

Name: _____ Date: _____

Lesson 1: What can we see in our room?

Part A: Whole Class

Station	Type of shape printed on the paper	<u>Observation</u> How many stars can I see?
1	 star	I can see _____ stars.

Station	Type of shape printed on the paper	<u>Observation</u> How many triangles can I see?
2	 triangle	I can see _____ triangles.

Part B: Groups

Station	Shape	How many shapes can you see?
3		I can see _____  .
4		I can see _____  .
5		I can see _____  .
6		I can see _____  .

Part C

Comparing Our Results	What Did We Notice?	
<p data-bbox="212 575 505 653">Comparing Stations #3 and #4</p> 	 <p data-bbox="574 680 821 974">In our class, _____ people saw the <u>same</u> number of stars at both Station #3 and #4.</p>	 <p data-bbox="1141 680 1388 974">In our class, _____ people saw <u>different</u> number of stars at both station 3 and 4.</p>
<p data-bbox="212 1163 505 1241">Comparing Stations #5 and #6</p> 	 <p data-bbox="574 1268 821 1520">In our class, _____ people saw the <u>same</u> number of stars at both station 5 and 6.</p>	 <p data-bbox="1141 1268 1388 1562">In our class, _____ people saw <u>different</u> number of stars at both station 5 and 6.</p>

Name: _____ Date: _____

Lesson 2a: Student Activity Sheets:
How can I block the light that's coming through my window?

Directions: Make a prediction about how much light each material will block. Use a green crayon to circle your prediction. Use a red crayon to circle the results of your investigation.

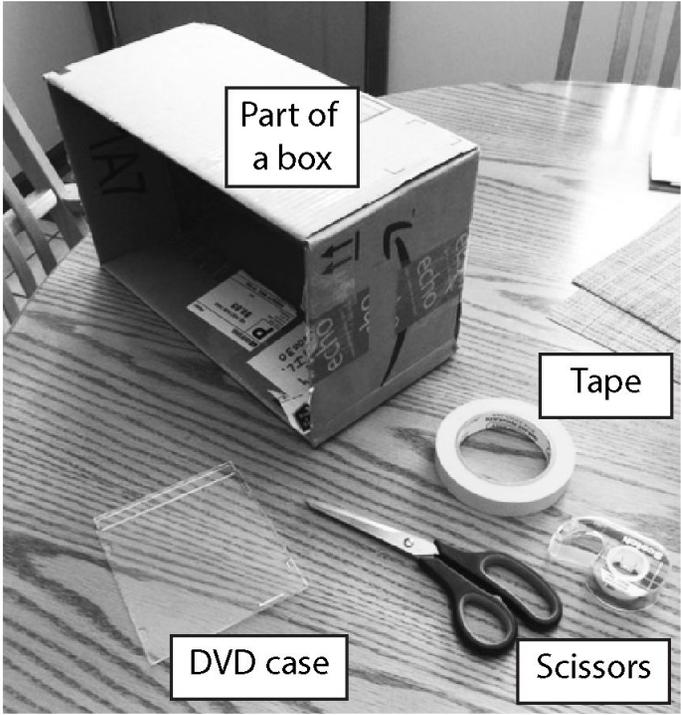
number	Material Being Tested	Prediction & Results: How much light will this material block?		
1		All of it	Some of it	None of it
2		All of it	Some of it	None of it
3		All of it	Some of it	None of it
4		All of it	Some of it	None of it
5		All of it	Some of it	None of it
6		All of it	Some of it	None of it
7		All of it	Some of it	None of it
8		All of it	Some of it	None of it
9		All of it	Some of it	None of it
10		All of it	Some of it	None of it

Lesson 2 - Student Design Sheets:

Name: _____

Date: _____

Our Problem: How can we use these materials below to make a small window on a small wall?
Circle and label what we can do with these materials to solve this problem.



Name: _____ Date: _____

Lesson 3a: Student Activity Sheets:

Which material will block light best to help make our room as dark as possible?

