8	2+11	13+0	1+12	1+12	9+4	5+7	3+10	9+3	6+6	1+11	2+10	6+7
6+6	3+10	9+3	2+11	2+10	6+7	6+6	9+3	3+10	6+7	13+0	6+6	1+12	2+10	6+7	0+11	8+1	6+2	8+1	3+10	9+3	2+11
1+12	13+0	9+3	5+9	2+12	1+14	5+7	4+8	3+10	9+3	2+10	6+7	6+6	1+11	4+8	4+4	5+6	10+0	5+6	8+1	1+11	2+10
2+10	13+0	7+8	0+2	2+13	4+10	0+0	13+0	4+8	4+8	1+11	6+6	1+11	2+8	5+5	2+9	7+1	4+5	4+3	0+11	5+8	5+8
6+6	6+9	14+0	2+13	0+2	5+9	6+8	5+9	6+8	9+3	1+12	13+0	10+0	3+3	3+6	7+3	2+5	6+4	6+4	5+5	4+2	6+7
5+8	4+11	3+12	5+10	7+7	2+13	0+1	6+9	5+10	6+6	1+11	5+7	4+5	10+1	6+4	3+8	10+1	4+7	7+1	1+9	7+3	1+12
6+7	1+13	0+2	7+7	2+0	5+10	7+8	2+12	2+0	4+11	2+10	6+7	0+9	6+1	4+7	4+3	2+8	8+1	7+3	6+2	5+6	5+7
2+11	6+8	3+11	7+8	6+8	7+7	0+1	2+13	6+9	1+13	6+6	1+11	1+9	8+1	8+1	0+11	0+11	3+3	5+6	8+1	2+8	2+10
4+8	1+1	1+14	1+1	5+10	7+8	14+0	7+7	1+1	5+7	4+8	2+10	0+12	5+6	3+5	5+5	7+3	4+7	2+8	2+5	6+7	6+6
9+4	9+4	4+10	5+9	6+9	1+1	3+12	13+0	9+3	1+11	6+7	4+8	5+8	6+6	3+6	1+9	5+6	6+1	3+8	2+9	1+11	5+7
13+0	6+7	9+3	6+9	4+11	1+13	3+11	1+12	9+4	13+0	3+10	5+7	4+8	13+0	4+7	1+5	2+8	7+3	3+10	0+12	9+4	2+10
6+6	1+11	6+7	9+3	1+3	0+5	1+11	4+8	0+12	4+8	3+10	5+8	6+6	6+6	1+11	0+3	0+3	1+12	2+11	1+12	13+0	5+8
13+0	1+12	9+4	0+12	2+3	1+4	9+3	2+11	5+7	4+8	5+8	6+6	0+12	9+4	5+8	1+2	1+2	9+4	1+12	9+4	6+6	6+7
1+12	9+4	13+0	2+11	1+4	4+0	6+7	5+7	3+10	0+12	9+4	6+7	13+0	9+4	6+7	0+3	2+3	6+7	5+7	4+8	13+0	1+12
9+4	3+10	0+0	6+7	1+3	2+3	4+8	1+1	1+11	9+3	1+11	9+3	2+11	4+4	5+7	1+2	1+4	5+7	6+6	7+1	1+12	8+0
1+1	5+5	7+3	2+8	5+5	2+9	1+0	2+8	7+3	2+0	5+6	7+3	0+11	10+1	5+5	7+3	3+6	8+0	10+0	2+8	5+5	2+9
4+5	10+1	6+4	3+8	10+1	4+7	7+1	1+9	7+3	3+6	2+8	7+3	10+0	4+5	10+1	6+4	3+8	10+1	4+7	7+1	1+9	7+3

red	0, 1, 2	yellow	6, 7, 8	blue	12, 13
brown	3, 4, 5	dark green	9, 10, 11	light green	14, 15

