Numeracy

For 8 to 10 year olds

Screen-free learning resources that build multiple skills.

Check if this Workbook is right for you.

Answer the following questions in 20 minutes.

1. Karen bought a toy for $25. She gave the shopkeeper $30. How much should she get back from the shopkeeper?

2. Solve:

    46 + 7 = _____

    10 ÷ 5 = _____

    30 - 11 = _____

    7 X 8 = _____

1. Skip count by 3s: 42, 45 , _____, _____, 54, _____

2. What comes next in the following patterns?

    A   A   A   B   C   A   A   A   _____   _____   _____

    5   3   3   2   5   3   3   2   _____   _____   _____
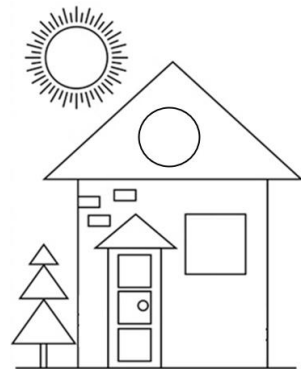
5. Look at the picture and count the number of:

    Triangles: Rectangles:
    Squares: Circles:

5. A coin is tossed once. How many outcomes are possible? What is the probability of it landing a tail?

Answer Key

Give the allotted marks for each correct answer.

1. **$ 5**

2 mark

1. 46 + 7 = **53**   30 - 11 = **19**

    10 ÷ 5 = **2**   7 X 8 = **56**

1 mark each

1. 42, 45 , **48** , **51** , 54, **57**

1 mark each

1 mark each

1. A   A   A   B   C   A   A   A   **B**   **C**   **A**

    5   3   3   2   5   3   3   2   **5**   **3**   **3**

1. Triangles: **5**   Squares: **4**

    Rectangles: **6**   Circles: **3**

0.5 marks each

6. Two outcomes are possible: Heads or Tails
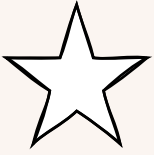   Probability (Getting a Tail) = 1/2

1 mark each

If your score is:

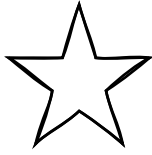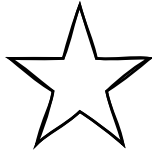| 7 or less	Use the **Numeracy Workbook for Level 1**
8 to 12	This workbook is right for you!
13 to 15	Use the **Numeracy Workbook for Level 3**

2

Draw yourself here.

My Learning Journey

Name: _____

Week 1
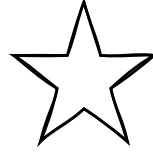
☆ ☆ ☆ ☆ ☆ 🙂
Day 1 Day 2 Day 3 Day 4 Day 5 DONE!

Week 2
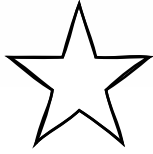
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Day 1 Day 2 Day 3 Day 4 Day 5 DONE!

Week 3
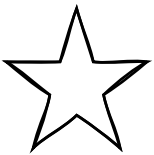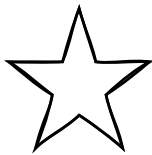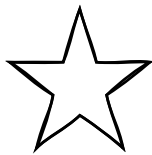
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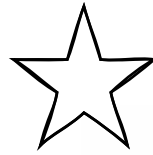
Week 4
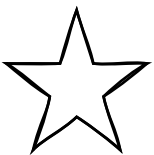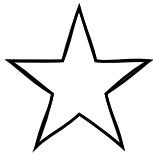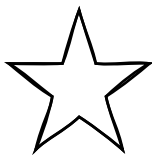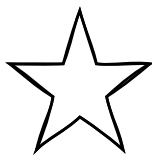
☆ ☆ ☆ ☆ ☆ WOW
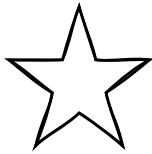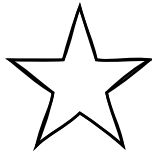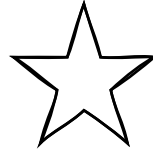Day 1 Day 2 Day 3 Day 4 Day 5

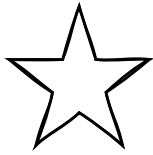*If you liked this, go to our IFERB website for hundreds of more such resources. Visit https://resources.educationaboveall.org*

Daily Routine

My Emotions

Draw how you feel **everyday** in your notebook.

Today, I feel 🖊️

Tired

Happy

Sad

Confused

Angry

Scared

4

Week 1 Overview

Project

Money Matters

Explore the role of money in our lives.

Story Time

Reba goes to buy ice-cream. What challenge does she face?

5

Coffee Shop Math

Create and answer your own questions!

4

Circles and Rectangles

Reflect on what you like and want to do through a mindful activity.

3

Barter System

Go back in time to explore how bartering worked.

1

2

Speed Shopping

Calculate the money exchange as fast as you can!

Materials Needed

- Paper
- Pencil
- Thread
- Glue

Money Matters

Why do we value money?

What is money? What does it help us do?

List some things you can do with money and the people involved.

Example: Money is used to buy food.

Shopkeeper

Buyer

If we do not have money, can we use something else to "buy" things?

Interview

Collect information about money from your community members and note down the responses. Sample Questions:

- Did people always have money as we know it today?
- Are there other forms of money?
- What did people use , before we had money, to buy or get the things they needed?

Long before people started using paper bills, they exchanged things with each other to get what they need. This is called **Bartering** or the **Barter System**.

- Select 4 players for the activity.
- Each player collects 4 items for one of the categories below. You can also add your own categories too!
- Each player will assign a different value (1 to 5) to their items, 5 being most valuable.
- Players will begin the barter. Trade your items for items in other categories. The objective is to have the most number of points.
- After 3 rounds, calculate the total points each player has.

Player	Food	Clothing	Medicine	Others	Total
Player 1					
Player 2					
Player 3					
Player 4					

Let's Reflect!

- Was it easy to convince others?
- What do you think happened to people who owned too much of 1 item?
- **Compare money-based exchanges to bartering.** Ask your community members or friends for their inputs too! Which one works better? Why?

Money Matters

Money is usually represented as paper cash currency. It can also be in the form of coins or digital currency.

Why do people want money even though the items are more valuable than a piece of paper?

Make Your Own Money

Challenge: Use English numbers to make your own money! What is your host country's currency called? (USD, CAD, QR, EUR, etc.)

- Cut out 30 rectangles (paper bills) and 30 circles (coins).
- Chose 6 denominations ($5, $20, $100, etc.) and make 5 bills and coins of each.

Observe a money bill. It usually has an important landmark or historical figure on it. Some even have a motivational saying! Add a picture of your hero or favorite landmark and add an inspiring quote to one of your paper bills and coins.

Think of a catchy name for your currency!

Calculate the total amount of money you have.

Perimeter is the total length around the object.

Calculate the perimeter of the paper bill.

breadth

length

SPEED SHOPPING

Game Set-Up

Each player should have their own "money" of different denominations. Use your home-made money.

How to Play

3 or more players

- Each player calls out the "price" of any item – this player is the shopkeeper of that round. (Ex: tea - $50)
- Others, the customers, must pay for the item and tell the 'shopkeeper' how much change they should get back.
- The fastest customer to do it accurately keeps the money. The others must pay the shopkeeper.

> The price is $ 85.

> Here is $ 100. I have to get back $ 16.

Customer

Shopkeeper

The customer with the most amount of money at the end of 5 rounds wins!

Money Matters

Set Up a Shop

- Collect any 10 items and write the price next to each item. Have 4 to 5 objects of each item. (Eg: 5 pens)

- Give the money you made to friends and community members and invite them to your shop.

- Make a Demand Table like this and fill it.

Item	Price	How many people bought it?

How many people want an item and have enough money to buy it? This is called '**demand**'.

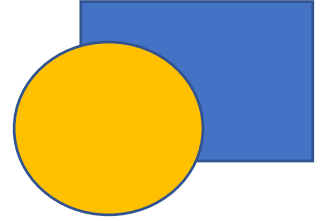Announce a sale in your store and reduce the prices. Record your customers' purchases at different prices

Let's Reflect!

