

Magnifiers

Task Information

Grade: 4th Grade

Content:

Physical Science - Level 1C

- Properties of an object can be affected by its shape and by the material.

Format: Manipulative

Purpose:

- To determine student's ability to infer that objects need the properties of transparency and curved exterior to magnify.

Skills:

Primary: observing, inferring

Secondary: recording data

Time: 8 - 10 Minutes

Materials:

- | Teacher | Per student |
|---|---|
| <ul style="list-style-type: none">• scissors or craft knife• resealable plastic bags | <ul style="list-style-type: none">• clear glass ball (marble)• clear rod• clear plastic block• white rod• hand lens |

Preparation:

- Clear glass balls(marbles) can be purchased at a florist or craft supply store. You may find ones that have a flat surface, these work very well.
- The clear plastic blocks should be 1" X 1" pieces of 1/4 " Plexiglas. **Do not** use a cube of plastic (1" X 1" X 1") it could be misleading for the students.
- Plexiglas can be purchased at a hardware store. It is easily cut with a hack saw or a saber saw.
- Clear rods can be the clear craft glue sticks used in some hot glue guns.
- The white rods can also be craft glue sticks used in some hot glue guns. The glue sticks can be cut into 2 or 3 pieces for this experiment as the student only needs about a two inch rod. Glue sticks can be purchased at any craft or fabric store.
- individual sets of materials can be easily stored in resealable sandwich bags.

Safety:

- Be sure that the edges of the Plexiglas are sanded smooth

Magnifiers

Task: At this station, you will observe the ability of different objects to magnify small letters.

Materials:

- 1 hand lens
- 1 clear ball
- 1 clear block
- 1 clear rod
- 1 white rod

Directions:

1. Suppose you wanted to read the message in the box below better, but could not find a hand lens to help you see it. Which of the four objects in front of you would you choose to help you see the message?

In the data table:

- show or tell how the objects make the message look.
- tell whether or not the objects are good or poor magnifiers



Object	Show or tell how the letters look through the object	Good or Poor Magnifier?
Hand Lens		
Clear Block		
Clear Rod		
Clear Ball		
White Rod		

Please Continue on the Next Page

2. Which of the objects, besides the hand lens would be helpful if you had to magnify a message as small as the one on page 1?

3. Using the information you have collected, write a sentence describing two properties an object must have to be a good magnifier.

Magnifiers - Scoring Rubric

Maximum score - 6 points

1. **Standard:** The student will record his/her observations about the objects in the data table.

Criteria:

- 1 point for each object if the student draws an appropriate diagram or gives an appropriate description of his/her observations
- *** No points are given for the "good or poor" column. This question is intended to give the students a focus for the next question.

Sample of appropriate responses:

Clear block

- The letters stayed the same
- There was no change in the letters
- The letters didn't look any different
- Nothing happened

Clear Ball and Clear rod

- It made the letters bigger
- It turned the letters upside down
- It made the letters bigger, but it was still blurry
- The letters were bigger, but they weren't very clear
- Could see through it, but not very well

White rod

- Couldn't see through it

*** No points are being given for the hand lens. It is being used to set a standard for the student. ***

4 points total

2. **No points** are awarded for this question **No points given**

3. **Standard:** The student will write a sentence giving two properties of good magnifiers which includes transparency and a curved exterior surface

Criteria:

- 1 point for each appropriate property

Sample of appropriate responses:

- round or curved
- clear or transparent
- thick or thicker in the middle than at the edges
- you can see through it
- it's curved like glasses

2 points total

Highest possible score - 6 points

Student ID _____

Scoring Form - Magnifiers

Male / Female (circle one)

Circle the student's score for each question. Add the points for each question and write the total score at the bottom of the scoring form.

- | | | | | |
|----|---------------------------|-----------|---|---|
| 1. | Hand Lens | Not Rated | | |
| | Clear block | 0 | 1 | |
| | Clear rod | 0 | 1 | |
| | Clear ball | 0 | 1 | |
| | White rod | 0 | 1 | |
| 2. | Choose the best magnifier | Not rated | | |
| 3. | Properties of magnifiers | 0 | 1 | 2 |

Total Score _____
Total possible score - 6

Student ID _____

Scoring Form - Magnifiers

Male / Female (circle one)

Circle the student's score for each question. Add the points for each question and write the total score at the bottom of the scoring form.

- | | | | | |
|----|---------------------------|-----------|---|---|
| 1. | Hand Lens | Not Rated | | |
| | Clear block | 0 | 1 | |
| | Clear rod | 0 | 1 | |
| | Clear ball | 0 | 1 | |
| | White rod | 0 | 1 | |
| 2. | Choose the best magnifier | Not rated | | |
| 3. | Properties of magnifiers | 0 | 1 | 2 |

Total Score _____
Total possible score - 6

Male / Female (circle one)

Circle the student's score for each question. Add the points for each question and write the total score at the bottom of the scoring form.