5+7	9+3	4+8	3+10	5+7	9+4	1+11	5+7	1+11	4+8	2+11	13+0	1+12	1+12	9+4	5+7	3+10	9+3	6+6	1+11	2+10	6+7
6+6	3+10	9+3	2+11	2+10	6+7	6+6	9+3	3+10	6+7	13+0	6+6	1+12	2+10	6+7	0+11	8+1	6+2	8+1	3+10	9+3	2+11
1+12	13+0	9+3	5+9	2+12	1+14	5+7	4+8	3+10	9+3	2+10	6+7	6+6	1+11	4+8	4+4	5+6	10+0	5+6	8+1	1+11	2+10
2+10	13+0	7+8	0+2	2+13	4+10	0+0	13+0	4+8	4+8	1+11	6+6	1+11	2+8	5+5	2+9	7+1	4+5	4+3	0+11	5+8	5+8
6+6	6+9	14+0	2+13	0+2	5+9	6+8	5+9	6+8	9+3	1+12	13+0	10+0	3+3	3+6	7+3	2+5	6+4	6+4	5+5	4+2	6+7
5+8	4+11	3+12	5+10	7+7	2+13	0+1	6+9	5+10	6+6	1+11	5+7	4+5	10+1	6+4	3+8	10+1	4+7	7+1	1+9	7+3	1+12
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2+11	6+8	3+11	7+8	6+8	7+7	0+1	2+13	6+9	1+13	6+6	1+11	1+9	8+1	8+1	0+11	0+11	3+3	5+6	8+1	2+8	2+10
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9+4	9+4	4+10	5+9	6+9	1+1	3+12	13+0	9+3	1+11	6+7	4+8	5+8	6+6	3+6	1+9	5+6	6+1	3+8	2+9	1+11	5+7
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6+6	1+11	6+7	9+3	1+3	0+5	1+11	4+8	0+12	4+8	3+10	5+8	6+6	6+6	1+11	0+3	0+3	1+12	2+11	1+12	13+0	5+8
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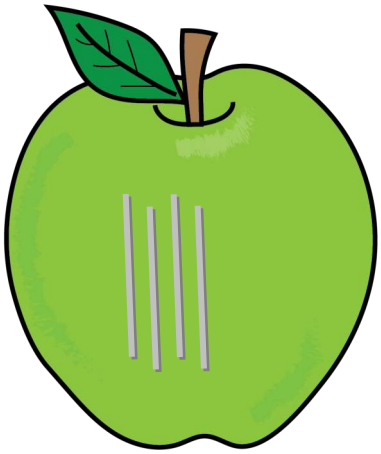
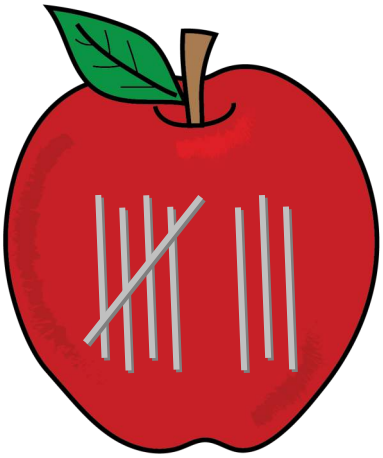
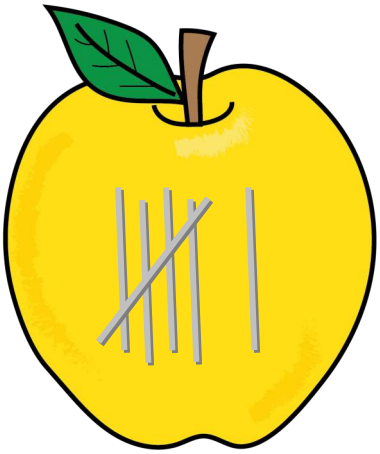
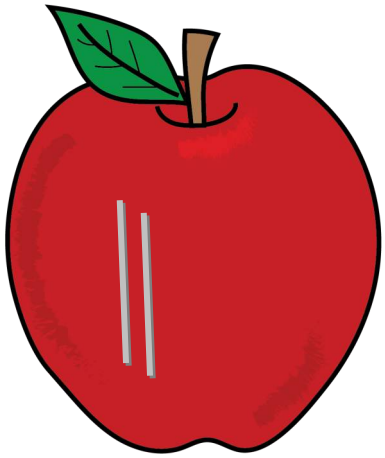
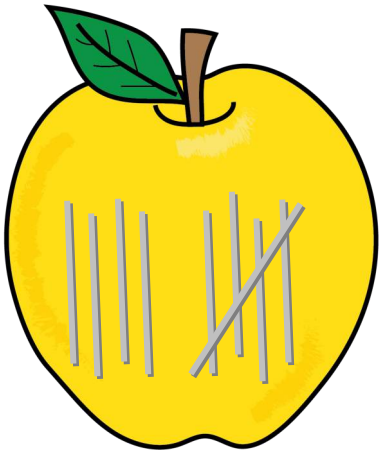
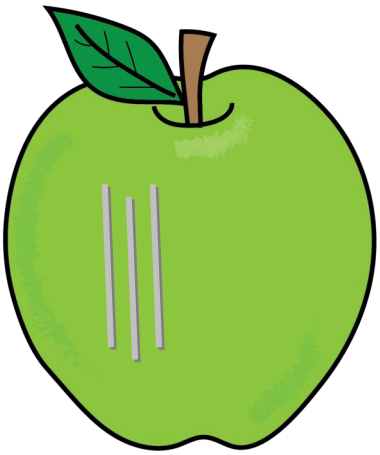
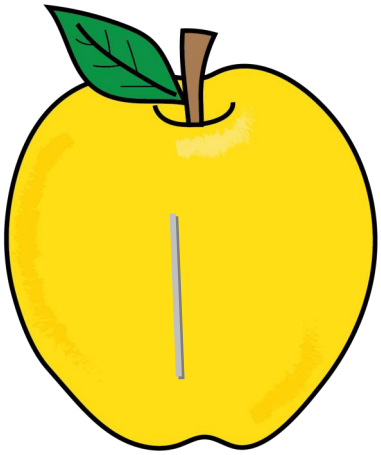
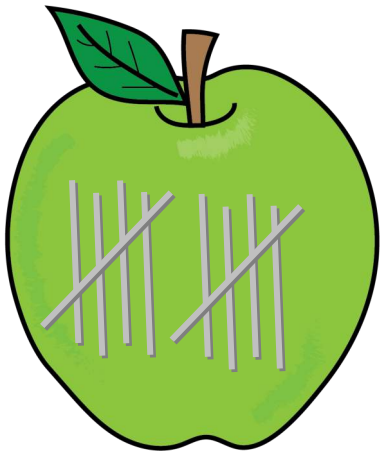
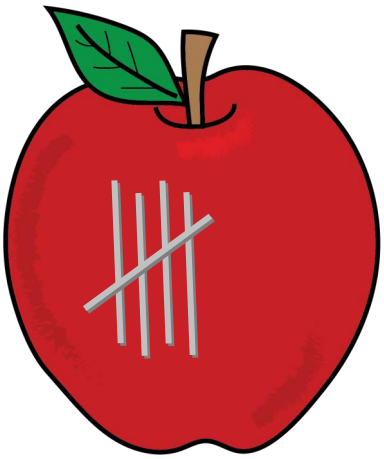
1+1	5+5	7+3	2+8	5+5	2+9	1+0	2+8	7+3	2+0	5+6	7+3	0+11	10+1	5+5	7+3	3+6	8+0	10+0	2+8	5+5	2+9
4+5	10+1	6+4	3+8	10+1	4+7	7+1	1+9	7+3	3+6	2+8	7+3	10+0	4+5	10+1	6+4	3+8	10+1	4+7	7+1	1+9	7+3

red	0, 1, 2	yellow	6, 7, 8	blue	12, 13
brown	3, 4, 5	dark green	9, 10, 11	light green	14, 15

Tally the Apples

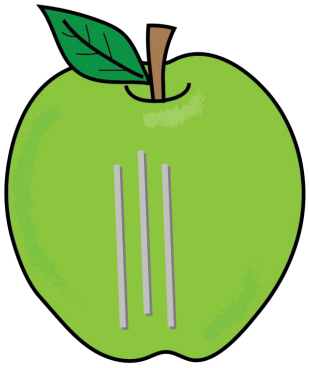
Count the tally marks on each apple. Then write the number on the lines.

 _____	 _____	 _____
 _____	 _____	 _____
 _____	 _____	 _____

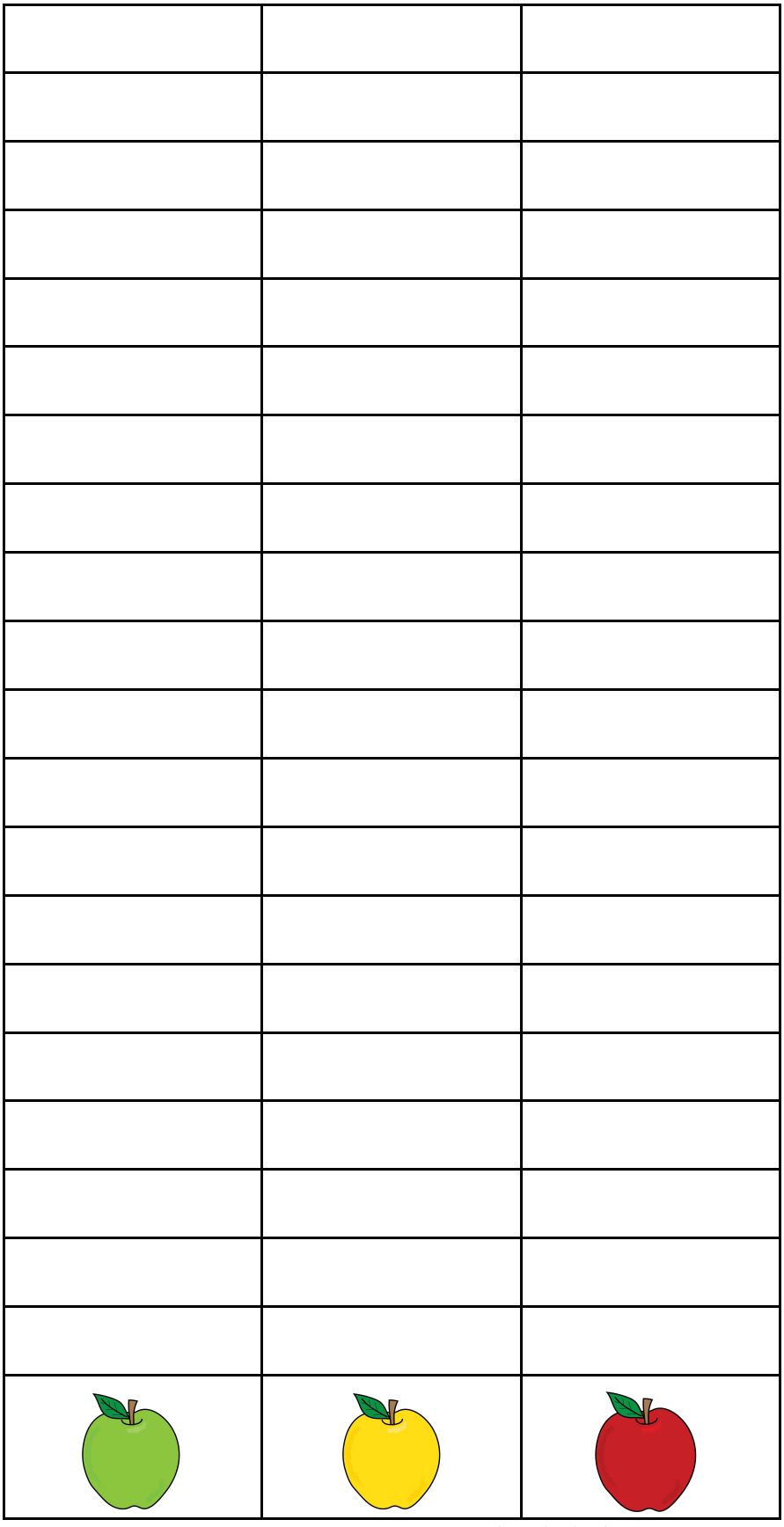
Graph the Tallied Apples

Using the numbers you counted on the apples, color in the squares of the graphs to see how many of each colored apple you have.

Example



3



MY FAVORITE APPLE

SUPPLIES:

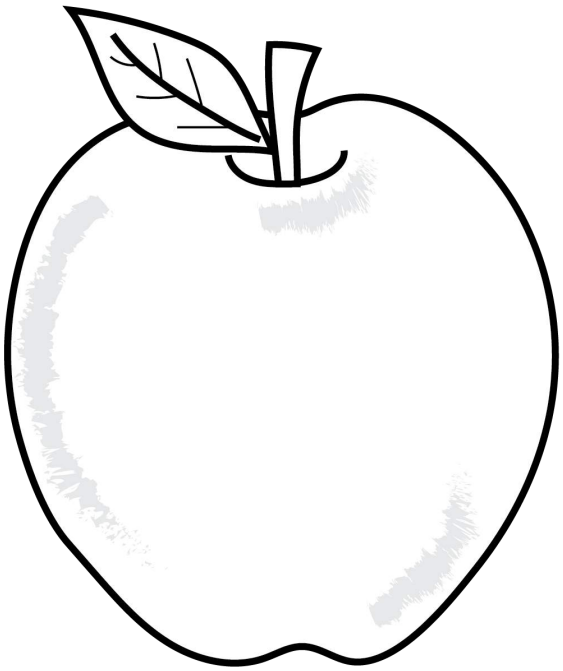
Several varieties of apples for tasting
Knife for slicing (adults only)

PROCESS:

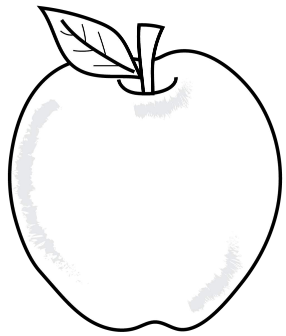
STEP 1: Have an adult slice the apple into multiple sections.

