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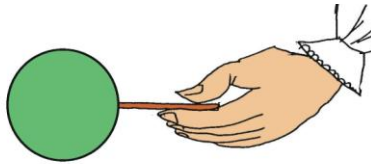
SHEET No. 1¹

Activity 1. What a shadow is

Discuss critical aspects in a definition of a shadow and a penumbra

Activity 2 Shadows produced by light from the Sun

2a. Make a prediction: *On a sunny day, when the Sun is right above, you are holding a ball on a stick above the ground as shown by the drawing. Sketch the beams of light (rays) reaching the ball and how its shadow is formed on the ground.*



2b. Explain your reasoning also in words, using any justification appropriate for you

2c. Discuss the most common difficulties students may have in solving this problem

2d. Imagine you are an ant walking on the ground along the black line on the sketch and looking in the direction of Sun. Discuss what do you see at different locations along the line (ignore the stick and the hand).

¹ The MUSE group (G. Planinsic, E. Sassi, L. Viennot) takes responsibility for the content of this paper (July 2011). The intellectual property remains with the authors.