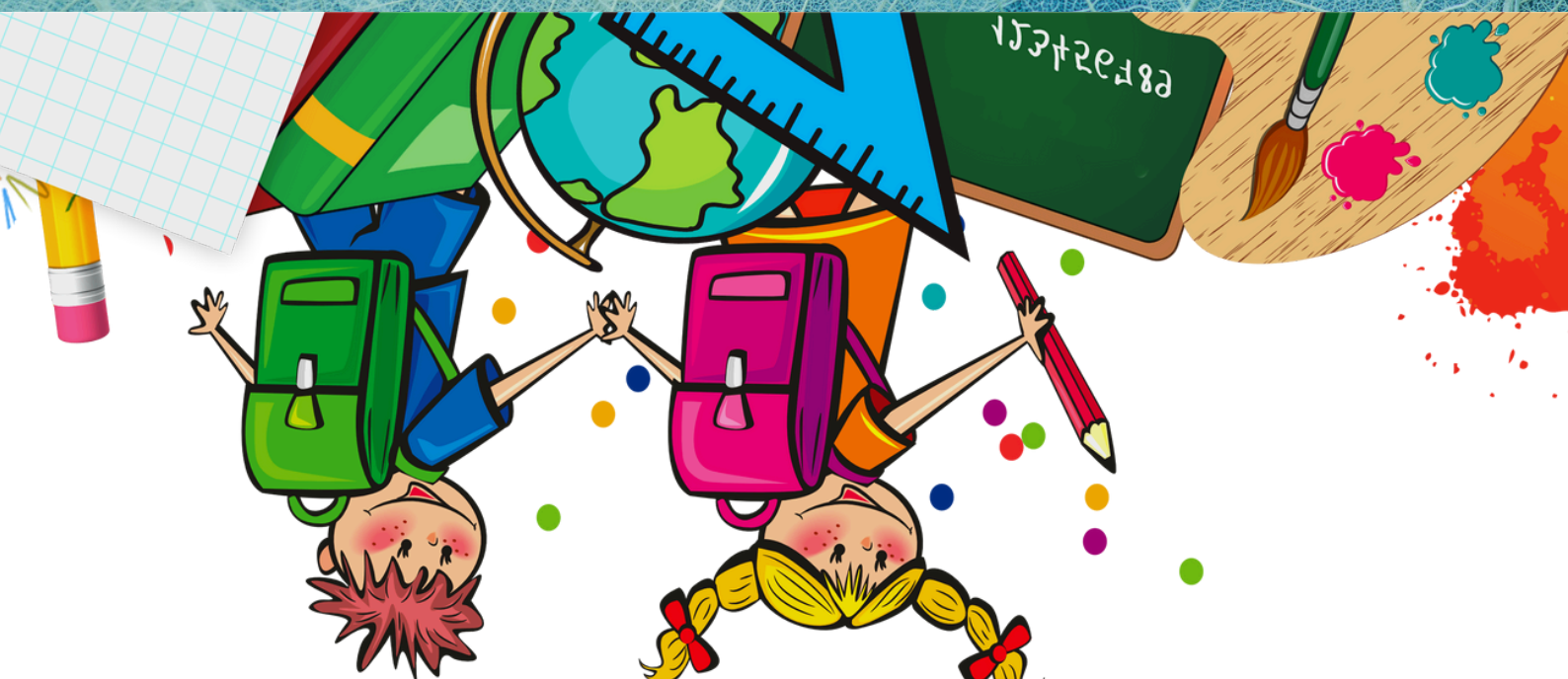




MINI JOURNAL ON

SCIENCE EXPERIMENTS DIY CRAFTS MATHS TRICKS

For Ages : 6 to 16 years





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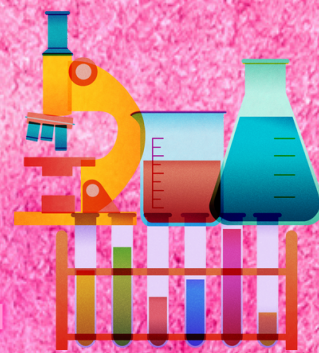
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SIMPLE SCIENCE EXPERIMENTS FOR OUR CURIOUS MINDS



COLORFUL MILK SWIRLS

Materials Needed:

1. A Shallow dish or plate
2. Whole milk
3. Food coloring (at least three different colors)
4. Liquid dish soap
5. Cotton swabs or toothpicks

Instructions:

- Pour enough whole milk to cover the bottom of the dish or plate.
- Add a few drops of different colored food coloring randomly across the surface of the milk.
- Dip a cotton swab or toothpick into the liquid dish soap.
- Gently touch the surface of the milk with the soapy cotton swab or toothpick.
- Watch as the colors in the milk begin to swirl and mix.

