NAME: _____ PERIOD: _____ DATE: _____

LAB PARTNERS: _____ LAB #28

LIGHT VERSUS DARK OBJECTS

PHENOMENON:
Glacier National Park is warming at a faster rate than other parts of the world, https://youtu.be/ur4I8tYnxP4

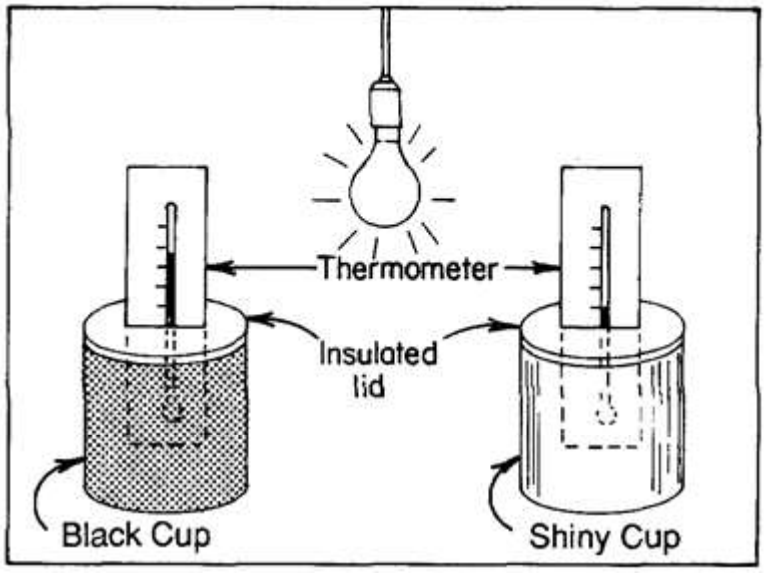
INTRODUCTION The earth's surface is constantly absorbing and giving off energy. The characteristics of the earth's surface determine what happens to the incoming solar radiation (insolation).

SEP's: Throughout this lab, the following SEP's (Science Engineering Practices) will be touched upon: MS-PS4-2.. Develop and use a model to describe phenomena, that waves are reflected, absorbed, or transmitted through various materials.

APPROXIMATE TIME 2 periods

MATERIALS:
Black and silver cups with insulated lids 2 thermometers Heat lamp with base Graph paper

PROCEDURE:
1. Arrange the black and silver cups as shown in the diagram. Be sure the two cups are an equal distance from the lamp.
2. Turn on the lamp and read the thermometers at one-minute intervals for 10 minutes. Record the readings in the data table.
3. After 10 minutes, turn off the lamp and MOVE IT AWAY FROM THE CANS.
4. Continue to take temperature readings every minute for another 10 minutes recording them on the data table.
5. Graph the data for both cups on the same set of axes. Label each line.
6. Answer questions 1-7.



Data Table

LAMP ON			LAMP OFF		
TIME (Min)	**BLACK CUP (Temp °C)**	**SILVER CUP (Temp °C)**	**TIME (Min)**	**BLACK CUP (Temp °C)**	**SILVER CUP (Temp ° C)**
0			**11**		
1			**12**		
2			**13**		
3			**14**		
4			**15**		
5			**16**		
6			**17**		
7			**18**		
8			**19**		
9			**20**		
10			**stop**		

LABORATORY QUESTIONS (Answer using complete sentences).

1. Why was it important to place each can the same distance from the lamp?

2. Why was it necessary to move the lamp away from the cans and not just simply turn it off?

3. By what process did the light travel from the bulbs to the cans?

4. Which can absorb the most energy? _____ How did you know?

5. Which can re-radiated the most energy? _____ How did you know?

6. How do the wavelengths absorbed by the cans differ from the wavelengths re-radiated from the cans?

7. Besides color, what other factor affects how much light is absorbed by an object?

8. How will light versus dark surfaces affect global warming?

CONCLUSION: Write a short paragraph describing what you learned in this lab based on your data and observations.