

# THE LIGHT TRAP

INVESTIGATING  
LIGHT & PIGMENTS



STUDENT WORKBOOK

ACCELERATE





### STEP 2

Cut the four sections apart, using the folds to guide you.



### STEP 3

Take one of the cut sections and fold it in thirds. Label the three folded sections: "blank," "marker," and "super-black."



### STEP 4

Leave the "blank" section white. In the "marker" section, above the label, draw and fill in a square shape with the marker. It doesn't have to be exact. In the "super-black" section, paint a square shape with the super-black paint. Set aside to dry.



### STEP 5

Take another of the four cut pieces of paper and fold it in half.



### STEP 6

Cut out a design along the folded edge (similar to how you would to make a paper snowflake). You can throw away or recycle the scraps.

## (ALMOST) A PORTABLE BLACK HOLE

Colors can have different meanings in art, and they are used in many ways in science.

In this activity, you will: 1) learn about an interesting black coating, 2) find out what gives paints their colors, and 3) explore the connections between science, art, and society.

### LEARNING GOALS:



I can use evidence to show that synthetic materials are made from natural resources and affect society.

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## SO DARK, IT DOESN'T SEEM REAL!

Take a look at these two photos. Does it look like there's a black hole on the page?

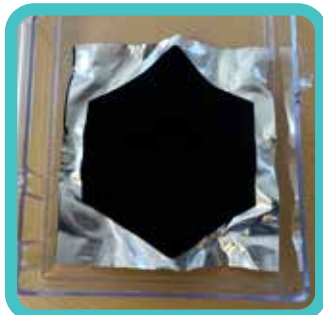


Photo used with permission from Surrey Nanosystems.



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Believe it or not, the photos haven't been edited! The objects in the photos (aluminum foil and a bowl-shaped object) have been painted with a super-black coating.

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### MAKING OBJECTS "DISAPPEAR"

This super-black coating can make the surface features of objects "disappear." In this photo, two identical sculptures of a face are shown. The one on the left has been painted with the super-black coating, and the other has not. Notice how the coating is so dark, you can't even tell that the coated sculpture has three-dimensional features!

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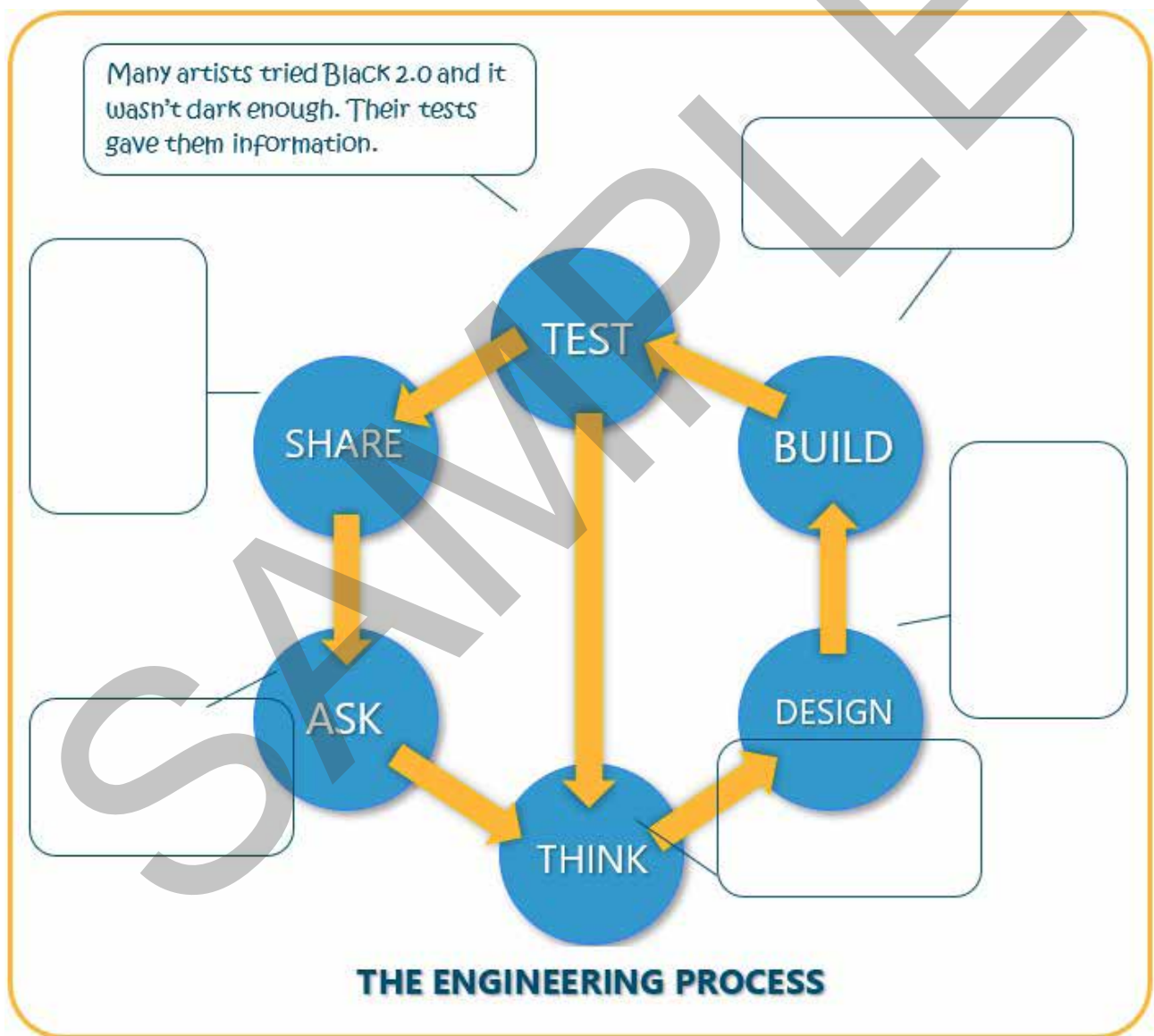
## THINK ABOUT IT!



1. Were the photos of the super-black coating surprising and unusual? Why or why not?

3. Although it's not what they set out to do, the people who developed super-black paints used the engineering process. Engineering is the designing and building of things to solve problems.

Take a look at the the engineering process below. Then, next to at least TWO of the engineering actions, write a part of the development of super-black paint and explain how it matches with that engineering action. "TEST" has been done for you as an example, so choose two more.





# SCIENCE UNLOCKED

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