Directions: Make a prediction about how much light each material will block. Use a green crayon to circle your prediction. Use a red crayon to circle the results of your investigation.

number	Material Being Tested	Prediction & Results: How much light will this material block?		
1		All of it	Some of it	None of it
2		All of it	Some of it	None of it
3		All of it	Some of it	None of it
4		All of it	Some of it	None of it
5		All of it	Some of it	None of it
6		All of it	Some of it	None of it
7		All of it	Some of it	None of it
8		All of it	Some of it	None of it
9		All of it	Some of it	None of it
10		All of it	Some of it	None of it

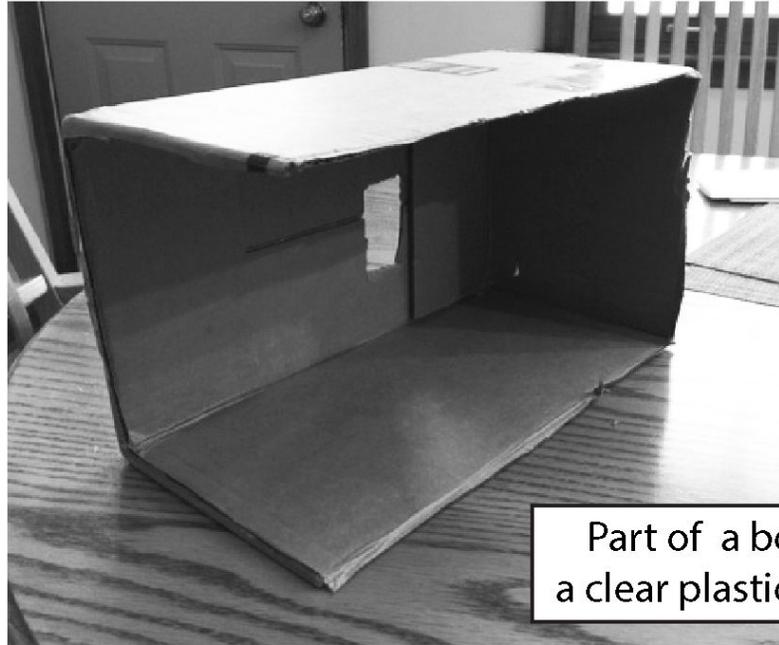
Lesson 3 - Student Design Sheets:

Name: _____

Date: _____

Our Problem: How can we use these materials below to make our box more like a small version of our room?

Draw and label what additional materials we will need to use to solve this problem.



Part of a box with a clear plastic window

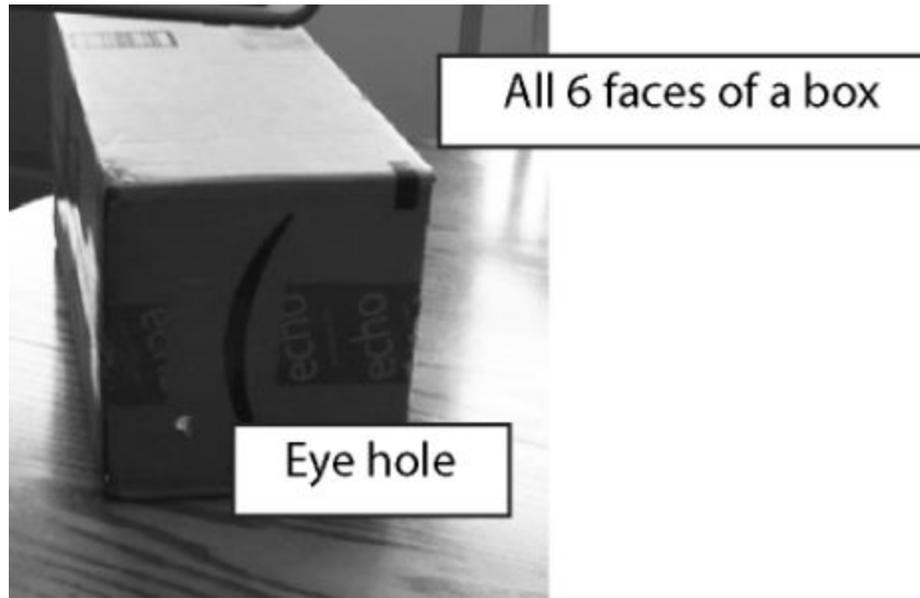
Lesson 4 - Student Design Sheets:

Name: _____

Date: _____

Our Problem: What materials can we use to all see into the box at the same time?

Draw and label any other materials that you have, or the teacher has in the classroom, that we could use to all see into the box at the same time.



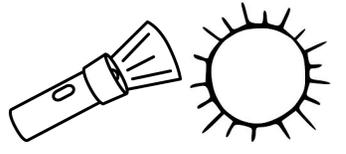
Lesson 6: Light Sources Reading

Tamara and Josiah were first grade students in Mrs. Swenson's class. They had been learning about light with their teacher during science, and after weeks of careful observations and investigations, they came to the agreement that they needed light to see. If there was no light in a room then they wouldn't be able to see anything, but if there was even just a little bit of light, they'd be able to see something in the room. The more light that was present, the better chance they'd have at seeing more things.

Tamara and Josiah also knew that when there was light present, different objects would respond to light in different ways. Some objects let light go through them. Other materials sort of let light go through them and they saw some light behind the materials. But the most interesting materials were the ones that didn't let light through them at all. They blocked all of the light!

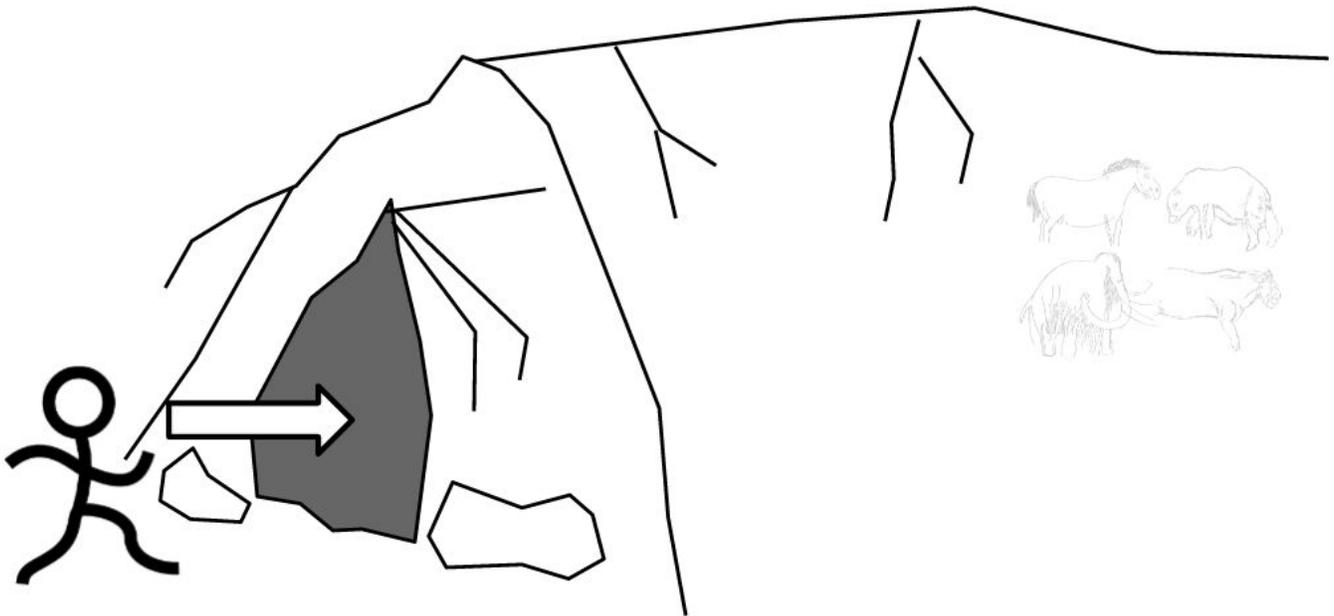
Mrs. Swenson had always let the students test their ideas using light from the sun that entered their classroom through the windows or from the flashlights that she had kept stored in her cabinets. These objects, she told the class, were known as "light sources." Light sources were objects that give off their own light, allowing us to see. Light sources could be objects found in nature that people didn't make. These include objects like the sun. Or, they could be artificial, or human-made, like a flashlight.