- Observe the patterns and colors formed as the soap interacts with the fat molecules in the milk.
- Experiment with adding more soap or different colors of food coloring to see how it affects the patterns.
- Try swirling the colors in different directions or creating different designs.
- Enjoy the beautiful and mesmerizing results of your colorful milk swirls!

Concepts Learnt:

Surface Tension
Molecular Interaction
Emulsification





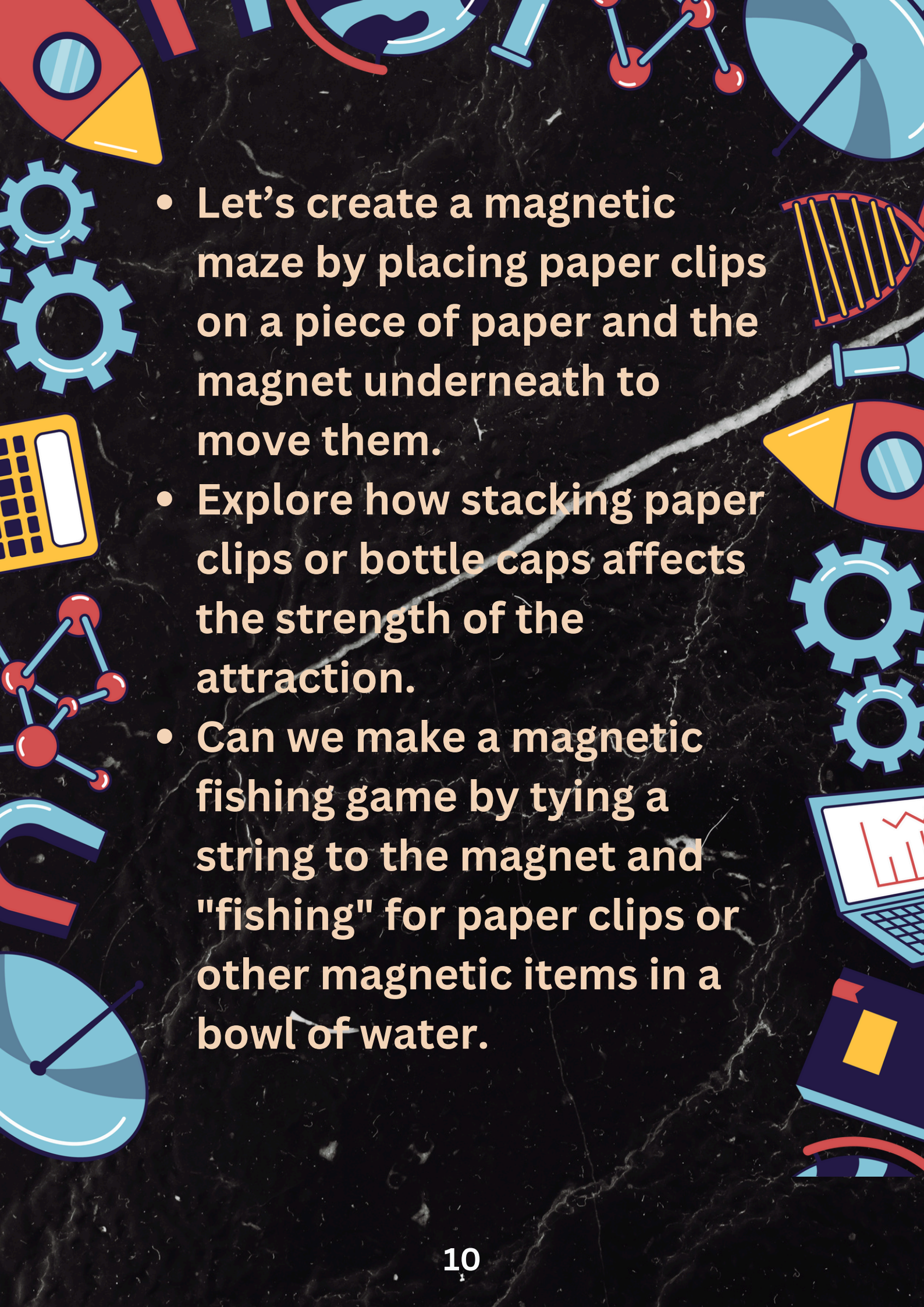
LET'S EXPLORE MAGNETS

Materials Needed:

1. magnet
2. paper clips
3. plastic bottle caps
4. rubber bands
5. small pieces of paper

Instructions:

- Scatter the items on a table or flat surface.
- Let's predict which items will be attracted to the magnet.
- Let's test each item by bringing the magnet close to it.
- Time to reason out why few items are attracted while others aren't (ferromagnetic vs. non-ferromagnetic materials).

- 
- A decorative border surrounds the central text, featuring various science-related icons in blue, red, and yellow. These include a rocket, gears, a calculator, a molecular structure, a satellite dish, a DNA helix, a microscope, a laptop with a bar chart, and a book.
- Let's create a magnetic maze by placing paper clips on a piece of paper and the magnet underneath to move them.
 - Explore how stacking paper clips or bottle caps affects the strength of the attraction.
 - Can we make a magnetic fishing game by tying a string to the magnet and "fishing" for paper clips or other magnetic items in a bowl of water.

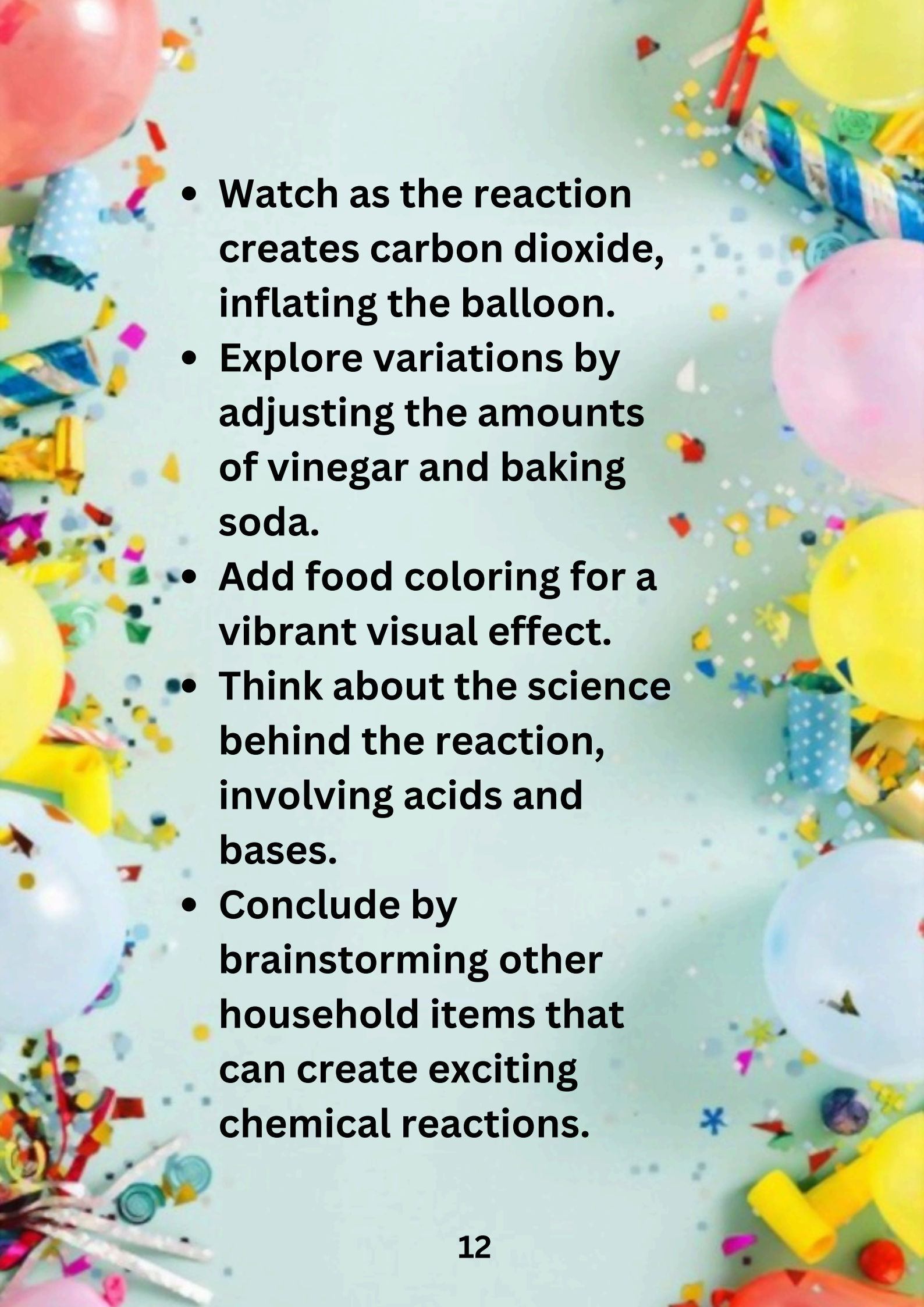
FIZZY BALLOON BLAST

Materials Needed:

- 1. a clear bottle**
- 2. vinegar**
- 3. baking soda**
- 4. a balloon**
- 5. a funnel**

Instructions:

- Pour vinegar into the bottle, filling it about one-third full.**
- Use the funnel to add baking soda into the balloon.**
- Stretch the balloon over the bottle's opening without letting the baking soda fall in.**
- When ready, lift the balloon, allowing the baking soda to mix with the vinegar.**

- 
- Watch as the reaction creates carbon dioxide, inflating the balloon.
 - Explore variations by adjusting the amounts of vinegar and baking soda.
 - Add food coloring for a vibrant visual effect.
 - Think about the science behind the reaction, involving acids and bases.
 - Conclude by brainstorming other household items that can create exciting chemical reactions.

DANCING RAISINS EXPERIMENT

Materials Needed:

1. a clear glass
2. carbonated soda
3. raisins

Instructions:

- Fill the glass halfway with carbonated soda.
- Drop a few raisins into the soda.
- Observe as the raisins sink to the bottom, then start to "dance" up and down.
- Discuss why this happens (carbon dioxide bubbles attaching to the rough surface of the raisins).
- Experiment with different types of soda to see if they produce different results.

- Try using other small objects besides raisins, like popcorn kernels or small pieces of fruit.
- Challenge the kids to predict what will happen before dropping in the raisins.
- Discuss the science behind carbonation and why some liquids are fizzy while others aren't.
- Conclude by brainstorming other fun experiments involving carbonation or buoyancy.



GLOWING GOO EXPLORATION

Materials Needed:

1. a highlighter
2. clear plastic cups
3. water
4. a UV flashlight
5. a sponge

Instructions:

- Cut open the highlighter and extract the ink-soaked sponge inside.
- Place the sponge in a cup and add water.
- Stir the mixture until the water becomes brightly colored.
- Shine the UV flashlight on the mixture and observe it glowing.
- Discuss why the mixture glows under UV light (fluorescence).

- Experiment with different highlighter colors and concentrations for varying effects.
- Try shining the UV light on other household items to see if they fluoresce.
- Encourage the kids to hypothesize about what will happen before testing.
- Conclude by brainstorming other fun experiments involving light and color.

Note: Adult supervision may be required



POPCORN POWER LAUNCH

Materials Needed:

1. a paper bag
2. popcorn kernels
3. tape
4. microwave

Instructions:

- Place a handful of popcorn kernels in the paper bag.
- Fold the top of the bag a few times and secure it with tape.
- Microwave the bag on high for a couple of minutes.
- Listen for the popcorn popping inside the bag.
- Discuss why the popcorn pops (the moisture inside the kernel turns to steam and expands).

- Experiment with different microwave times to find the perfect popping duration.
- Try adding seasoning to the popcorn after it's popped for extra flavor.
- Let's have fun by counting the kids the number of pops we hear.
- Conclude by enjoying a tasty snack while discussing the science behind popcorn popping.