- What was the demand for items at the original price? What about after the sale?
- What do you observe about your customer's buying habits now?
- Is there any relation between demand and price?

Circles and Rectangles

- Circle all the things you enjoy doing.
- Draw a rectangle around all the things you want to do in the future.
- Write your own interests in the space below.

Going to school   *Singing*   *Playing with my friends*

Painting   *Helping my friends*   *Flying a kite*

Spending time with animals   *Dancing*   *Reading*   *Writing*

Going to the park   *Playing games*   *Playing a musical instrument*

Learning new things   *Watching a movie*   *Swimming*

Studying   *Keeping my things neatly*   *Laughing*

Helping others   *Travelling*   *Telling the truth*

Watching a cartoon   *Sleeping on time*   *Eating fruits*
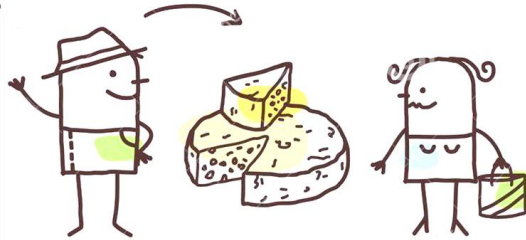
Making new friends   *Helping my community*   *Growing a plant*

_____   _____

_____   _____

DREAM A DREAM

Money Matters

Producer

People making things to sell.

Consumer

People buying things.

Do consumers want low or high prices? Why?

Which of these items would you produce more of? Why?

$ 60

$ 2

Interview a shopkeeper to know what they sell more of and why.

- Imagine you are a shopkeeper (producer).
- Make a **Supply Table** like this for your shop and fill it.

Item	Price	How many of it I want to sell?

How much of an item is produced is called 'supply'.

- Do producers want low or high prices? Why?
- What would you sell more of in these 2 scenarios – normal times and in times of financial trouble?

Coffee Shop Math

Write the prices for each item below. Ask a friend to fill in the blanks for you to solve!

Coffee Shop Menu

Chocolate sundae [ ]

Hot chocolate [ ]

Carrot cake [ ]

Strawberry cake [ ]

Milkshake [ ]

Mia ordered [strawberry cake] and [hot chocolate].

She paid _____. How much should she get back?

Ana ordered [chocolate sundae] [carrot cake] [hot chocolate].

She paid _____. How much should she get back?

Ali ordered [strawberry cake] [strawberry cake] [milkshake] [milkshake].

He paid _____. How much should he get back?

Jon ordered [hot chocolate] [strawberry cake] [milkshake] [chocolate sundae].

He paid _____. How much should he get back?

13

Money Matters

Ask an adult/community member how they decide to spend the money they earn. **Is it important to save money? Why?**

A **budget** is an amount of money we set aside for something. It helps us spend and save money wisely.

Imagine your budget is $ 50. How many bananas and apples can you buy with it?

$ 2 $ 5

Try different combinations like this:

Item	Price	Quantity	Total
Apple	$ 2	2	2 x 2 = $ 4
Banana	$ 5	10	5 x 10 = $ 50
Total			4 + 50 = $ 54

- Write 10 most important things you use in a week.
- Put it in a table (as above) and calculate the total cost.
- Take some money from the currency you made. (Eg: 100)

Money saved is the amount you have left over *after* you pay for everything you need. Are you able to save any money? What if you increase the budget? What will you do with the saved money?

Present your final budget to your friends/group members for their inputs. Discuss with them why we value money.

education above all
التعليم فوق الجميع

Reba Wants Ice-Cream

"Ice cream! Ice cream!" the shopkeeper called. Reba ran to her aunt.
"Aunty! Aunty! I want ice cream!"
"Finish your homework first," said Aunty.

Reba looked unhappy. Aunty asked, "Are you done with your homework yet?" "Mmm…No. But my notebook is full! I need to buy another one."

Aunty gave Reba 50 taka. *(Taka is the name of currency used in Bangladesh.)* "Go buy a notebook. We also need a bar of soap."
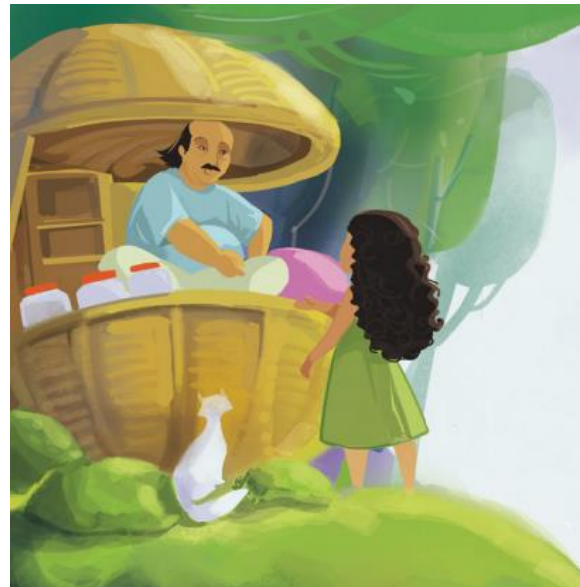
Reba went to the shop. The shopkeeper gave Reba a notebook and a bar of soap.

"How much?" asked Reba.

"The notebook is 20 taka, and the soap is 20 taka," said the shopkeeper.
"That means the total cost is 40 taka. Here's your change."

How much is Reba supposed to get back?

Reba Wants Ice-Cream

When Reba came back home, she calculated her change. Reba gave the shopkeeper 50 taka. The notebook was 20 taka, and the soap was 20 taka.

"I should only get 10 taka back, " thought Reba. "Why did the shopkeeper give me 20 taka back?"

"That's great!" thought Reba. "I can buy ice cream with this extra money!"

But Reba felt ashamed of herself. "I should go back and give the shopkeeper the correct change."

Reba ran to the shop and said, "You gave me 10 extra taka. Please take your money back."

"You're such an honest girl!"
The shopkeeper was so happy with Reba's honesty that he gave her an ice cream for free! Reba happily licked her ice cream all the way home.

Answer the following:

- What do you want to buy from a shop?

- What would you do if you were in Reba's situation?

- Why was Reba feeling ashamed of herself?

- Imagine you are the shopkeeper. Describe the day to a friend.

Weekly Reflection

Did I enjoy learning this week?

😊 😊 😐 ☹️ ☹️

What are some new things I learned?

What did I do well?

What can I do better next week?

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Week 1 Overview

Project

Probability Matters

Explore the likelihood of an event happening.

Luck of the Toss

Play a game to see whether to choose heads or tails!

5

Exploring Probability

Analyse situations and calculate probabilities.

4

Favourite Things

Create Venn Diagrams to show probability.

3

Coin Experiments

Do experiments with coins to explore probability.

1

Flow Like Water

Explore patterns with different shapes.

2

Materials Needed

- Paper
- Pencil
- Thread
- Glue

Probability Matters

Can you design a game using probability?

How likely is it to rain today?
How likely are you to go to bed early?

There are outcomes to any event – no right or wrong.
Probability (P) shows us how likely an event is to occur.

$$\text{Probabilty} = \frac{\text{Favorable outcomes}}{\text{Total outcomes}}$$
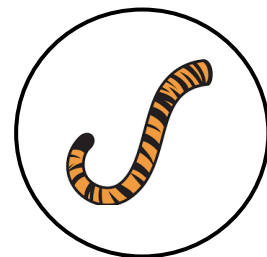
Example:

$P(red) = \dfrac{7}{12}$ ← Number of red marbles
← Total number of marbles

$P(blue) = \dfrac{5}{12}$ ← Number of blue marbles
← Total number of marbles

Design Your Coins

- Cut out 2 circles (coins)
- Draw the head of an animal on one side and its tail on the other.
- Coin 1 – pick a carnivore or omnivore.
- Coin 2 – pick a nocturnal animal.

Let's do an experiment to find out the probability of getting heads or tails when we toss a coin.

One Coin Experiment

- Toss 1 coin 6 times.
- For each toss, write if you got **H** (head) or **T** (tail)

Probability of getting a head =

$$\frac{\text{No. of heads}}{\text{Total no. of tosses}}$$

Number	Outcome
1	
2	
3	
4	
5	
6	

Example: If you get Head 4 times out of 6, the probability of getting a head is P (H) = 4 / 6

If an outcome does not happen, its probability is 0.