Mrs. Swenson encouraged her students to come up with a list of other light sources that they could think of. She'd then allow students to bring light sources into school that the class decided were safe enough to use inside their classroom so they could redo some of their investigations with light sources other than flashlights and the sun. Tamara and Josiah were up for the challenge!

<p>Circle the light source.</p>  <p>This light source is</p> <p>Natural Artificial</p> <p>Would this be safe to bring into a classroom as a light source?</p> <p>Yes No</p>	<p>Circle the light source.</p>  <p>This light source is</p> <p>Natural Artificial</p> <p>Would this be safe to bring into a classroom as a light source?</p> <p>Yes No</p>	<p>Circle the light source.</p>  <p>This light source is</p> <p>Natural Artificial</p> <p>Would this be safe to bring into a classroom as a light source?</p> <p>Yes No</p>	<p>Circle the light source.</p>  <p>This light source is</p> <p>Natural Artificial</p> <p>Would this be safe to bring into a classroom as a light source?</p> <p>Yes No</p>
<p>Circle the light source.</p>  <p>This light source is</p> <p>Natural Artificial</p> <p>Would this be safe to bring into a classroom as a light source?</p> <p>Yes No</p>	<p>Circle the light source.</p>  <p>This light source is</p> <p>Natural Artificial</p> <p>Would this be safe to bring into a classroom as a light source?</p> <p>Yes No</p>	<p>Circle the light source.</p>  <p>This light source is</p> <p>Natural Artificial</p> <p>Would this be safe to bring into a classroom as a light source?</p> <p>Yes No</p>	<h2 style="text-align: center;">Light Sources</h2> <h3 style="text-align: center;">Interactive Reader</h3>  <p>Name: _____</p>