Note: Adult supervision may be required



STRAW ROCKET LAUNCH

Materials Needed:

1. a drinking straw
2. tape
3. paper
4. scissors

Instructions:

- Roll a piece of paper tightly around the straw and tape it to secure.
- Cut off any excess paper to create a streamlined shape.
- Fold one end of the paper tube into a triangular point to form a rocket nose.
- Pinch the other end closed and tape it shut.
- Blow air through the straw to launch the rocket.

- Experiment with different sizes and shapes of rockets.
- Discuss how adjusting the angle and force of the blow affects the rocket's flight.
- Measure how far each rocket travels for a fun competition.
- Conclude by brainstorming ways to improve the rocket's design for better performance.



BUBBLING VOLCANO ERUPTION

Materials Needed:

1. a small plastic bottle
2. vinegar
3. baking soda
4. dish soap
5. food coloring
6. tray

Instructions:

- Place the bottle on the tray and add a few drops of food coloring.
- Pour vinegar into the bottle until it's about one-third full.
- Add a squirt of dish soap to the vinegar.
- In a separate container, mix baking soda with a little water to form a paste.
- Quickly pour the baking soda mixture into the bottle.
- Observe as the mixture foams and overflows like a volcano eruption.

- Discuss the chemical reaction between the vinegar (acid) and baking soda (base).
- Experiment with different amounts of vinegar and baking soda for varied eruptions.
- Conclude by discussing other natural phenomena that involve chemical reactions.



COIN SPINNERS

Materials Needed:

1. a coin
2. glass/bowl
3. water

Instructions:

- Fill the glass or bowl with water.
- Place the coin on a flat surface.
- Quickly rub your hands together to create heat.
- Gently touch the coin with your warm hands.
- Observe as the coin begins to spin on its own.
- Discuss the science behind the spinning motion (thermal expansion).
- Experiment with different coins and temperatures of water.

- Can you predict how long the coin will spin?
- Conclude by exploring other household items that can demonstrate thermal expansion.



INVISIBLE INK SECRETS

Materials Needed:

- 1. lemon juice**
- 2. paper**
- 3. cotton swab**
- 4. a heat source (light bulb/iron)**

Instructions:

- Squeeze lemon juice into a small bowl.**
- Dip the cotton swab into the lemon juice.**
- Use the swab to write a message or draw a picture on the paper.**
- Allow the juice to dry completely.**
- When ready to reveal the hidden message, gently heat the paper with the light bulb or iron.**
- Watch as the message magically appears!**
- Discuss the science behind the reaction (acid in the lemon juice oxidizing the paper).**

- Experiment with other "invisible" inks like milk or vinegar.
- Conclude by having fun exchanging secret messages with friends!

Note: Adult supervision may be required



CRAFTY CORNER FOR OUR YOUNG EXPLORERS



TIE-DYE T-SHIRT



- **Dampen a plain white t-shirt with water.**
- **Twist or fold sections of the shirt and secure them with rubber bands.**
- **Apply different colors of fabric dye to each section.**
- **Let it sit for several hours, then rinse and wash according to the dye's instructions.**
- **Unwrap to reveal your unique tie-dye masterpiece!**

DREAM CATCHERS



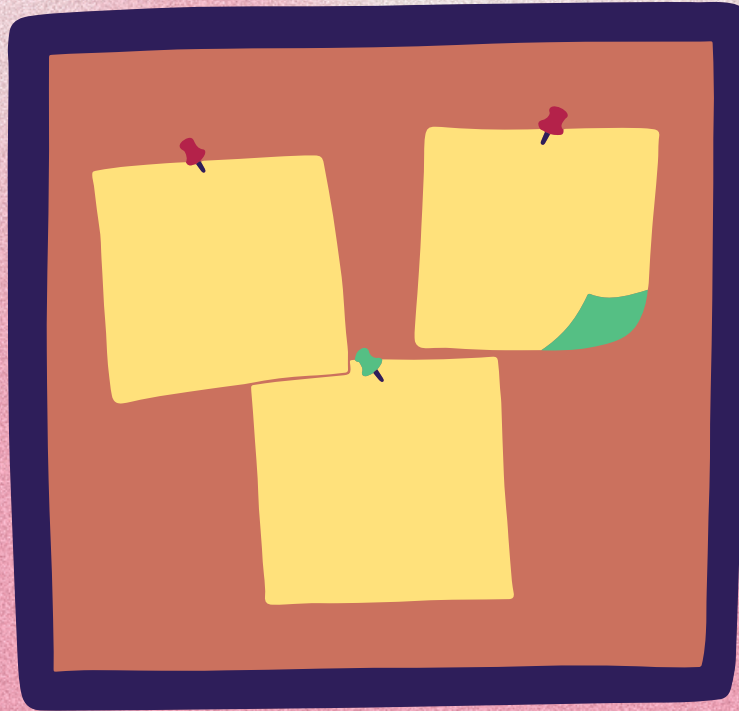
- Cut a hoop from a wire coat hanger and wrap it with yarn or suede cord.
- Weave the center with string or yarn in a spiderweb pattern.
- Attach feathers, beads, and charms to the bottom for decoration.
- Hang it above your bed to catch bad dreams and let the good ones through.