Two Coin Experiment

Number	Coin 1	Coin 2
1		
2		
3		
4		
5		
6		

Toss 2 coins 6 times and record your observation in this table.

Calculate:

- P (HH) – *getting head in both coins.*
- P (HT)
- P (TT)
- P (TH)

Add the 4 probabilities up.
What do you get?

Probability Matters

Three Coin Experiment

Make a 3rd coin.

Toss the 3 coins and write the outcomes in this table.

Calculate:

- P (HHH)
- P (TTT)
- P (2 tails and 1 head)
- P (2 heads and 1 tail)

No.	Coin 1	Coin 2	Coin 3
1			
2			
3			
4			
5			
6			

All Possible Outcomes!

1. A **one-coin** toss has 2 outcomes – H or T
2. A **two-coin** toss has 4 outcomes – HH , HT, TH, or TT
3. A **three-coin** toss has 8 outcomes – HHH, HHT, HTH, HTT, THH, TTH, THT, TTT

Calculate the probability of each of these possible outcomes for a 1, 2, and 3-coin toss. *(Ex: For a two-coin toss, P(HH) = ¼)*

For each case, add the probabilities of all the outcomes up.

We observe that the sum of the probabilities of all the outcomes of an even is equal to 1.
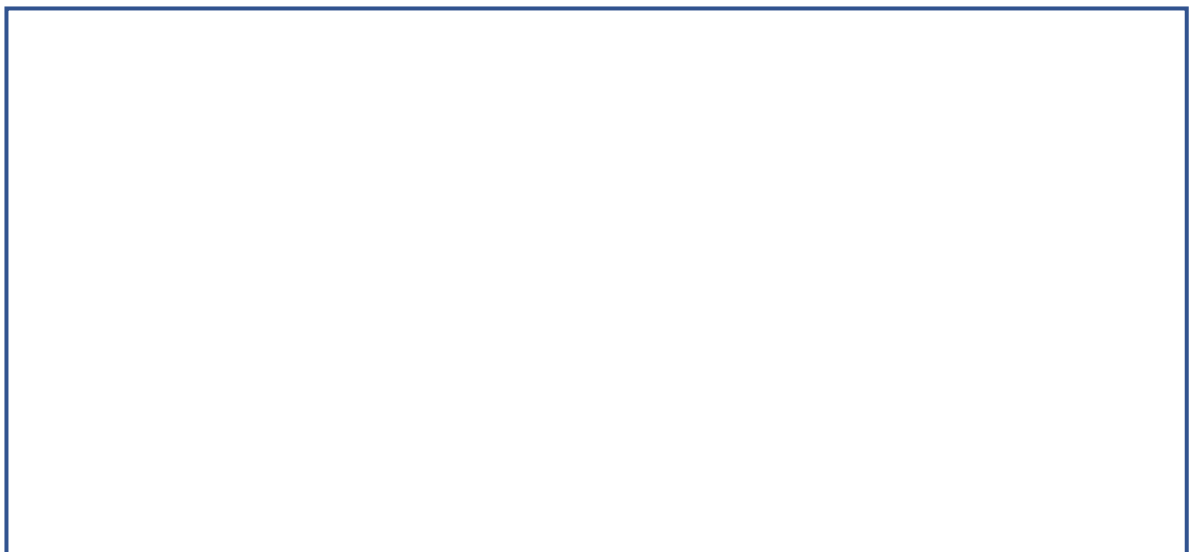
Flow Like Water

Slowly pour some water on the ground outside.
Observe the water flowing.

- Is the water moving forward?
- Is it moving slowly or fast?
- Does it slow down at some places?
- Does it move faster in some?
- Does it dry up?

Pour some more water and observe how it moves.

Draw the shape it makes below:

What is the probability that water does not spread when poured on the ground – likely or unlikely?

Probability Matters

Probability Game # 1

- Divide a circle into 4 parts. Colour or write the colour's name on each quarter.
- Create an arrow using paper and attach it at the center using a pin, so that it spins.

- Spin it 6 times and record the outcomes in a table.
- Find the probability of getting each colour.

Venn Diagrams

Venn diagrams have 2 circles that intersect and are used to show probability.

VEGETABLES   BREADS

VEGETABLES AND BREAD
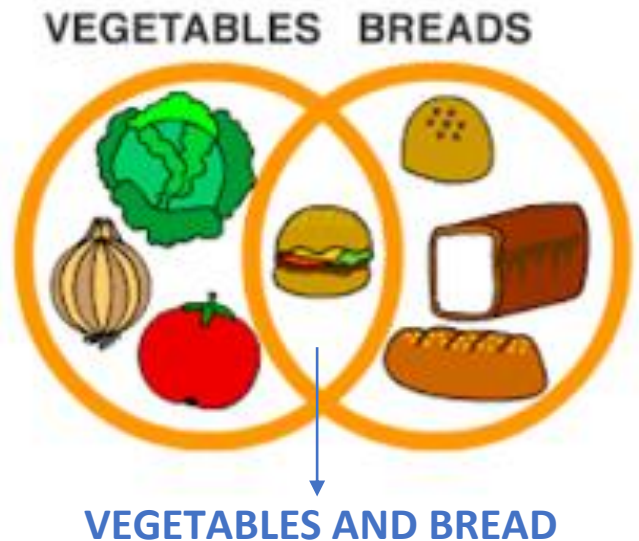
VEGETABLES   FRUITS

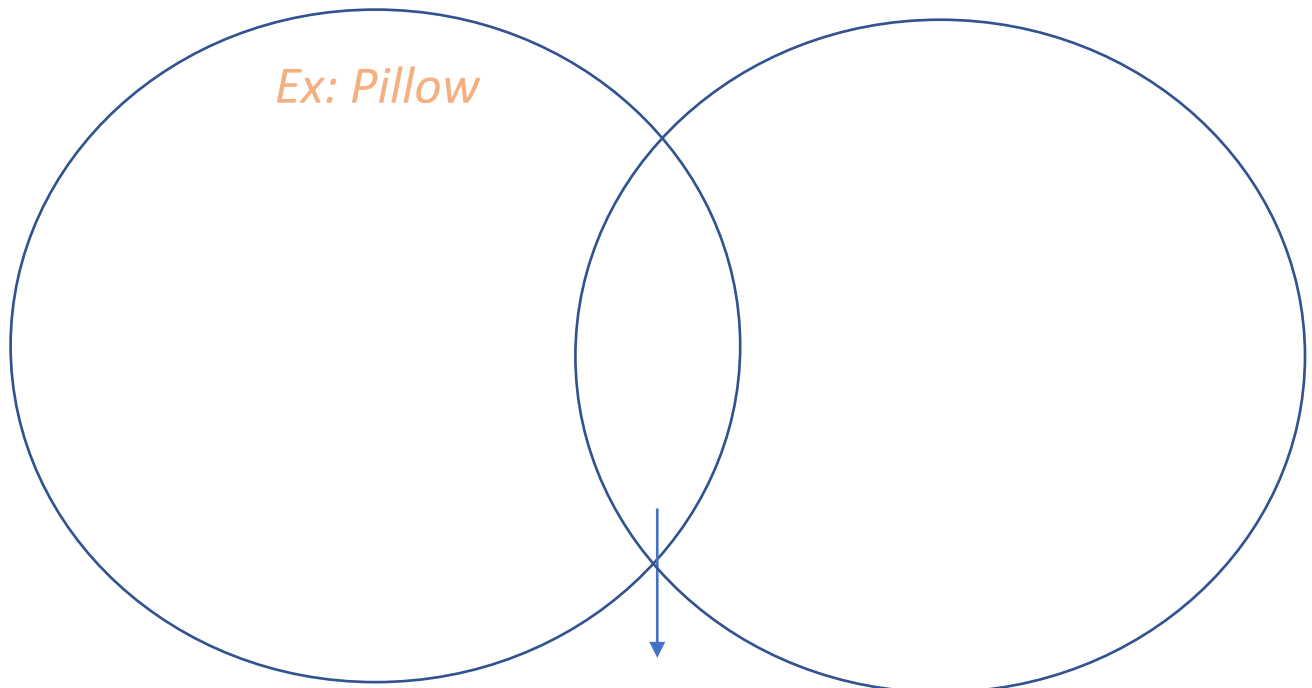If there is nothing in common between the 2 sets, the circles do not intersect.

