



Mental Rotation

STEM Sims

Lesson 3: Flipping Figures

Engineers commonly encounter drawings of 3-dimensional (3-D) objects. Often the engineers must mentally rotate and scale these figures to make products. For instance, a designer must first create a 3D drawing of a nut and bolt before machines can be configured to make the actual products. Do you have what it takes to mentally rotate figures?

Doing the Science

1. Start the Mental Rotation Simulation by clicking on the “Sim” tab.
2. Click the “Drafting” button.
3. Note the figure on the left side of the screen and read the on-screen instructions below the figure.
4. Your goal is to copy the figure shown on the left side of the screen into the gridded display area; however, your drawing must change the perspective and scale of the figure. The View display area on the right side of the screen states how the figure should be mentally rotated and drawn (viewing the figure from the Top, Side or End).
5. Make sure to note and use the colored dots on the figure and in the gridded display area to correctly position your drawing.
6. Use the Line and Eraser tools to complete your drawing. When you have completed your drawing, click the “Done” button to have your drawing evaluated.
7. Follow the on-screen instructions to complete other drawings.

Do You Understand?

1. Which view, top, side or end, was the most difficult for you to copy and scale? Provide a possible reason for this difficulty.
2. Draw the Top, Side, and End views of the figure below.

