

**TEACHING AND LEARNING MATERIALS**

**GRADE 2- LESSON 1**

**Welcome to the Wonderful World of Lines, Shapes, and Shadows!**

Hello, Super Learners! Get ready to explore the cool things all around us – from the straight lines that make up your desk to the fun shapes of your toys and even the mysterious shadows you make when you play in the sun!

**Lesson 1: All About Lines!**

Have you ever seen a perfectly straight road or the edge of a book? Those are **straight lines**!

• **What are Straight Lines?**

    ◦ A straight line goes perfectly straight, like when a rat follows a dotted path to find cheese.

    ◦ Sometimes it's hard to draw lines that are perfectly straight using only a pencil.

    ◦ **A ruler is a super helper**! It helps us draw perfectly straight lines.

• **Different Kinds of Straight Lines:**

    ◦ **Standing Lines (Vertical Lines):** These go straight up and down, like you standing tall. Think of a door frame or a tall tree trunk!

    ◦ **Sleeping Lines (Horizontal Lines):** These go straight across, like you sleeping in your bed. Think of the horizon where the sky meets the ground, or a shelf!

    ◦ **Slanting Lines (Sloping Lines):** These lines go at a tilt, like a slide at the park. Think of the roof of a house or a ladder leaning against a wall!

• **HOTS Challenge:**

    ◦ If you wanted to draw a straight line but forgot your ruler, how could you try to make your line as straight as possible? (Hint: Think about what else you could use that has a straight edge!)

• **Real-Time Application / Life Skill:**

    ◦ Look around your classroom or home! Can you spot three different things that have **standing lines**, **sleeping lines**, and **slanting lines**? For example, a window often has both standing and sleeping lines!

    ◦ When you draw or write, using straight lines helps make your work neat and tidy, which is a great skill for everything you do!

**Amazing Shapes!**

The world is full of interesting shapes, from a round ball to a square cracker!

• **Solid Shapes (3D Shapes):**

    ◦ These are shapes you can hold, like a toy block or a ball. They are "fat" and take up space!

    ◦ Some solid shapes are:

        ▪ **Cube:** Like a dice or a building block.

        ▪ **Cuboid:** Like a brick or a book.

        ▪ **Cone:** Like a party hat or an ice cream cone.

        ▪ **Sphere:** Like a ball or a globe.

        ▪ **Cylinder:** Like a can of juice or a drum.

• **Plane Shapes (Flat Shapes):**

    ◦ These are flat shapes you can draw on paper. They don't take up much space.

    ◦ **How do we get Plane Shapes?** When we **trace around** the flat parts of solid shapes, we get plane shapes.

        ▪ If you trace the bottom of a **cube**, you get a **square**.

        ▪ If you trace the side of a **cuboid**, you get a **rectangle**.

        ▪ If you trace a **sphere** (like a ball), you get a **circle**.

        ▪ If you trace the bottom of a **cone** or a **cylinder**, you get a **circle**.

• **Properties of Plane Shapes (Sides and Corners):**

    ◦ **Square:** Has **4 straight sides** that are all the same length, and **4 corners**.

    ◦ **Rectangle:** Has **4 straight sides** and **4 corners**, but two sides are long and two sides are short.

    ◦ **Triangle:** Has **3 straight sides** and **3 corners**.

    ◦ **Circle:** Is round, so it has **no straight sides** and **no corners**.

• **HOTS Challenge:**

    ◦ Can you think of two different solid shapes that would both make a **circle** if you traced their flat part? [Conversation history, 11] (Think about a ball, a cone, and a cylinder!)

    ◦ Why do you think a circle doesn't have any corners?

• **Real-Time Application / Life Skill:**

    ◦ Look at a cushion. Can you see different plane shapes like squares, rectangles, triangles, and circles that make up its design?

    ◦ Knowing shapes helps you in so many ways: when you play with building blocks, draw pictures, or even help sort laundry by shape!

**Mysterious Shadows!**

Have you ever noticed your dark shape following you on a sunny day? That's your shadow!

• **What is a Shadow?**

    ◦ A **shadow** is a dark shape that is formed when an object **blocks the light** that is shining on it.

    ◦ Shadows are **always black in color**, no matter what color the object is! So, if your shirt is red, your shadow will still be black!

• **Why Do Shadows Change?**

    ◦ The **sun's position changes** in the sky throughout the day.

    ◦ When the sun is low (like in the **morning** or **late afternoon**), your shadow will be **long**.

    ◦ When the sun is high up (like at **noon**), your shadow will be **short**.

    ◦ This change in the sun's position also changes where your shadow falls!

• **Shapes of Shadows:**

    ◦ When an object blocks light, its shadow often looks like a **plane shape**!

    ◦ The shadow of a **ball** will be a **circle**.

    ◦ The shadow of a **blackboard** will be a **rectangle**.

    ◦ The shadow of a **dice** will be a **square**.

• **HOTS Challenge:**

    ◦ Imagine it's a very cloudy day. Will you still be able to see your shadow clearly? Why or why not?

    ◦ Can you think of an object that would make a square shadow? What about a circle shadow?

• **Real-Time Application / Life Skill:**

    ◦ You can have fun playing with shadows by making **hand puppets** against a wall with a light behind you!

    ◦ People sometimes use shadows to tell the time or to know which way is north, south, east, or west. This is a neat way to use observations in the world around you!

Keep exploring and observing the lines, shapes, and shadows all around you – math is everywhere!