

Worksheet 3 Understanding shadows

1. In the space below, draw a diagram of how you would set up a bulb, cardboard square, and paper screen in order to show a shadow.



2. Now set up the apparatus as you've drawn in the diagram. When you turn on the bulb, do you see a shadow of the cardboard piece on the paper? Why do you think the shadow is formed?

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3. Adjust the set up to make the shadow larger on the screen. Explain what modification you needed to make.

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4. Is there another way of the making the shadow larger? (Hint: What did you move in order to answer Question 3? Is this the only part of your set up you can change?)

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5. In this investigation there are 3 'variables' that can be changed to alter the size of the shadow. What are these 3 variables?

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6. Choose one variable you have not already examined. Predict how you should adjust that variable in order to make the shadow smaller. What alteration to your set up will you make?

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Now adjust the variable in your experimental set up. Does the experimental result match your prediction? Explain.

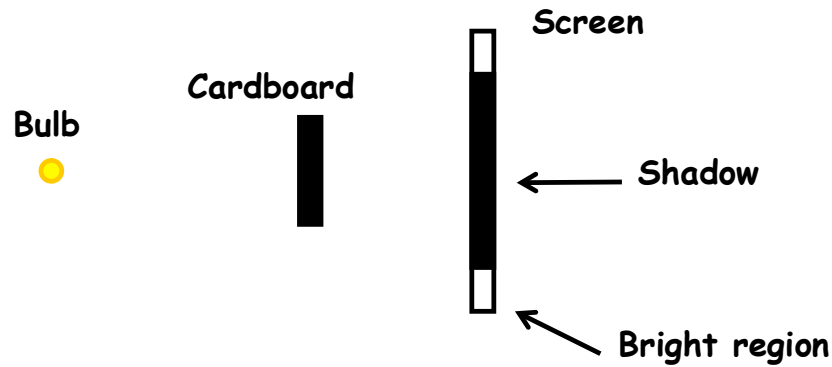
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7. The diagram below shows the relative positions of the bulb, cardboard piece, and paper screen.



(i) Draw in the path that light travels from the bulb to the cardboard piece. Does this light reach the screen? Explain.

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(ii) Draw in the path that light travels from the bulb to the screen. Does light reach all parts of the screen? Explain.

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8. Draw the shadow you'd expect to see in each of the following cases:

