

<p>Unit 5</p> <p>Week 2</p>	<p>Large Group: Whose Shadow is This? OR Guess Whose Shadow</p> <p>Medium to High Support</p>	<p>Math</p> <p>LG</p>	<p>Standards:</p> <p>MELDS.M.G.PS.2</p> <p>MELDS.M.MD.PS.10</p> <p>MELDS.M.MD.PS.11</p> <p>MELDS.S.ES.PS.4</p>
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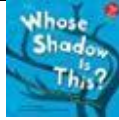


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Guiding Math Idea:

- Integrated projects- Science/Technology/Engineering Math [STEM]- Measuring- Non-Standard
- Beginning Operations- Comparisons- Greater Than/Less Than
- Patterns- Identifying Patterns in the Surrounding Environment using Attribute Words

Math Concepts From Unit Learning Progressions:

- Math is a part of many learning projects (Uses math in STEM activities)
- Discovering, describing and comparing attributes of shapes.
- Using math terms accurately.
- We can identify and utilize shape and space concepts in science engineering and technology as well as math.

Adaptations for Using Large Group In Alternate Schedule Slots:

This Guessing Game can be used during Transitions, SWPL or Outdoors.

Note: This activity also supports Science standards.

Materials:

- *Whose Shadow is This?* by Claire Berge OR Guess Whose Shadow*
- 4 or 5 Classroom Items, one of which you will use for demonstration
- Box or cloth to conceal the Classroom Items
- Flip Chart- One blank page, and one page divided into as many sections as you have Classroom Items.
- Markers
- Light Source- Small Lamp without shade is preferred- or use large Flashlight
- Whiteboard, White Wall or White paper/sheet attached to wall

Math Vocabulary:

- Shadow- the special shape we see when a person or thing blocks the light that is shining on it.
- Engineering- a way to solve problems through using ideas and equipment.
- Compare or Comparison- A way to find out how things are alike or different
- Length- how long something is from end to end.
- Height- How tall something is from top to bottom

- Width- how wide something is from side to side
- Experiment- a way to test out our ideas about something.

Preparation:

* ***Whose Shadow is This?*** Is the preferred book (listed in Math Books Resources) because it has many descriptors of attributes of shadows . It also has facts about shadows and activity ideas at the end of the book. If unavailable, substitute ***Guess Whose Shadow***, from the general book list.

Prior to Large Group time, set up a shadow-casting activity in the classroom: Position a lamp or flashlight to cast a bright light on a large white surface. Leave room for you to sit near the light.

Find 5 or 6 items in classroom that can easily be brought to group time and that will cast distinctive shadows, such as a long rectangular block, a truck, a pair of scissors, a plate from Home Center, etc. Set aside one of the items for demonstration, and place the others in a box or cover with a sheet, so that the children cannot see them. Test out your shadow-casting area ahead of time to see if shadows are clearly visible on the white surface and make adjustments.

Alternative if you do not have a space or access to whiteboard/light source, draw outlines of the items on dark bulletin board paper, one per piece of paper and time cut out the shapes/shadows. Place shadow/silhouettes one by one in center of group, and ask them to guess Whose Shadow is This? And then bring out the matching object and continue with the activity as written.

At Group Time: Gather materials. Hide the classroom items in block or under a cover so that children cannot see them ahead of time.

We are learning about **shadows** this week. Who can tell us what a **shadow** is?

You have good ideas about shadows. A shadow is a special shape that is made when we or an object blocks the light that is shining on it.

Outside, shadows are made by the sun, but you can make them inside as long as you have light. All people have shadows- and anything else that blocks the light.

We have a book about shadows.

We are going to have some fun with shadows! What equipment do you see that I am using to create a shadow-casting area?

Here is a special way to make shadows using a light and a white wall.

Ask children for a few definitions and write down on flip chart, reading them as you write.

Introduce book and read. [Whose Shadow is This? Or Guess Whose Shadow.]

Children will describe the light and the wall. Demonstrate how the shadow-making area works.

When we describe how we make something, we are using our **engineering** skills. Engineers are people who figure out how to solve problems.

Do you see the shadow of my hand?

I have a _____.[demonstration object]

Can you see its shadow? What do you notice about this shadow?

[Example]. Yes, this is a plate from our home center. It's shadow is round and wide.

I'm going to write "plate" on our paper, and some of our words.

We are going to play a guessing game about shadows. I have hidden some things from our room that I am going to use to make shadows.

[Example]

___ said the shadow was tall. Another word for tall is called **height**. That's a measurement from top to bottom.

Let's try another one and **compare** their shadows. **Compare** means to find out how things are alike and different.

What happens when I move this closer to the light? Farther away?

The shadow changes! It gets bigger or smaller.

Did the [object] really change its size?

How could we find out?

[Optional]

We are going to leave our shadow-casting area here for you to experiment with during center time. Do you remember what **experiment** means?

We experiment when we test out our ideas about something, usually when we are curious.

In our small group math time we will try to measure shadows!

Place your hand in front of the light. Then, take your demonstration item and put it in front of the light and cast a shadow.

Children give ideas about the shadow. Encourage the use of descriptors such as tall, short, wide, pointy, etc. Write the object name in one section of the chart paper, and put children's descriptors underneath.

One by one, place hidden objects in front of the light source. Children will guess what the object is. Encourage the use of descriptors as they talk about the item. As children describe, take opportunities to introduce accurate measurement words. Continue writing on the chart.

Continue until all hidden objects are described or as time permits. Use comparison words as children add ideas, such as shorter, longer, wider, bigger, etc.

Move the object closer or farther away from the light source. Children will notice how the size of the shadow changes.

Children may suggest measuring. Write ideas down for later use during Small Group 1.

See Math Small Group 1 for follow up activity. If possible leave the shadow-casting area and a box of items for the children to experiment with during center time as a preview of small group.

Children give ideas about what it means to experiment.

Strategies to Provoke Math Thinking:

- Use of accurate measurement terms: Accept children’s descriptions, but insert accurate measurement terms. For example, many people interchange or confuse the ideas of height and length. We might lay down something down on the floor, measure it and say this is how “tall” something is, rather than how long it is. A child might describe an object by saying how “fat” it is, giving us an opportunity to say- *Yes, it is wide.*
- STEM- Working with shadows is a perfect way to integrate science, technology, engineering and math. As you set up the shadow-casting area, you are using engineering skills. As you talk about shadows and how they change in relation to a light source you are using science. Describing the attributes of the items and measuring shadows, which occurs in Math Small Group 1.

Adaptations for Additional Learning:

- Some children may be very interested in shadows. If you have access to technology, look up shadows online [or have children do it], and share information. A child could create a “shadow fact book”, writing down ideas and experimenting with different light sources, such as small or large flashlights or different surfaces for projecting shadows.
- Explore the idea of **engineering** further. As children build structures in the block center, or identify problems (Example: We want to see which car is the fastest), describe their work such as creating ramps, as engineering.

Provocation:

- Place books about shadows in the book center, such as *Moonbear’s Shadow* from your curriculum. The non-fiction section of libraries have books about shadows.
- Silhouettes are special shadows. If there is interest, adapt your shadow-casting area so that a child can sit sideways in front of the light source and the image of his/her head is projected onto the wall. Optional: Place white paper on the wall and draw around her/his head. You could use the silhouettes for a guessing game, and then send them home for families with information about shadows.
- Adapt to outdoor play: Go on a shadow-hunt outdoors and have children describe the shadows cast by playground equipment and natural objects. If you have 2 outdoor times, one morning and one afternoon, compare the shadows, or compare shadows on cloudy and sunny days.