Make a Venn diagram to show your and a friend's favourite food items.

Favourite Things

Fill the Venn Diagram below:

My Favourite Things   **Friend's Favourite Things**

Ex: Pillow

Both of our favourite things

Imagine all the things from the Venn diagram is put into a bag. If you pick out any one thing, find the probability of getting:
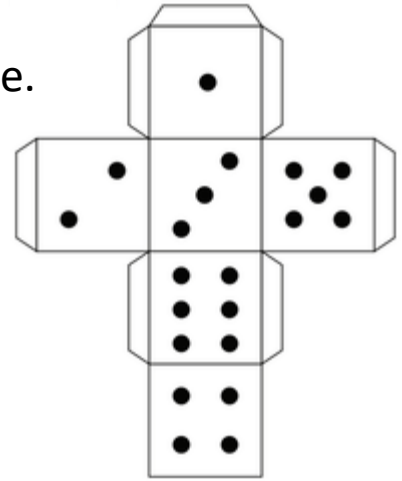
- Your favourite thing   = Total no. of your favourite things
                                    Total no. of things in the Venn diagram

- Friend's favourite thing
- Favourite things you have in common

Probability Matters

Probability Game # 2

With an adult's help, make a die.

- Draw and cut the picture.
- Fold along the lines and stick together to form a cube.

The outcomes of rolling a die are 1, 2, 3, 4, 5 and 6.

Roll a die and record the outcomes on this table:

Roll	Number on die
1	
2	
3	
4	
5	
6	

Calculate the probability of getting each number. Are they equal?

What is the probability of getting:

- 3 or 5 on the die?
- 2, 4, or 6 on the die?

What is the sum of the probability of all the possible outcomes?

Exploring Probability

Spin It

1. What is the probability of the spinner landing on C? _____

2. What is the probability of **not** spinning a C? _____

3. What is the probability of the spinner landing A or B? _____

3. What is the probability of the spinner landing on one of the first five letters of the alphabet? _____
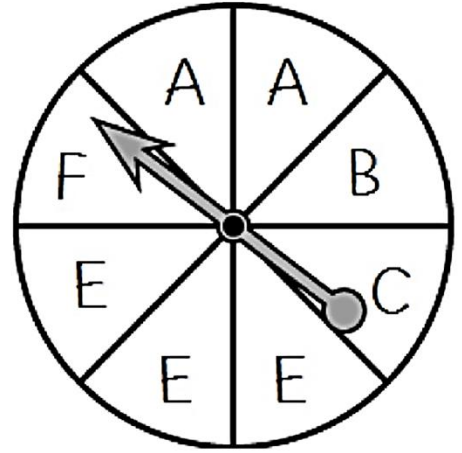
Marbles in a Bag

The marbles pictured below are gray, white, and black. They are placed in a bag and one is drawn at random.

1. Which color marble is least likely to be drawn from the bag? _____

2. What is the probability of drawing the black marble from the bag? _____

3. What is the probability of drawing a gray marble? _____

4. What is the probability of the drawing a white marble? _____

5. What is the probability of drawing a marble that is not white? _____

6. Would you be more likely to draw a marble that is not black or a marble that is not gray? Explain your answer.

Probability Matters

Probability Game # 3

- Make a second die.
- Roll the 2 dice 10 times and record your observations:

Roll	Die 1	Die 2
1		
2		
3		
4		
5		
6		

Calculate:

- P (6, 3)
- P (5, 1)
- P (3, 2)
- P (Same number on both dice)

Discover how many possible outcomes can happen if you roll two dice at the same time.

Probability Game # 4

Fill 2 plastic bottles halfway with water. Flip them at the same time. The bottles can land on top, middle, or side.

Which outcome is more likely to happen? (High probability)
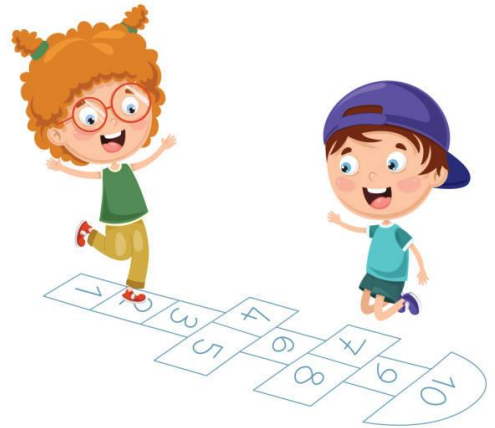Ask others to flip the 2 bottles 10 times. The one who lands it upright the most number of times, wins.

Make more games with probability and start your own Game Club with friends.

LUCK OF THE TOSS

Game Set-Up

- Mark a starting and an ending point 10 steps away.
- Each player has a coin.

How to Play

- Player 1 tosses the coin and only hops 1 step forward if it is heads. Player 2 tosses and only hops forward if it is tails.
- Players will record their observations below:

Toss	Player 1	Player 2
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

The player to reach the end of the path first wins!

Play 2 rounds of this game.

Is it better to be Player 1 (heads) or Player 2(tails)?

Weekly Reflection

Did I enjoy learning this week?

What are some new things I learned?

What did I do well?

What can I do better next week?

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Week 3 Overview

Project

Draw Like an Architect

Create floor maps of any house.

Design a House
Your clients need your help to make a floor plan!

5

Story Time
Read about the first house being built in a faraway land.

4

Division
Let us practise division!

3

Scavenger Hunt

Find objects of different lengths.

1

2

My Surrounding

Think about what makes your surrounding special.

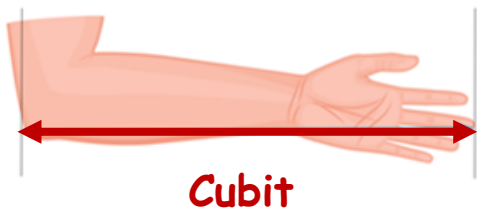## Materials Needed

- Paper
- Pencil

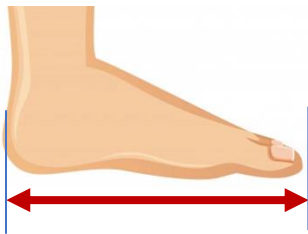## Draw Like an Architect

How can you draw a floor plan and measure using your body?

An **architect** designs a room or a building using accurate measurements.

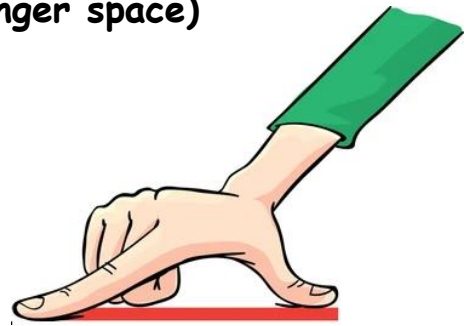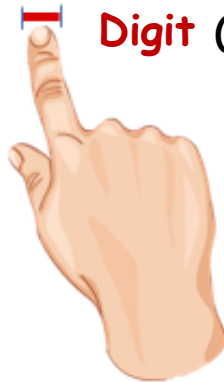In the past, people measured things using their bodies.

Cubit

Digit (1 finger space)

Footspan

Handspan

- Pick a room in your villa/living area.
- Start at one corner and measure each side in footspans.

Side 1: _____   Side 3: _____

Side 2: _____   Side 4: _____

What shape is the room? How many vertices (corners) does it have? Which sides are equal? Does this apply to all shapes?

Scavenger Hunt

Game Set-Up

3 or more players

List different lengths on a sheet. Find objects around you in these approximate lengths.

Some Examples:

- 2 Cubit
- 3 Footspans
- 4 Handspans
- 10 Digits

- 10 centimeters
- 2 meters
- 5 inches
- 20 centimeters

How to Play

- Players run and bring an object that measures the same as the lengths in the sheet.
- 2 players cannot bring the same object.

The first player to cross out all the lengths wins!

Draw Like an Architect
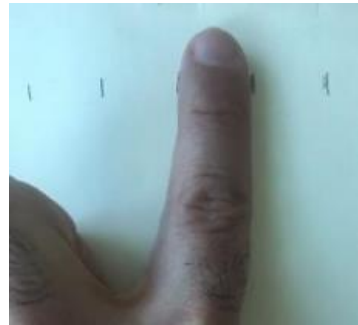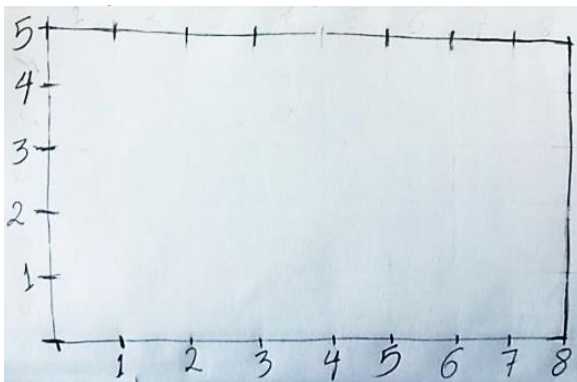
We will draw a sketch of the room on paper.

The room is much bigger than the sheet of paper, so architects draw a smaller sketch that looks like the actual room. This is called the **blueprint.**

So, we can represent footspans as 'digits' (finger space) on paper.

Example

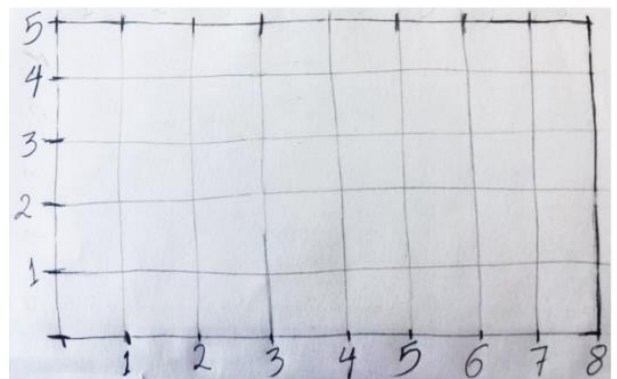Length of the room = 8 footspans
Breadth of the room = 5 footspans

Draw the sides using the same number of digits.
Length = 8 digits
Breadth = 5 digits

Create a grid using the digit marks.

Notice that the side length of the small square is 1 digit, so we call this a **unit square**.

Area is the number of unit squares that something covers.

Area of your drawing = _____ squared digits

My Surrounding

Close your eyes. Breathe in and out slowly, 3 times.

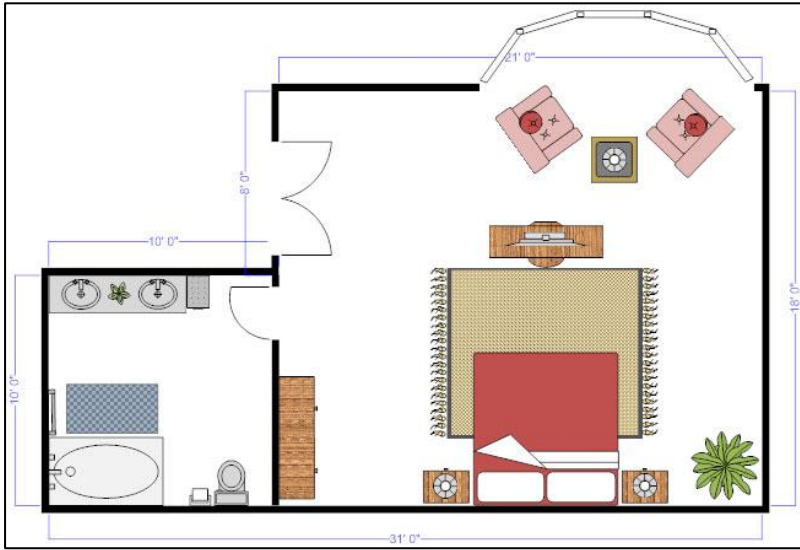Think of places or things around you that make you happy.

Draw and label them below in Pashto/Dari.

Challenge yourself to label in English.

Special things about my surrounding:

Draw Like an Architect

Architects imagine that the roof of the house is transparent and draw a floor map as if we are looking at the house from the top, like a flying bird.

Observe and find:

- The walls
- The doors
- The no. of rooms
- The types of rooms
- The objects you see

Create a Floor Map

- Measure the different rooms in your villa/living area using footspans for one floor. Draw and mark the digits on paper.
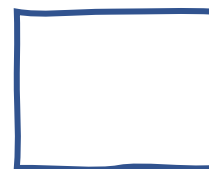- Add doors and draw symbols to show the use of each room.

Present the floor plan to your friends and take their inputs.

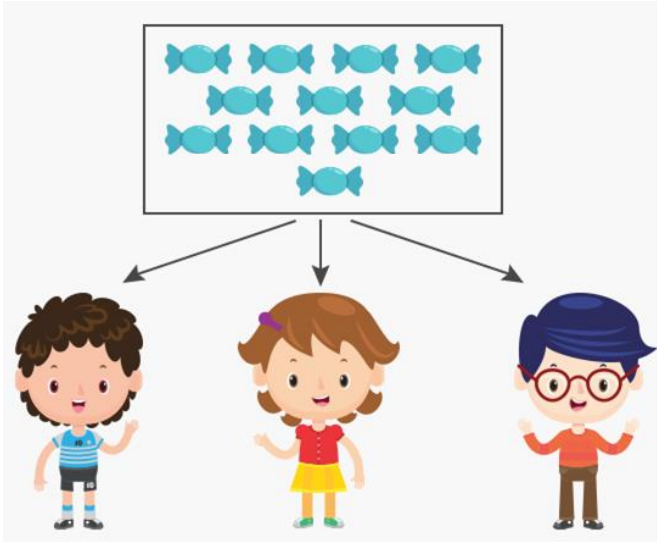|	**Perimeter**	**Area**
Calculate the floor map's	☐ digits	☐ squared digits

Area is usually expressed as square meters or square feet, but since we are using our fingers/digits, we will express the area calculated as square digits.

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الجميع | all

DIVISION

Distribute 12 candies among 3 people equally.

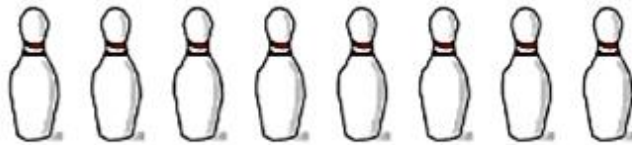Each person gets _____ candies.

So, **12 ÷ 3 = _____**

OR $\dfrac{12}{3}$ = _____

If there were 14 candies, how many would be left over? This is called the **remainder**.

Use the pictures to solve the division problems.

8 ÷ 2 = _____

10 ÷ 5 = _____

9 ÷ 3 = _____

5 ÷ 5 = _____

Project-Based Learning

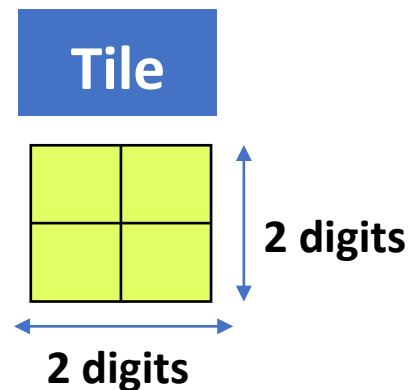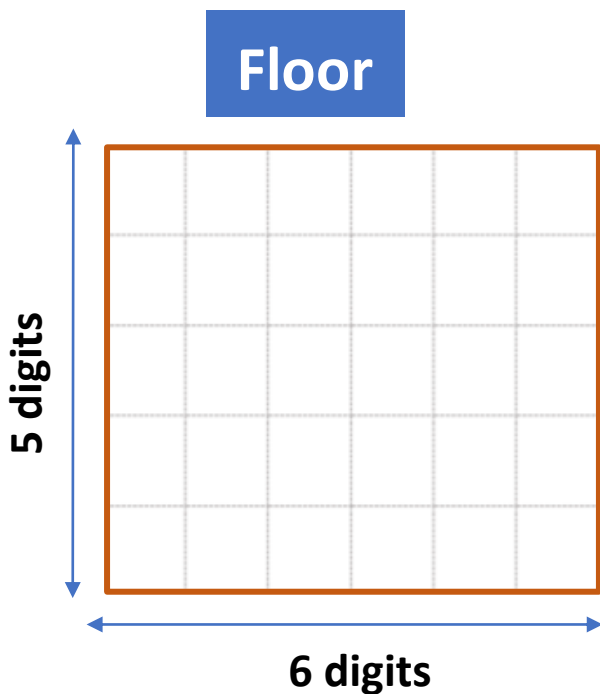## Draw Like an Architect

Architects use the different measurements of the house to calculate the material needed to complete the house construction.