MASON JAR LANTERNS



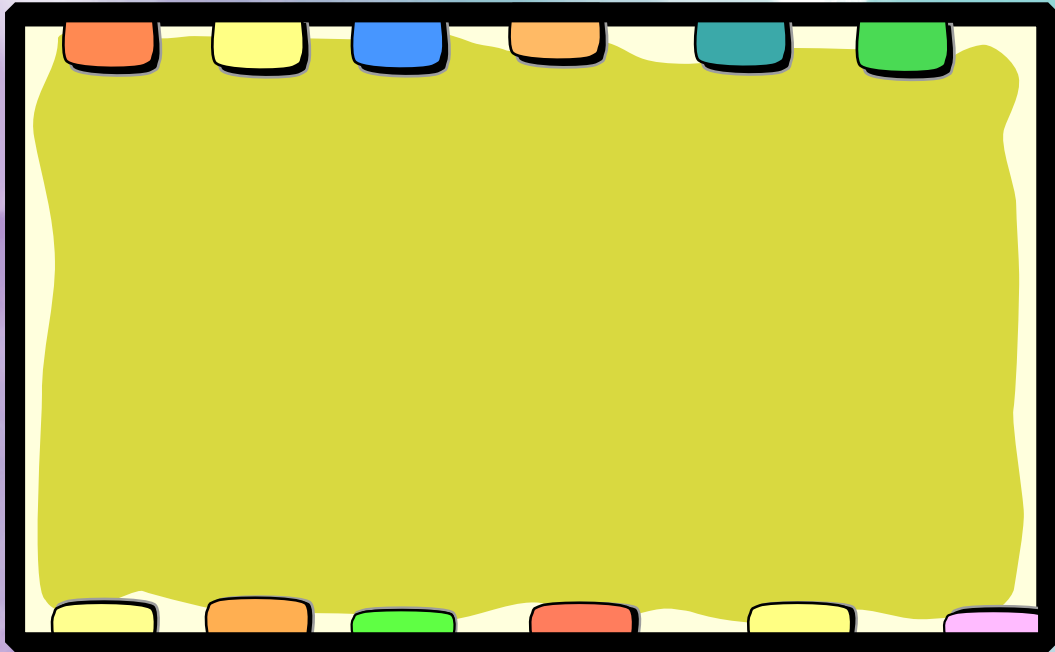
- Paint the outside of a clean mason jar with acrylic paint in your favorite colors.
- Once dry, use a hot glue gun to attach lace, sequins, or other embellishments.
- Place a battery-operated tea light inside for a cozy glow.

DECORATIVE CORK BOARDS



- Collect wine corks and arrange them on a wooden board in your desired pattern.
- Glue them down securely.
- Paint the board and corks in complementary colors.
- Hang it on your wall and use push pins to display photos, notes, and mementos.

FABRIC COVERED BULLETIN BOARD



- **Cut a piece of fabric slightly larger than a corkboard.**
- **Stretch and staple the fabric tightly to the back of the board.**
- **Trim any excess fabric.**
- **Hang it up and use decorative push pins to add photos, notes, and inspiration.**

DIY TERRARIUMS



- Layer small rocks, activated charcoal, and potting soil in a glass container.
- Plant succulents or small indoor plants in the soil.
- Add decorative stones or figurines for extra flair.
- Water sparingly and place in a sunny spot.

PERSONALIZED CANVAS ART



- Paint a canvas with acrylic paint in your favorite colors.
- Use stencils or freehand paint inspirational quotes, song lyrics, or your own designs.
- Add embellishments like glitter, sequins, or buttons for texture.

BEADED KEYCHAIN



- Cut a piece of sturdy string or leather cord to your desired length.
- String colorful beads onto the cord in any pattern you like.
- Tie a knot at each end to secure the beads in place.
- Attach a key ring to one end and a clip or hook to the other.

DIY BATH BOMBS

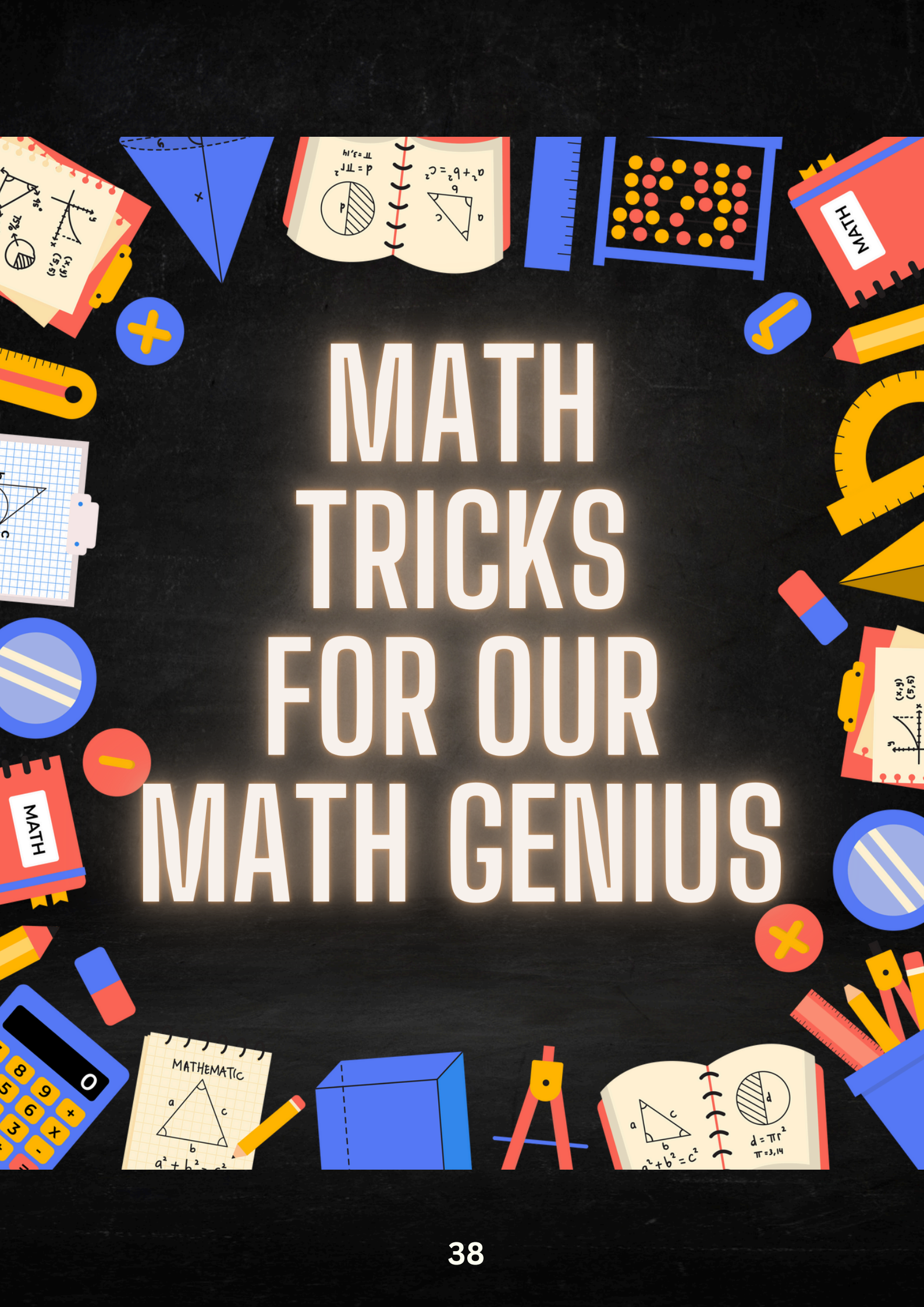


- Mix 1 cup baking soda, 1/2 cup citric acid, and 1/2 cup Epsom salt in a bowl.
- Add 1 tablespoon of water and a few drops of essential oil for fragrance.
- Press the mixture into a silicone mold and let it dry overnight.
- Pop them out of the mold and store in an airtight container until ready to use.