STEP 2: Encourage the kids to taste each apple one at a time and markdown on the sheet the name of the apple. Next, have them circle as many of the adjectives as they want, sweet, sour, crunchy, or juicy. Then, have them circle whether they enjoyed the taste or not!

My Favorite Apple



Apple Taste Test



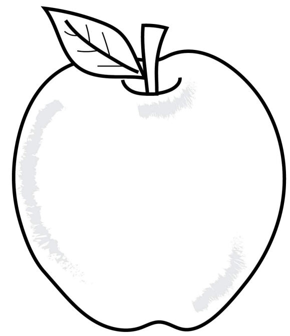
Type:

Circle what the apple tastes like:

sweet, sour, crunchy, juicy

Circle the face that shows how you like the apple:



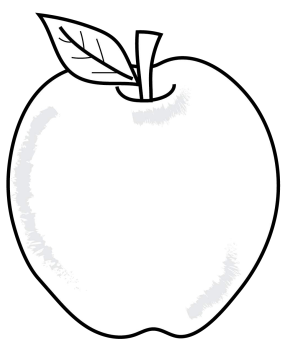
Type:

Circle what the apple tastes like:

sweet, sour, crunchy, juicy

Circle the face that shows how you like the apple:



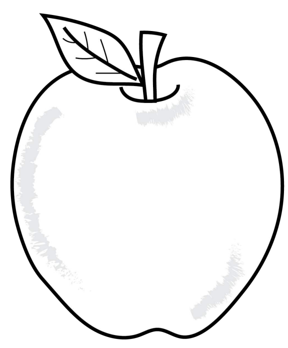
Type:

Circle what the apple tastes like:

sweet, sour, crunchy, juicy

Circle the face that shows how you like the apple:



Type:

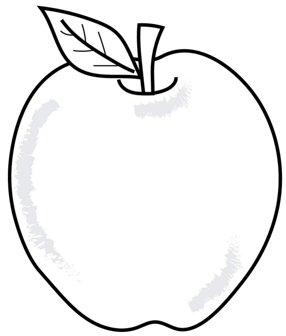
Circle what the apple tastes like:

sweet, sour, crunchy, juicy

Circle the face that shows how you like the apple:

Apple Taste Test



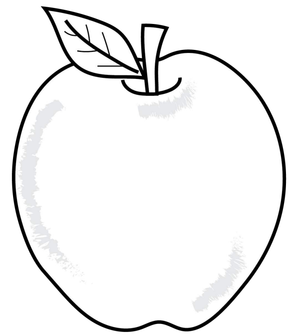
Type:

Circle what the apple tastes like:

sweet, sour, crunchy, juicy

Circle the face that shows how you like the apple:



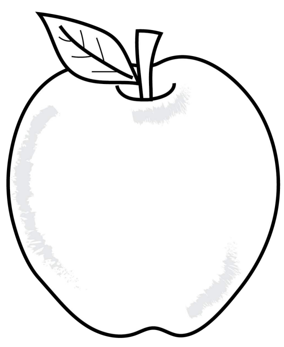
Type:

Circle what the apple tastes like:

sweet, sour, crunchy, juicy

Circle the face that shows how you like the apple:



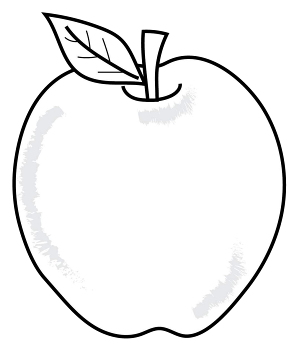
Type:

Circle what the apple tastes like:

sweet, sour, crunchy, juicy

Circle the face that shows how you like the apple:



Type:

Circle what the apple tastes like:

sweet, sour, crunchy, juicy

Circle the face that shows how you like the apple:

APPLE: ALL ABOUT APPLES

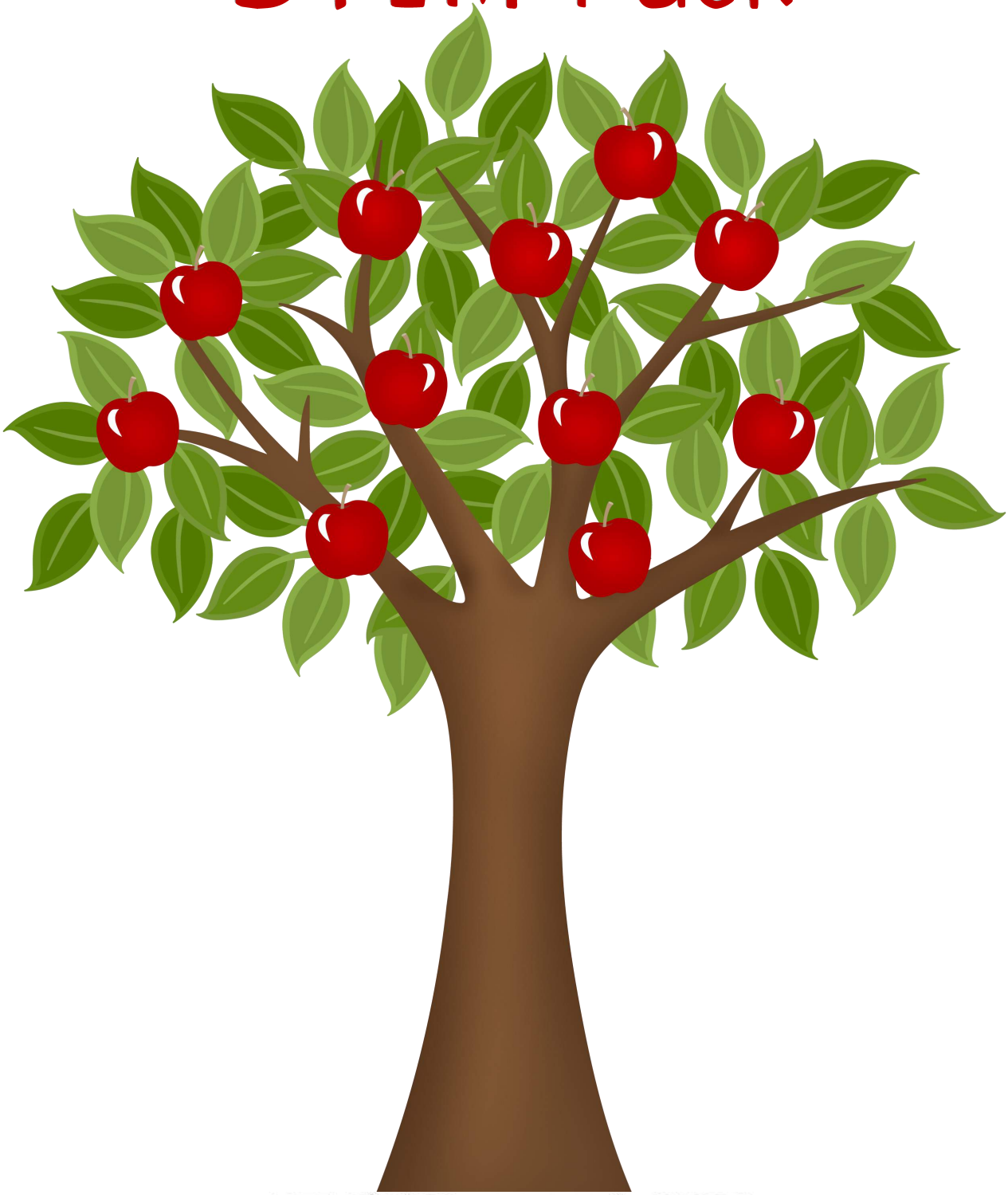
Explore parts of an apple and learn all about how an apple grows.

SUPPLIES:

Printable sheets
Scissors
Colored pencils, pens, crayons, and markers

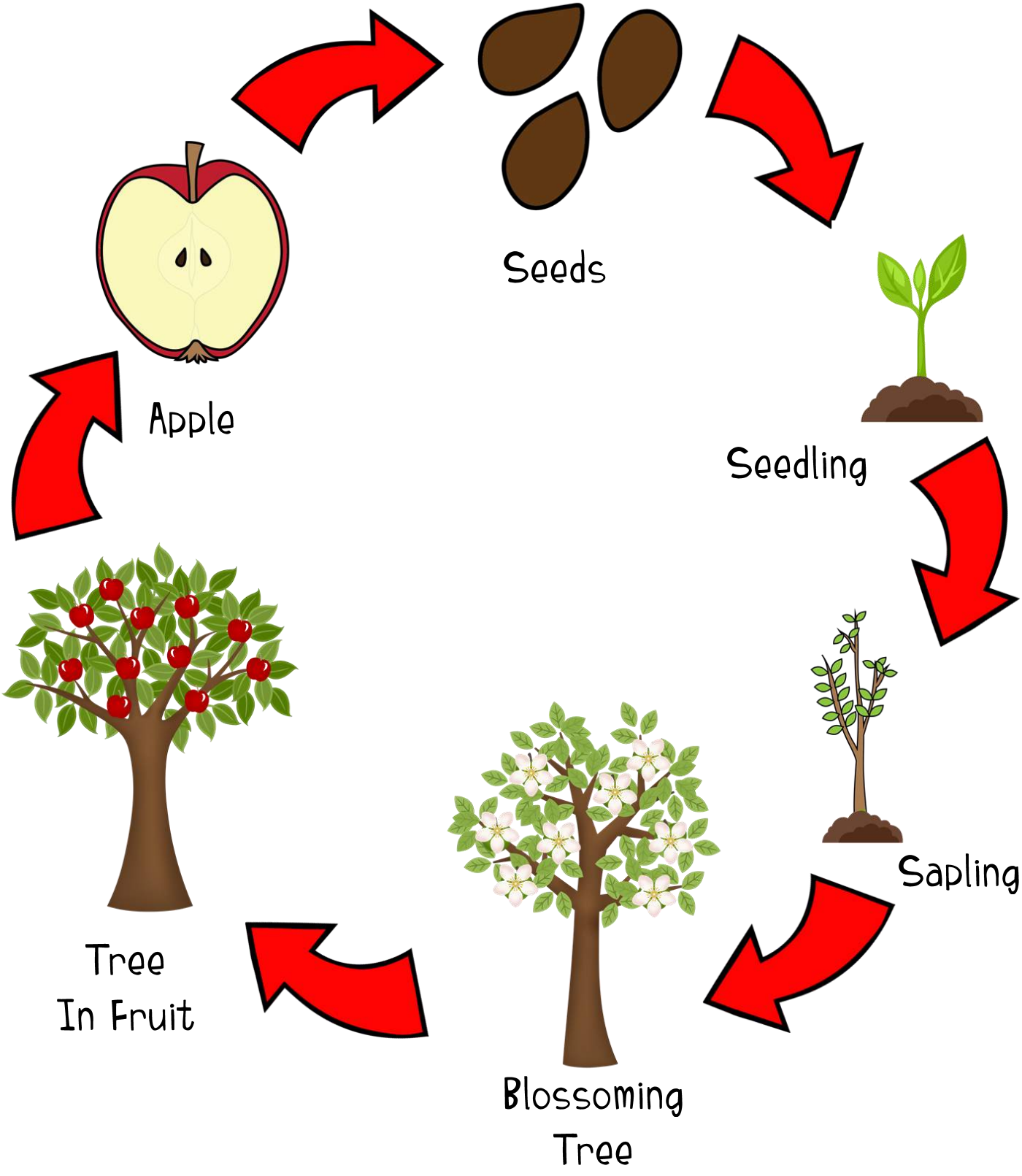
Go ahead and include cutting up a real apple as part of the activity if you have the opportunity. Exploring a real apple and its parts is an excellent hands-on way to learn about a favorite fruit and get the kids excited.

How an Apple Grows STEM Pack

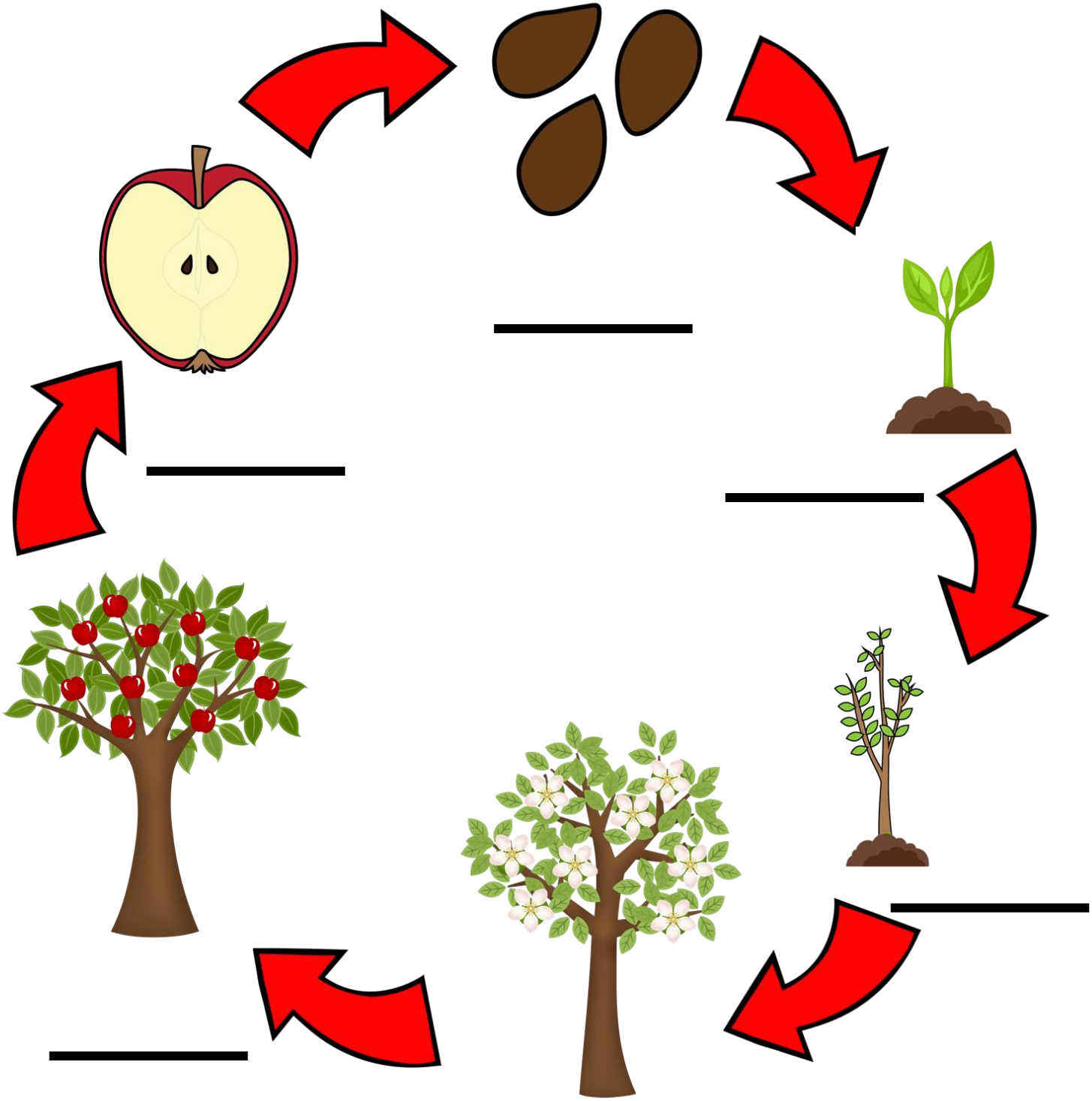


LITTLE BINS FOR LITTLE HANDS

Life Cycle of an Apple



Label the Life Cycle of an Apple



Labels for Life Cycle of an Apple

Apple	Sapling	Seeds
Tree In Fruit	Blossoming Tree	Seedling

Color the pictures and fill-in-the-blanks.

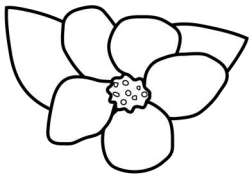
What is it?

It all starts with a tiny little

_____.

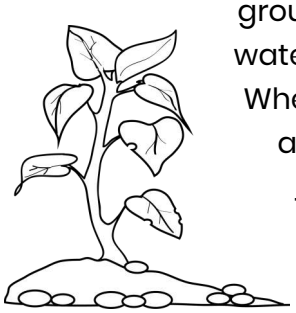
But, within it is all the parts that make an apple tree grow and produce new fruit.

What is it?



Those pretty pink and white flowers aren't just the pretty part of the tree. They grow past the flower stage into an _____.

What is it?

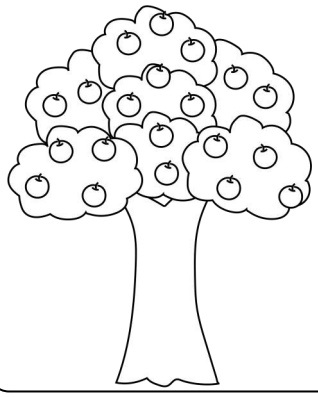


Once it's planted in the ground it'll need a little water to begin to grow. When you start to see a bit of green the

_____

has sprouted.

What is it?



Following the flowering stage the tree will begin to produce

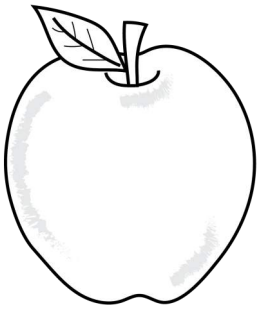
_____.

What is it?

Once the wood begins to appear you'll see a small tree which is called a

_____.

What is it?

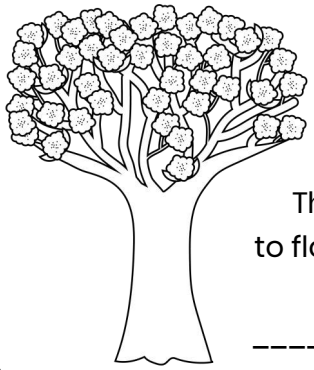


This juicy,

_____

Can sometimes be sweet and other times are tart.

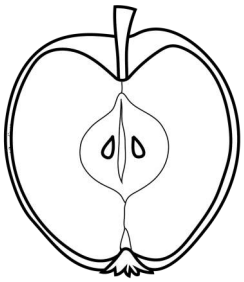
What is it?



In early spring The tree will begin to flower. These flowers are called

_____

What is it?

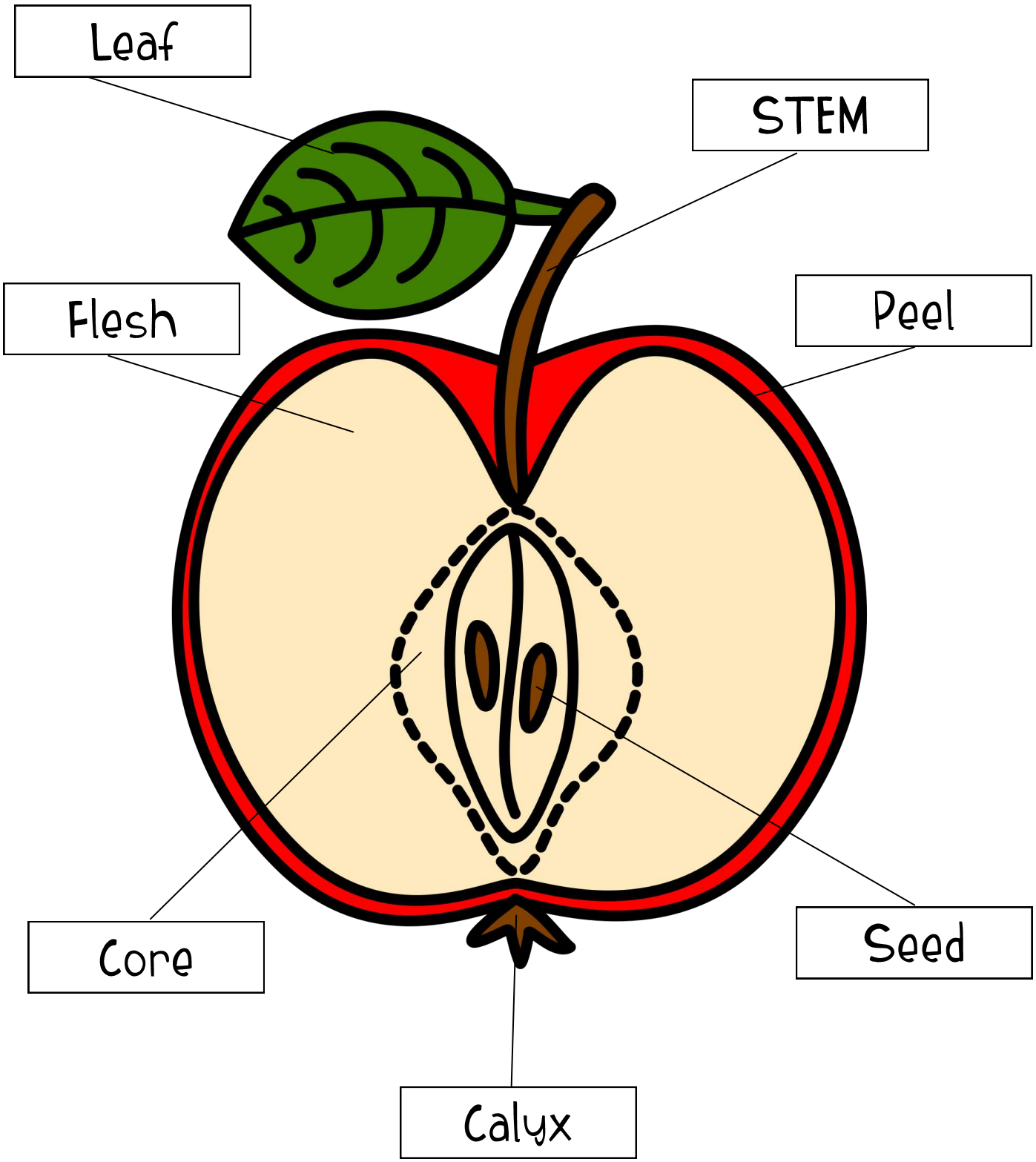