How many tiles will we need for this floor?

Floor

Tile

5 digits

6 digits
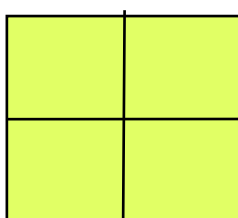
2 digits

2 digits

- Find the area of the floor.
- Find the area of 1 tile.
- No. of tiles = $\dfrac{\text{Floor's Area}}{\text{1 Tile's Area}}$
  needed

How many tiles of each type will you need for the floor plan you drew?

Tile 1

Tile 2

Tile 3

Create your own tile. Add designs or a symbol to it!

First House

Koni and Kincha were two close friends. They wanted to build a house. In their land, people still lived in caves and did not know what a house looked like.

One day, Koni said, "O Kincha, I'm so tired of living in a dark cave. Why don't we build a house in the forest?"

"Good idea, Koni!" said, Kincha. "Let's go and ask our friends, the animals, how to build a house!"

So, they came out of their caves and entered a big forest. The first animal they saw was an elephant.

"Can you tell us how to build a house?" they asked.
The elephant said, "Cut trees to make pillars as strong and thick as my legs!"

So, they cut down a tree and made thick pillars out of it.

Suddenly, they heard a 'mooo'. It was Mithun, a large buffalo who lives in the forest.
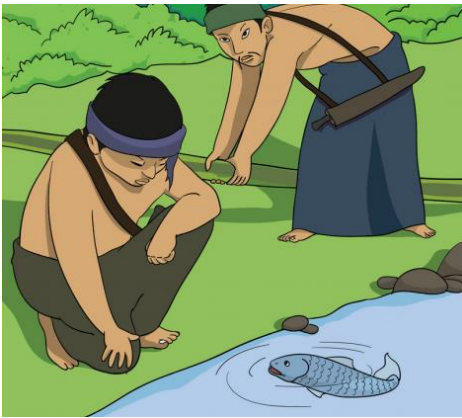
"Can you tell us how to build a house please?" asked Kincha.

"I'm too sad to talk now," said Mithun sadly, "but I'll help you to build your house. You see, a tiger ate all the food in our house! So, put sharp poles to protect your home."

They thanked Mithun and began setting up the poles, but got tired. They walked to a nearby river to have a drink.

Suddenly, a fish came up to them and said, "Collect a lot of leaves and put them on the roof, one on top of the other, like my scales. That will protect your house from sun and rain, " said the fish.

Koni and Kincha now had all the ideas they needed to build a house and they worked very hard to complete it. This is how the first house was built in that faraway land.

- Who are the characters in the story? What is the setting?
- How do you think the first house was built? Draw it.
- What advice would you give Koni and Kincha to make their house even better?

Draw Like an Architect

Treasure Hunt

- Hide 3 items in the villa/living area.
- Mark the hiding spots in its floor map.
- Ask 3 players to search for the items using the map. Play 2 or more rounds of the game.

Is your floor map accurate? Is it easy to follow?

Guide and Find

Move 2 steps forward. Turn right.

- Blindfold a player.
- Start from the house's entrance. Give them verbal directions to the item.

Let's Reflect!

- How good were your directions to the blindfolded member?
- Did you have to correct any of the directions you gave? Why?
- In the past, how do you think ship captains navigated their way in the sea without using technology?
- Can you draw a floor plan and measure using your body?

Imagine you are an architect. Draw the floor plan for these clients' specifications:
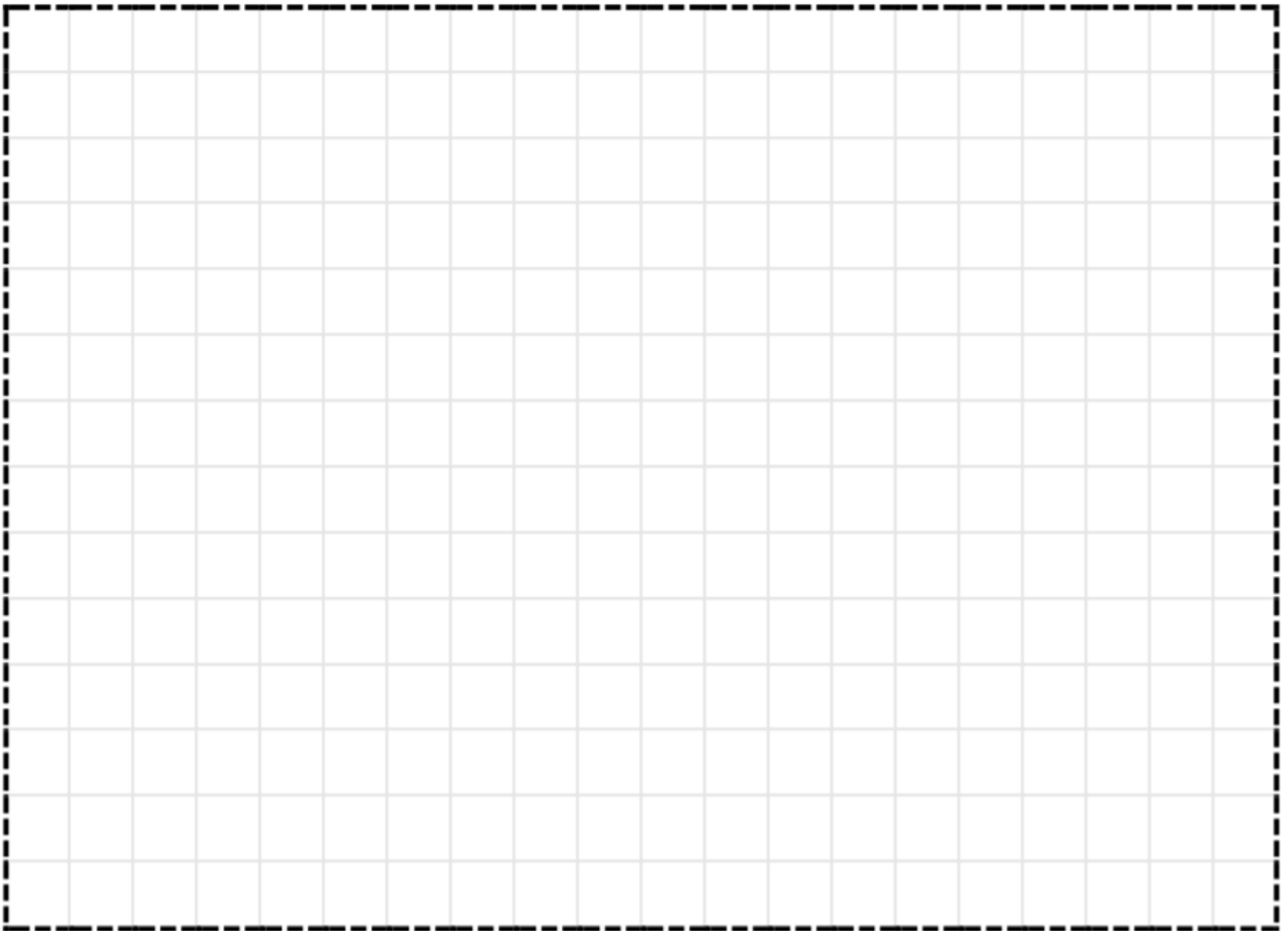
Bathroom: 9 sq. meters
Kitchen: 15 sq. meters

Living Room: 20 sq. meters
Bedroom: 10 sq. meters

Each square represent 1 square meter.