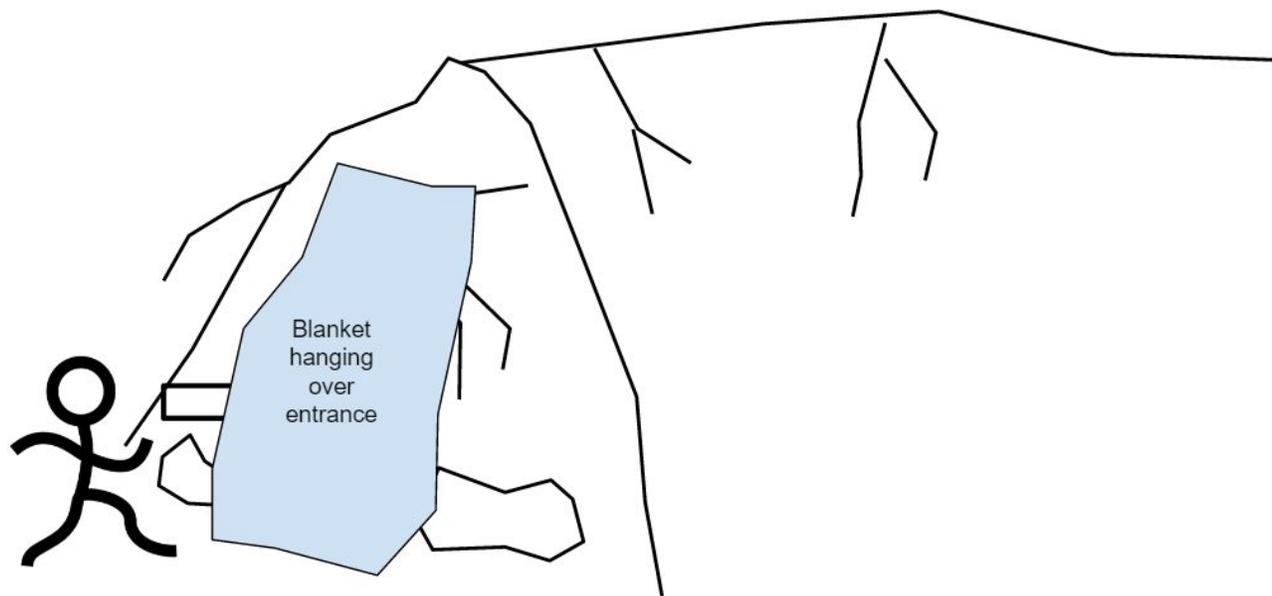
Lesson 7: Modeling Seeing Inside a Cave

1. You walk into a cave and look at the walls and see something. You can kind of see drawings on the cave walls. **Draw** and **write** why you **can kind of see** the drawings of animals on the cave walls.



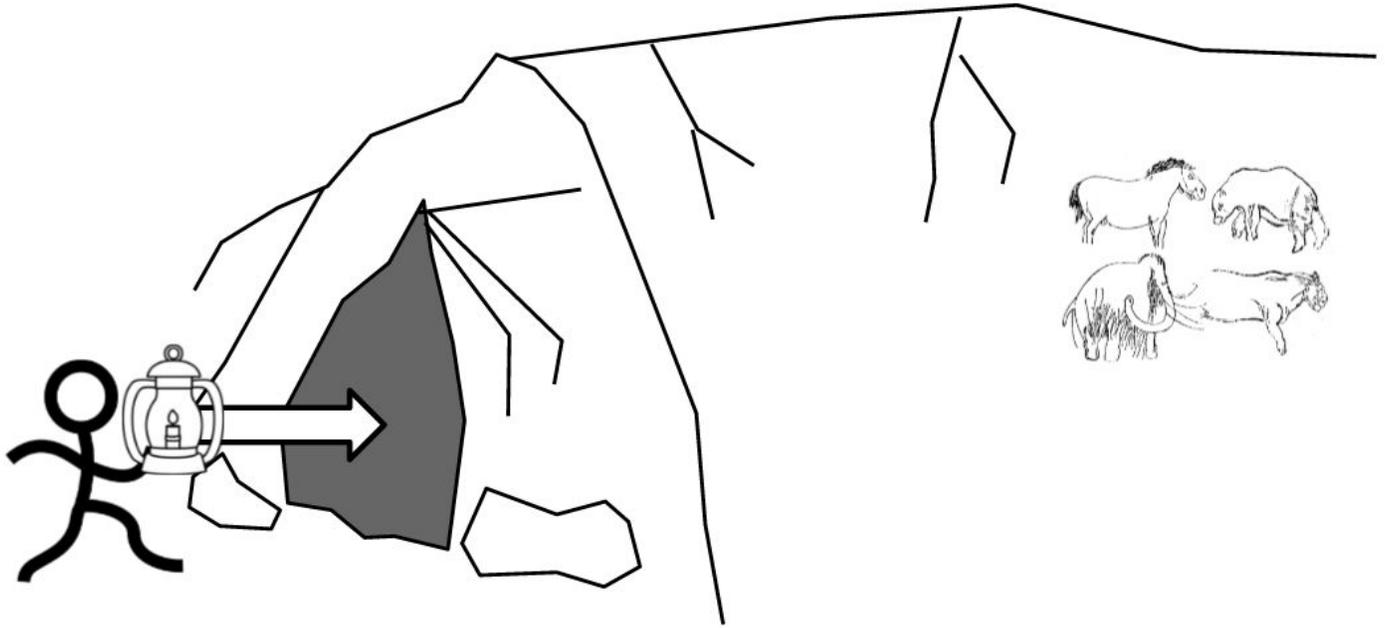
I can kind of see the drawings of animals on the cave walls because

2. As you're in the cave, your friend tries to scare you by covering the entrance with a dark blanket. Now you can't see the drawings anymore. **Draw** and **write** why you **cannot see** the drawings of animals on the cave walls.