PERSONALIZED PHONE CASES



- Start with a clear phone case that fits your device.
- Decorate it with stickers, rhinestones, or acrylic paint.
- Let your creativity shine as you design a case that's as unique as you are!



MATH TRICKS FOR OUR MATH GENIUS

MULTIPLYING BY 11

- To multiply a two-digit number by 11, simply add the digits together and place the sum between the original digits. For example, $11 \times 23 = 253$ ($2+3=5$, so the answer is 253).

SQUARING NUMBERS ENDING IN 5

- To square a number that ends in 5, take the digit(s) before the 5, multiply it by the next consecutive number, and append 25 to the result. For example, $25^2 = (2 \times 3)$ with 25 = 625.

FINDING MULTIPLES OF 9

- To find multiples of 9, simply add the digits of the number together. If the sum is divisible by 9, then the original number is also divisible by 9. For example, 27 ($2+7=9$) is a multiple of 9.

EASY PERCENTAGES

- To find 10% of a number, move the decimal point one place to the left. To find 1% of a number, move the decimal point two places to the left. For example, 10% of 80 is 8, and 1% of 80 is 0.8.

Sum Sleuth: Alex's Brilliant Breakthrough

In the bustling city of Numerville, fourteen year old Alex faced a challenging math problem: finding the sum of the first 100 positive integers.

Remembering a trick, Alex realized the sum was equal to half the product of the number of integers and the number of integers plus one. That can be done as follows. Number of integers is 100. so, the answer would be $\frac{1}{2}$ the product of 100 and 101, which is 5050.

With a grin, Alex shared the solution with his classmates, proving that math was not just about numbers but also clever strategies and discoveries.

Math Magic: The Power of Patterns

In a land of mathematical wonders,
twelve-year-old Mia encountered a mysterious
pattern while counting the petals on a magical
flower. Each day, the number of petals doubled.
Mia quickly realized the pattern and used her
knowledge of exponents to predict the number
of petals on day 10. With a flick of her hand,
she exclaimed, "2 raised to the power of 10".
She wondered how fast she could answer
with the proper trick used in an effective
way. So, the answer is 1024 petals.
Mia's friends marveled at her math magic,
learning that patterns held the key
to unlock many mathematical mysteries.

The Cookie Counting Conundrum

In Grandma's kitchen, there were trays of
freshly baked cookies cooling on the counter.
Grandma asked her grandchildren to help
count the cookies, but there was a problem-
some cookies were stacked on top of each other,
making it tricky to count them all.
With determination, the children decided to
solve the cookie counting conundrum using
math. They began by estimating how many
cookies were in each stack and then multiplied
that by the number of stacks.
Next, they used addition to tally up the cookies
on each tray. Finally, they proudly announced
the accurate count to Grandma.

**Brain Teaser to show
your super powers.**

- 1. Find a letter that is in SOCK but not in
CLOCK. _____**
- 2. Find a letter that is in MOON but not in
SPOON. _____**
- 3. Find a letter that is in PIE but not in
PEN. _____**
- 4. Find a letter that is in LOG but not in
GOAT. _____**
- 5. Find a letter that is in BELL but not in
BALLOON. _____**

Write your letters to spell a happy word

.....
key: Smile

THE CHALLENGE OF THE MAGIC SQUARE

**Can you arrange the
numbers 1 to 9 in a 3x3
grid so that each row,
each column, and both
diagonals have the
same sum?**

Answer:
8 1 6
3 5 7
4 9 2

FIND THE WEIGHT OF EACH ANIMAL

$$\text{dog} + \text{dog} = 120\text{kgs}$$

$$\text{monkey} + \text{dog} = 70\text{kgs}$$

$$\text{cat} + \text{monkey} + \text{dog} = 90\text{kgs}$$

Answer: dog = 60kgs monkey = 10 kgs cat = 20kgs



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