Find its area, perimeter, and the no. of tiles needed for the floor.

How will the environment and weather conditions affect the design of the house you just designed?

Weekly Reflection

Did I enjoy learning this week?

😊 🙂 😐 🙁 ☹️

What are some new things I learned?

What did I do well?

What can I do better next week?

If you liked this, go to our IFERB website for hundreds of more such resources. Visit https://resources.educationaboveall.org

Week 4 Overview

Project

Patterns Everywhere

Explore patterns around you.

Story Time

Explore patterns with Paul, the Pattern Detective.

5

Number Sequences

Explore and create patterns with numbers.

4

Look Up

Observe patterns in the sky!

3

My Habits

Observe patterns in your daily actions and behaviour.

1

2

Shape Patterns

Explore patterns with different shapes.

Materials Needed

- Paper
- Pencil

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الجميع | all

Patterns Everywhere

How can patterns help us understand the world?

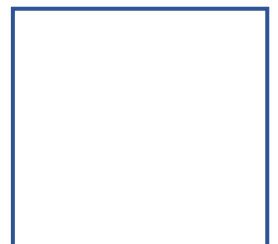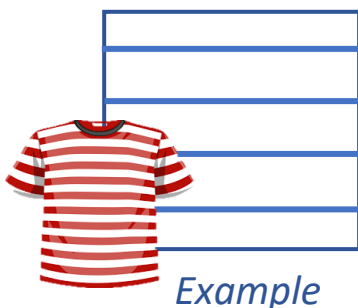**Patterns are things, numbers, or shapes that repeat in a logical way.**

Days and nights repeat and happen regularly as a pattern. Below are some patterns in animal skin. Identify the animals they belong to.

List 3 more patterns you see in nature.

Observe the shapes and designs that repeat in your clothes.

Draw at least three such patterns in the boxes below.

Example

My Habits

Let us observe patterns in our daily actions. Fill the table below. (Add other behaviours you want to track too.)

✔️ I did   ❌ I didn't

Question	Day 1	Day 2	Day 3	Day 4	Day 5
Did I lose my temper today? **Think:** When did it happen? What happened before and after that?					
Did I get sleepy today? **Think:** When did that happen? What was I doing before that?					

Continue tracking your habits over the next 2 weeks.

Patterns Everywhere
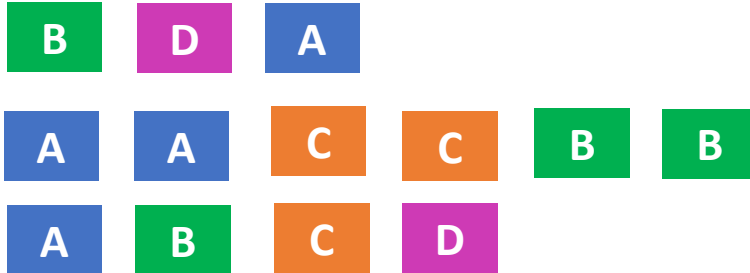
Let's make music based on the code!

A	B	C	D
Snap your fingers.	*Clap your hands.*	*Stomp your feet.*	*Tap your thighs.*

Try these patterns!

B D A

A A C C B B

A B C D

- Create your own code and music pattern.
- What is your favourite song? Identify a pattern in it.

Select a song to dance to. Create a code for different steps and make your own pattern. Teach the dance to your friends!

Let's Reflect!

- Did they enjoy the dance?
- Were they able to follow the pattern?
- Do we always "see" patterns?
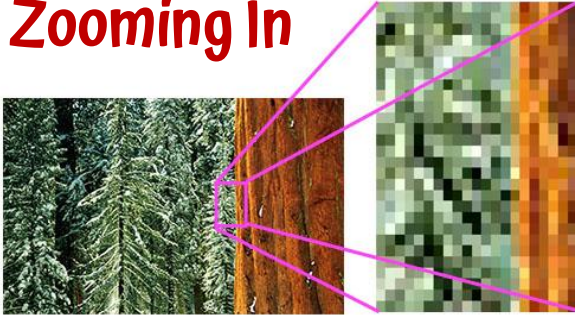
SHAPE PATTERNS

Finish the following patterns.

Create 2 patterns using any 3 shapes. Try 3D Shapes!

Patterns Everywhere

Zooming In

Vision involves identifying patterns, like combining pixels. Pixels are the smallest area of a screen or picture.
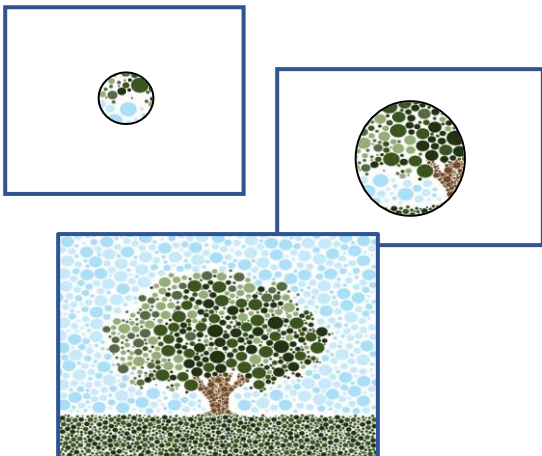
Artists use a technique called pointillism, where dots are used in patterns to create an image. Let's try!

- Draw any picture.
- Use your fingers to add colour.
- You can make your own colours using spices. *(Ex: Turmeric powder ⬜ Yellow)*

Pointillism
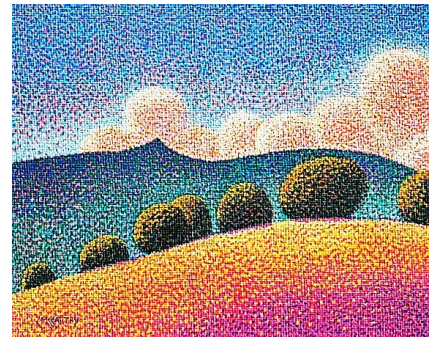
Zooming Out

Make a tiny hole on paper and place it over the painting. Ask a peer:

- What do you see or notice?
- What do you think this might be?

*Repeat this by increasing the size of the hole and then showing the full picture.*

This process of "zooming out" is called **abstraction**. Abstraction helps us make sense of what we see. Patterns help us zoom out and move from small details to see the bigger picture!
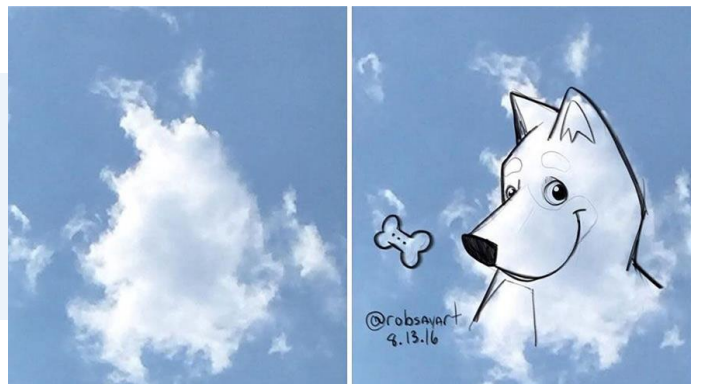
LOOK UP

What are some changes you observe in the sky?