I cannot see the drawings of animals of the cave walls because

3. Your friend removes the blanket and you come out of the cave. You re-enter the cave with a light source. Now you can really see the drawings of animals on the walls. **Draw** and **write** why you **can see** the drawings of animals on the cave walls.



I can see the drawings of animals on the cave walls because

Name: _____ Date: _____

Lesson 8: Where else do people use materials to block light?

Directions:

- Draw and label picture showing a time that someone would want to block sunlight.
- Draw and label the **tool** that you would use to block the sunlight.



How would you know if this tool actually helped block sunlight? What could you do to test the tool to see if it works as you intended?

Name: _____

Date: _____

Lesson 9a: Student Activity Sheets - Part 1: Will all Materials Create a Shadow?

Directions: Circle the box that matches what you observe or predict as your teacher tells you to.

Material 1	A. How much of the light did it let through?	B. Will it make a shadow?
	<input type="radio"/> None of it <input type="radio"/> Some of it <input type="radio"/> All of it	
	C. Did it make a shadow?	<input type="radio"/> Yes
	<input type="radio"/> Yes, a dark one <input type="radio"/> Yes, but not a dark one <input type="radio"/> No	<input type="radio"/> No

Material 2	A. How much of the light did it let through?	B. Will it make a shadow?
	<input type="radio"/> None of it <input type="radio"/> Some of it <input type="radio"/> All of it	
	C. Did it make a shadow?	<input type="radio"/> Yes
	<input type="radio"/> Yes, a dark one <input type="radio"/> Yes, but not a dark one <input type="radio"/> No	<input type="radio"/> No

Material 3	A. How much of the light did it let through?	B. Will it make a shadow?
	<input type="radio"/> None of it <input type="radio"/> Some of it <input type="radio"/> All of it	
	C. Did it make a shadow?	<input type="radio"/> Yes
	<input type="radio"/> Yes, a dark one <input type="radio"/> Yes, but not a dark one <input type="radio"/> No	<input type="radio"/> No

Material 4	A. How much of the light did it let through?	B. Will it make a shadow?
	<input type="radio"/> None of it <input type="radio"/> Some of it <input type="radio"/> All of it	
	C. Did it make a shadow?	<input type="radio"/> Yes
	<input type="radio"/> Yes, a dark one <input type="radio"/> Yes, but not a dark one <input type="radio"/> No	<input type="radio"/> No

Material 5	A. How much of the light did it let through?	B. Will it make a shadow?
	<input type="radio"/> None of it <input type="radio"/> Some of it <input type="radio"/> All of it	
	C. Did it make a shadow?	<input type="radio"/> Yes
	<input type="radio"/> Yes, a dark one <input type="radio"/> Yes, but not a dark one <input type="radio"/> No	<input type="radio"/> No

Material 6	A. How much of the light did it let through?	B. Will it make a shadow?
	<input type="radio"/> None of it <input type="radio"/> Some of it <input type="radio"/> All of it	
	C. Did it make a shadow?	<input type="radio"/> Yes
	<input type="radio"/> Yes, a dark one <input type="radio"/> Yes, but not a dark one <input type="radio"/> No	<input type="radio"/> No

Material 7	A. How much of the light did it let through?	B. Will it make a shadow?
	<input type="radio"/> None of it <input type="radio"/> Some of it <input type="radio"/> All of it	
	C. Did it make a shadow?	<input type="radio"/> Yes
	<input type="radio"/> Yes, a dark one <input type="radio"/> Yes, but not a dark one <input type="radio"/> No	<input type="radio"/> No

Material 8	A. How much of the light did it let through?	B. Will it make a shadow?
	<input type="radio"/> None of it <input type="radio"/> Some of it <input type="radio"/> All of it	
	C. Did it make a shadow?	<input type="radio"/> Yes
	<input type="radio"/> Yes, a dark one <input type="radio"/> Yes, but not a dark one <input type="radio"/> No	<input type="radio"/> No

Material 9	A. How much of the light did it let through?	B. Will it make a shadow?
	<input type="radio"/> None of it <input type="radio"/> Some of it <input type="radio"/> All of it	
	C. Did it make a shadow?	<input type="radio"/> Yes <input type="radio"/> No
	<input type="radio"/> Yes, a dark one <input type="radio"/> Yes, but not a dark one <input type="radio"/> No	

Material 10	A. How much of the light did it let through?	B. Will it make a shadow?
	<input type="radio"/> None of it <input type="radio"/> Some of it <input type="radio"/> All of it	
	C. Did it make a shadow?	<input type="radio"/> Yes <input type="radio"/> No
	<input type="radio"/> Yes, a dark one <input type="radio"/> Yes, but not a dark one <input type="radio"/> No	

Name: _____ Date: _____

Lesson 9 Student Activity Sheets - Part 2: Will all Materials Create a Shadow?

Directions: Use what you know about light and materials to predict if the materials your teacher shows you will make a shadow, when the lights in the room are turned off.

Material 10	How much of the light did it block?
	<input type="radio"/> All of it <input type="radio"/> Some of it <input type="radio"/> None of it
	Should it make a shadow?
	<input type="radio"/> Yes, a dark one <input type="radio"/> Yes, but not a dark one <input type="radio"/> No

Material 11	How much of the light did it block?
	<input type="radio"/> All of it <input type="radio"/> Some of it <input type="radio"/> None of it
	Should it make a shadow?
	<input type="radio"/> Yes, a dark one <input type="radio"/> Yes, but not a dark one <input type="radio"/> No

Material 12	How much of the light did it block?
	<input type="radio"/> All of it <input type="radio"/> Some of it <input type="radio"/> None of it
	Should it make a shadow?
	<input type="radio"/> Yes, a dark one <input type="radio"/> Yes, but not a dark one <input type="radio"/> No

I know this because

Directions: Use what you know about light and materials to predict if the materials your teacher shows you will block light make a shadow, when the lights in the room are turned off.

Material 13	Did it make a shadow?
	<input type="radio"/> Yes, a dark one <input type="radio"/> Yes, but not a dark one <input type="radio"/> No
	How much of the light should it block?
	<input type="radio"/> All of it <input type="radio"/> Some of it <input type="radio"/> None

Material 14	Did it make a shadow?
	<input type="radio"/> Yes, a dark one <input type="radio"/> Yes, but not a dark one <input type="radio"/> No
	How much of the light should it block?
	<input type="radio"/> All of it <input type="radio"/> Some of it <input type="radio"/> None

Material 15	Did it make a shadow?
	<input type="radio"/> Yes, a dark one <input type="radio"/> Yes, but not a dark one <input type="radio"/> No
	How much of the light should it block?
	<input type="radio"/> All of it <input type="radio"/> Some of it <input type="radio"/> None

I know this because

Name: _____

Date: _____

Lesson 10 - Student Activity Sheets: Light and Shadow Hunt

1. What do you see?  _____

What do you notice about what you saw .

What do you wonder? 

2. What do you see?  _____

What do you notice about what you saw .

What do you wonder? 

Name: _____

Date: _____

3. What do you see?  _____

What do you notice about what you saw ?

What do you wonder? 

4. What do you see?  _____

What do you notice about what you saw ?

What do you wonder? 

Name: _____

Date: _____

Activity Sheet 11.1: Brainstorming Light Communication Devices

Directions: Draw and label different ways that you could communicate a message with light that students are too loud and “just right” in the hallway. Label the materials you will use and explain how you will communicate the message.



Idea#1 (Too Loud)



Idea #1 (“Just Right”)



Students will know they're too loud when...

Students will know they're “just right” when...



Idea#2 (Too Loud)



Students will know they're too loud when...

-

-



Idea #2 ("Just Right")



Students will know they're "just right" when...

Name: _____ Date: _____

Activity Sheet 11.2: Plan for Light Communication Device

Directions: Draw and label the device that you and your partner will build and test to communicate a message with light that students are too loud and “just right” in the hallway. Label the materials you will use and explain how you will communicate the message. Get your teacher’s approval before you visit the Materials Station.

My partner is: _____

The device we agreed to build and test looks like this (label the materials you will use):

Plan# _____ (Too Loud)	Plan# _____ (“Just Right”)
Students will know they’re too loud when... _____ _____ _____	Students will know they’re “just right” when... _____ _____ _____

My teacher’s approval: _____

Name: _____ Date: _____

Activity Sheet 11.3: Light Communication Device Reflection Tool

Directions: With another group, share your light communication device.

1. The students I worked with from another group were: _____
2. We could tell when they were communicating that we were being too loud: YES NO
3. We could tell when when they were communicating that we were being “just right.” YES NO

[+] Strengths of their Device (+)	[-] Weaknesses of their Device (-)

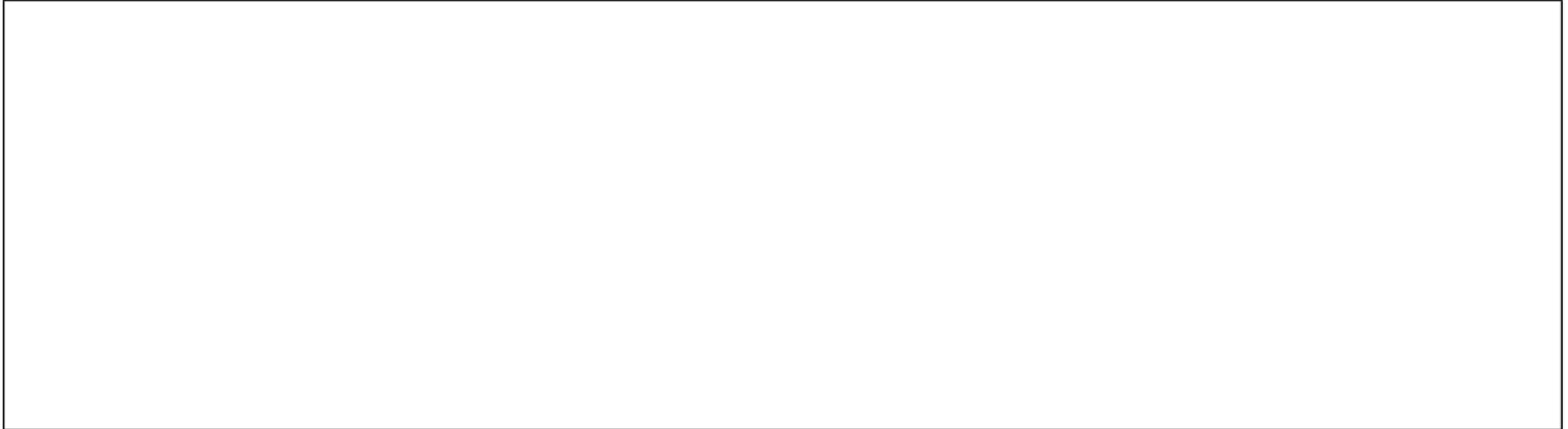
Name: _____

Date: _____

Activity Sheet 11.5: Using the Engineering Design Process for a New Message

1. New Message(s) I Want to Communicate with Light: _____

2. How I Will Communicate These Messages *(label your device).*



3. Did your device clearly communicate your message?

YES

NO