Hidden within each apple inside it's core is a tiny little

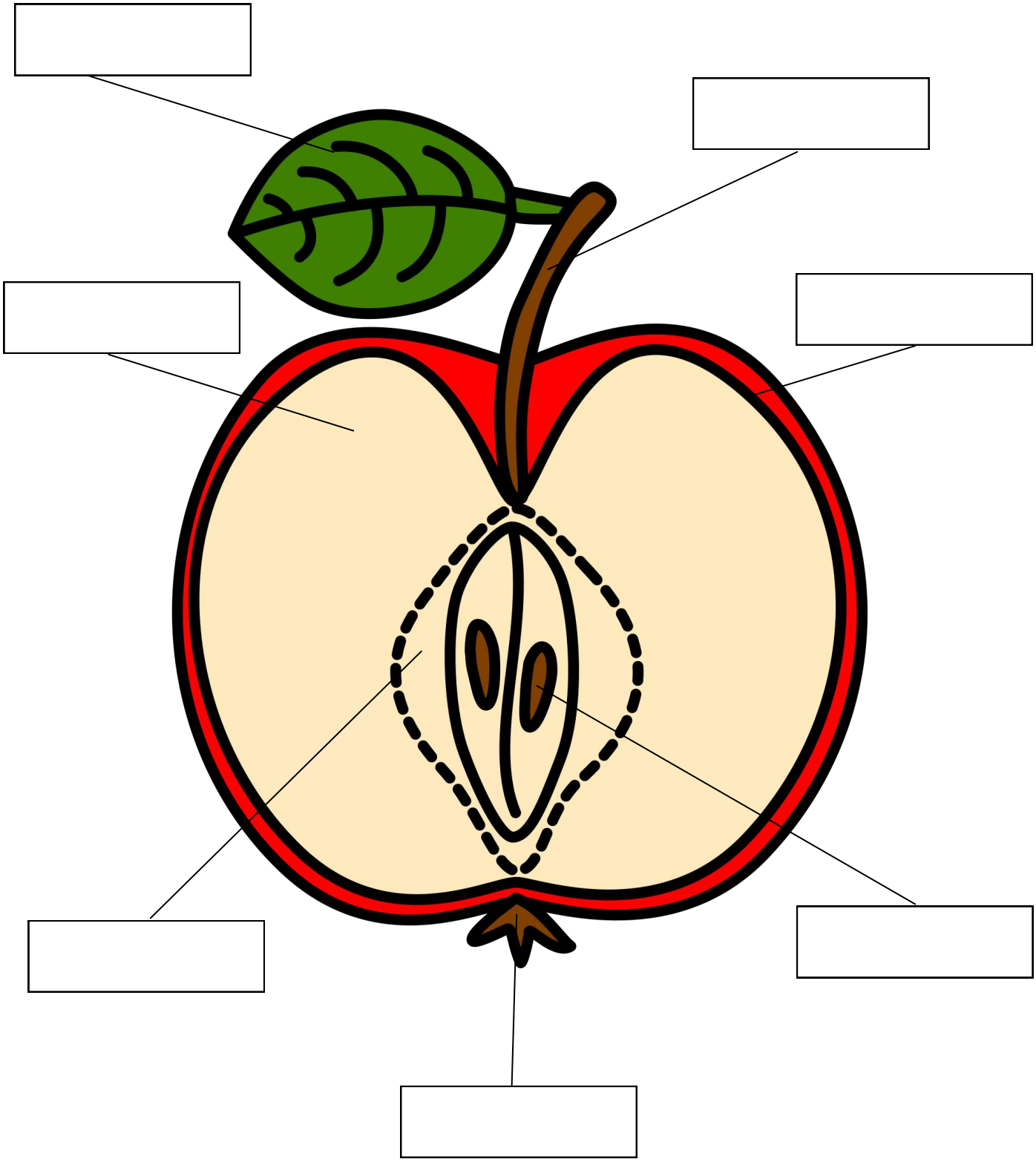
_____

that can be planted to start the process all over again.

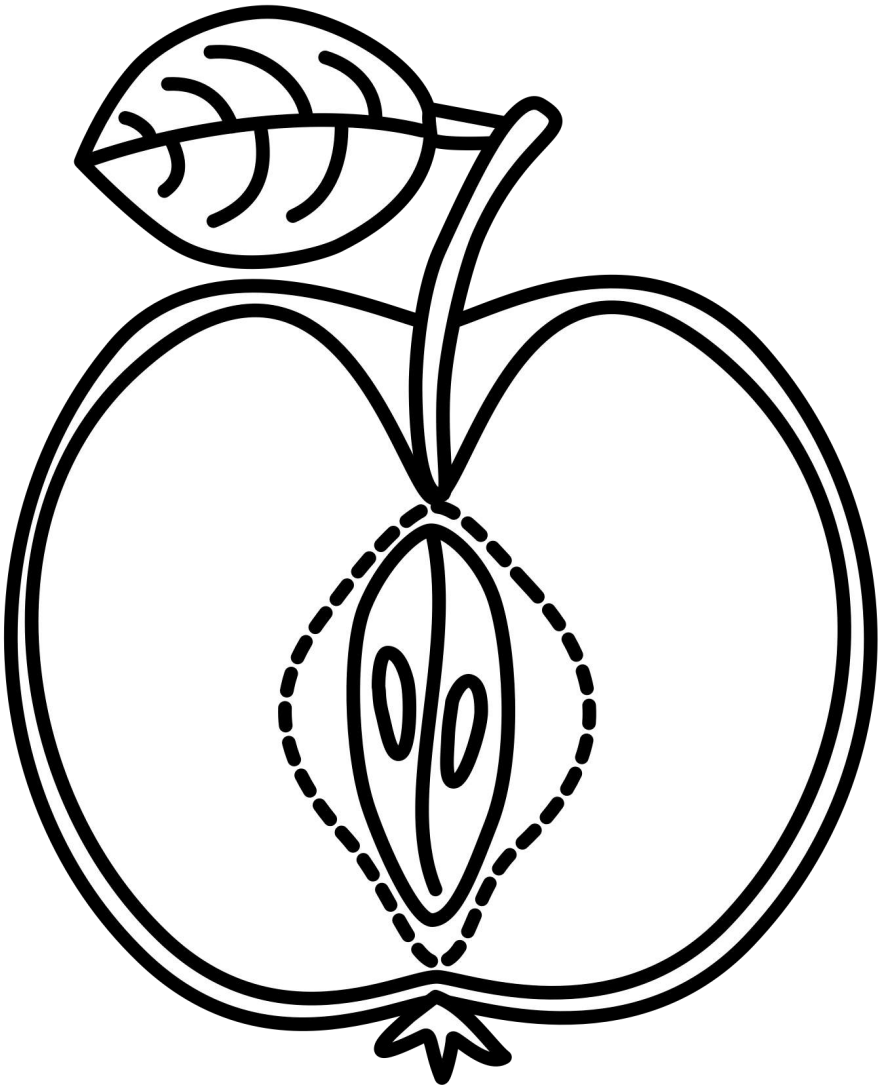
Parts of an Apple



Label the Parts of an Apple



Color the Apple



Cut, Sort & Label

Seed	Calyx	Core	Peel
Flesh	Stem	Leaf	