- Look up at the sky.
- Draw the different shapes of the clouds you see.
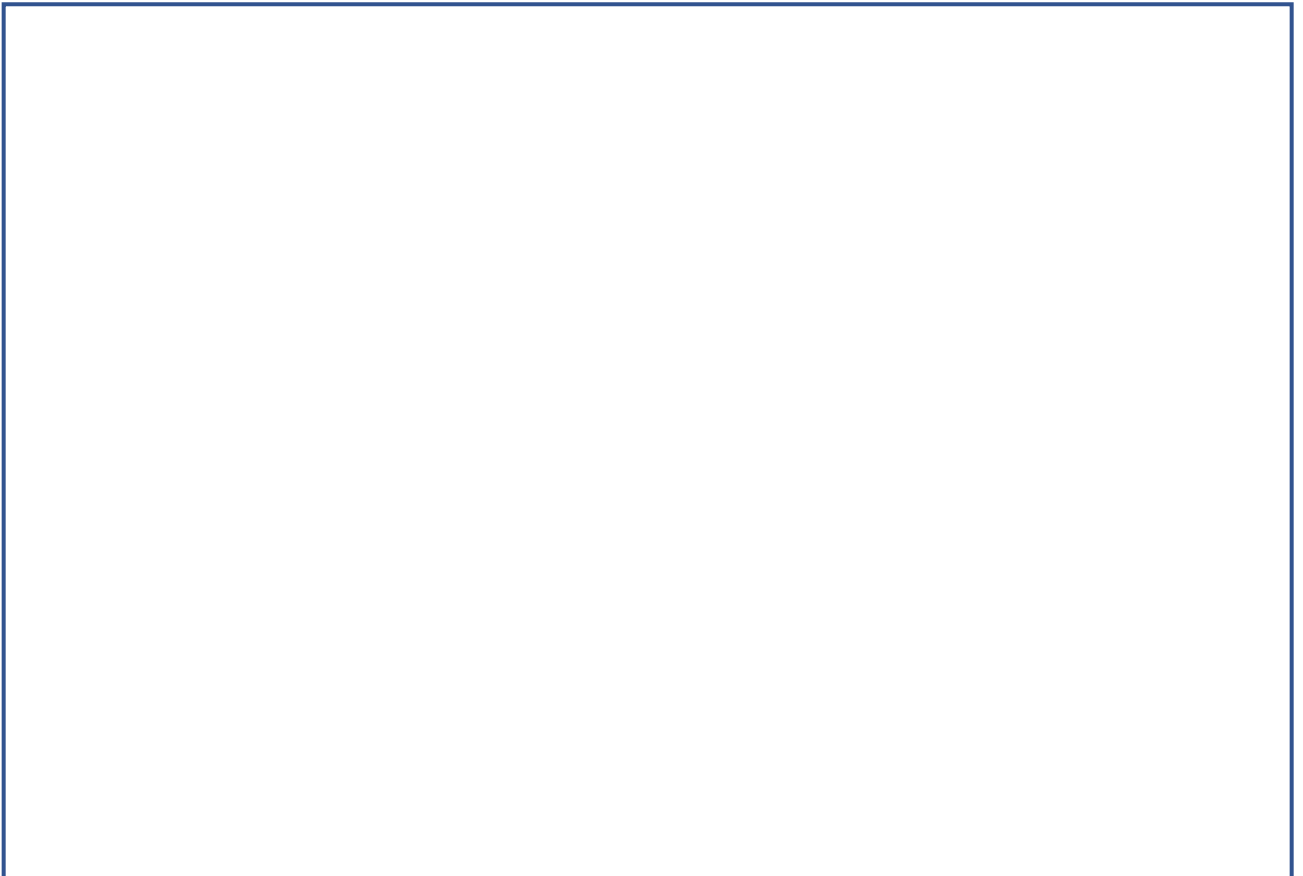
Do they remind you of something - an animal, a person, or a thing?

@robsayart
9.13.16

Patterns Everywhere

Make a pattern with any 3 items around you.

Example:

What comes next in these letter patterns?

A A B A A B _____ , _____ , _____ , _____

K Z L K Z L K Z L _____ , _____ , _____

S S D A S S D A _____ , _____ , _____ , _____

What comes next in these number patterns?

1 0 1 0 1 0 1 _____ , _____ , _____ , _____

2 4 4 5 2 4 4 5 _____ , _____ , _____ , _____

6 12 18 24 30 36 _____ , _____ , _____ , _____

Make your own number, letter and shapes patterns.
Challenge your friends to complete it!

NUMBER SEQUENCES

| 1   3   5   7 ... |

- What number comes next?
- How do you know this?

Number patterns follow a **rule**. In this case, the rule is to add '2' to the number. What comes next in these patterns? What is the rule?

3   6   9   12   ____ ____ ____

9   18   27   36   ____ ____ ____

Design your own number sequence starting from 1, using a rule.
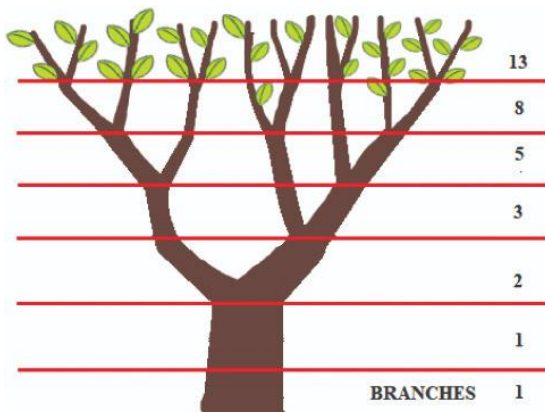
Fibonacci Sequence | 1   1   2   3   5   8 ... |

In this sequence, each number is the sum of the two numbers before it. What are the next 3 numbers?

Observe the Fibonacci Sequence in nature

Tree Branches

13
8
5
3
2
1
BRANCHES   1

Flower Petals

1 Petal   3 Petals   5 Petals

8 Petals   13 Petals

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Patterns Everywhere

You see these clouds. What do you think will happen next?

Patterns help us predict.

You have been tracking some behaviours during the week.

Write down 3 patterns you observe like this:

When I _____ , _____ happens.

Ex: When I eat too much, I get sleepy.

Let's Reflect!

- Are there "good" or "bad" patterns?
- Let's zoom out. In a month or a year, how will these patterns affect your life?
- **Patterns can be changed.** How would you break or enhance some patterns?

Make a poster to remind yourself of this!

Why is it useful to recognise patterns around us? How do they help us see things differently?

Paul, The Pattern Detective

Paul loves searching for patterns. "I am going to be a pattern detective today! Let's go find patterns!" said Paul.

Paul found a pattern hanging on the tree. It is called a hive and bees live in it. It is made up of the hexagons(a shape with 6 equal sides) stuck to each other.
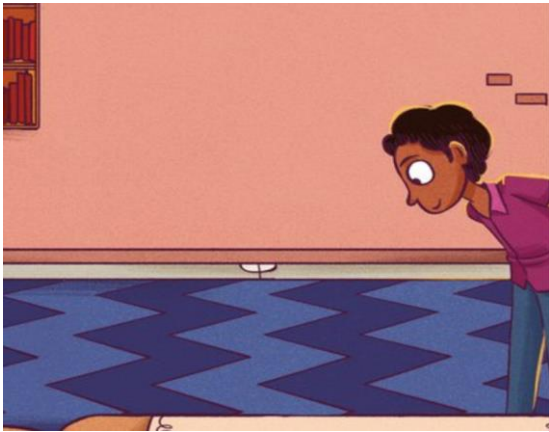
Draw a hexagon.

Before going inside the house, he notices that the bricks of house make a pattern.

What is the shape of the brick?

PAUL, THE PATTERN DETECTIVE

Inside the house, Paul saw a pattern on the carpet.

Draw your own carpet pattern.

He went to the kitchen and saw a pattern on the table.

"What is this fruit?" he wondered.

"It is a _____," he remembered!

"It is _____ in colour."

Draw 2 patterns you see in other fruits.

The next day at school, he told his friends all about the patterns he found.

"Join me today! Let's all be pattern detectives!" said Paul.

- Where did Paul see patterns?
- Where do you see patterns around you?
- Draw your favourite pattern. Why is it your favourite?
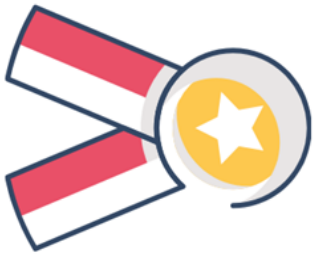
Weekly Reflection

Did I enjoy learning this week?

What are some new things I learned?

What did I do well?

Did I do better based on last week's learnings?

If you liked this, go to our IFERB website for hundreds of more such resources. Visit https://resources.educationaboveall.org

CERTIFICATE OF COMPLETION

This certificate is awarded to

for the successful completion of the **Numeracy** workbook.

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