- 1. Hand Lens Not Rated
- Clear block 0 (1)
- Clear rod 0 (1)
- Clear ball (0) 1
- White rod (0) 1
- 2. Choose the best magnifier Not rated
- 3. Properties of magnifiers (0) 1 2

Total Score 2
Total possible score - 6

Student ID DE-1 #2

Scoring Form - Magnifiers

Male / Female (circle one)

Circle the student's score for each question. Add the points for each question and write the total score at the bottom of the scoring form.

- 1. Hand Lens Not Rated
- Clear block (0) 1
- Clear rod 0 (1)
- Clear ball (0) 1
- White rod 0 (1)
- 2. Choose the best magnifier Not rated
- 3. Properties of magnifiers 0 1 (2)

Total Score 4
Total possible score - 6

Male / Female (circle one)

Circle the student's score for each question. Add the points for each question and write the total score at the bottom of the scoring form.

1.	Hand Lens	Not Rated	
	Clear block	0	<u>1</u>
	Clear rod	0	<u>1</u>
	Clear ball	0	<u>1</u>
	White rod	0	<u>1</u>
2.	Choose the best magnifier	Not rated	
3.	Properties of magnifiers	0	<u>1</u> 2
Total Score		<u>4</u>	
		Total possible score - 6	

Student ID _____

Scoring Form - Magnifiers

Male / Female (circle one)

Circle the student's score for each question. Add the points for each question and write the total score at the bottom of the scoring form.

1.	Hand Lens	Not Rated	
	Clear block	0	1
	Clear rod	0	1
	Clear ball	0	1
	White rod	0	1
2.	Choose the best magnifier	Not rated	
3.	Properties of magnifiers	0	1 2
Total Score		<u> </u>	
		Total possible score - 6	

Magnifiers

Task: At this station, you will observe the ability of different objects to magnify small letters.

Materials:

- 1 hand lens
- 1 clear block
- 1 white rod
- 1 clear ball
- 1 clear rod

3SM-26

M

#1

Directions:

Suppose you wanted to read the message in the box below better, but could not find a hand lens to help you see it. Which of the four objects in front of you would you choose to help you see the message?

In the data table:

- show or tell how the objects make the message look.
- tell whether or not the objects are good or poor magnifiers



1.

Object	Show or tell how the letters look through the object	Good or Poor Magnifier?
Hand Lens	Bigger	Good
Clear Block	Same size	Good
Clear Rod	a little bigger	Good
Clear Ball	same size	Poor
White Rod	Do see	Poor

Please Continue on the Next Page

2. Which of the objects, besides the hand lens would be helpful if you had to magnify a message as small as the one on page 1?

clear rod

3. Using the information you have collected, write a sentence telling two properties an object must have to be a good magnifier.

clear block same size

and clear rod a little bigger

#1

Task: At this station, you will observe the ability of different objects to magnify small letters.

Materials:

- 1 hand lens
- 1 clear block
- 1 white rod
- 1 clear ball
- 1 clear rod

Directions:

Suppose you wanted to read the message in the box at the bottom of the page better, but could not find a hand lens to help you see it. Which of the four objects in front of you would you choose to help you see the message?

In the data table:

- show or tell how the objects make the message look.
- tell whether or not the objects are good or poor magnifiers



1.

Object	Show or tell how the letters look through the object	Good or Poor Magnifier?
Hand Lens	little bigger	good
Clear Block	nothing	poor
Clear Rod	tiny bit bigger	poor
Clear Ball	nothing	poor
White Rod	can't see through it	poor

Please Continue on the Next Page

The clear rod would be helpful

3. Using the information you have collected, write a sentence telling two properties an object must have to be a good magnifier.

It must be clear. It can't
be flat, it has to be
kind of big

#2

Magnifiers

Task: At this station, you will observe the ability of different objects to magnify small letters.

Materials:

- 1 hand lens
- 1 clear block
- 1 white rod
- 1 clear ball
- 1 clear rod

3SM-23

F

#3

Directions:

Suppose you wanted to read the message in the box below better, but could not find a hand lens to help you see it. Which of the four objects in front of you would you choose to help you see the message?

In the data table:

- show or tell how the objects make the message look.
- tell whether or not the objects are good or poor magnifiers



1.

Object	Show or tell how the letters look through the object	Good or Poor Magnifier?
Hand Lens	4x Bigger	Good
Clear Block	The Same	Poor
Clear Rod	Upside Down	Poor
Clear Ball	makes it look a little bigger	Good
White Rod	Can't see through	Poor

Please Continue on the Next Page

magnify a message as small as the one on page 1.

Clear Ball

#3

3. Using the information you have collected, write a sentence telling two properties an object must have to be a good magnifier.

It has to have a clear glass
and it must make things
look bigger.