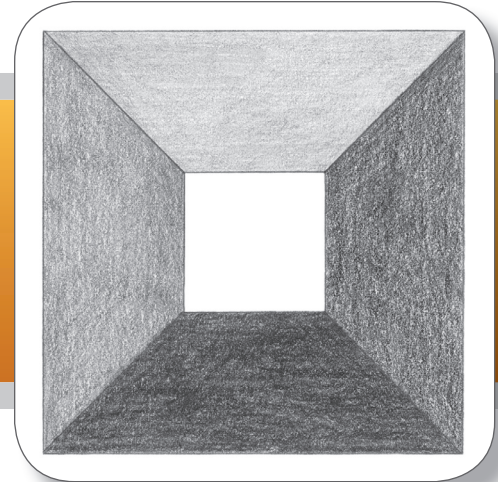# Shade an Optical Illusion

**Outline straight sided shapes and add shading with four grades of pencils**

Supplies: paper, HB, 2B, 4B, and 6B pencils; pencil sharpener, sandpaper block, vinyl and kneaded erasers; ruler

This activity has two sections:

- Outline an Optical Illusion
- Add Shading with Four Pencils

Optical illusions can challenge one's perception. Examine the white square in the center of Figure 1.

Figure 1
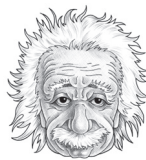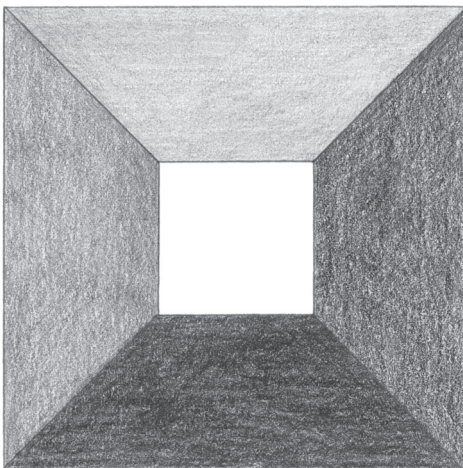
ArtSpeak

Optical illusion: (also called a *visual illusion*) An image that differs from objective reality, but when processed by the subconscious brain is interpreted as reality.

Subconscious: A mental process which may be beneath or beyond current awareness.

**Perception:** The manner in which you understand and process sensory information.

- Does it appear closer to you than the sides?
- Or are the sides closer to you than the white square?

The answer is both! Keep staring at the white square until you can see both illusions.

If you don't see both illusions right away, try again after you render your own optical illusion.

Outline an Optical Illusion

1. **Use a ruler and an HB grade of pencil to measure and draw a square (Figure 2).**
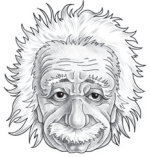
ArtSpeak

Parallel: Two or more straight lines that slant in the exact same direction and can extend to infinity without ever intersecting.

Parallelogram: A four-sided shape with two sets of parallel sides that are equal in length and in which the opposite angles are identical.

Square: A parallelogram with four straight sides of equal length and four right angles.

Render: The process of making or creating something. For example, an artist can render a sketch by drawing lines on a sheet of paper.

Diagonal line: A line that is neither vertical nor horizontal but rather slants at an angle.

Horizontal line: A geometric object that is at a right angle to a vertical line and parallel to a level surface.

Vertical line: A geometric object that is straight up and down and at a right angle to a level surface.

Trapezoid: A four-sided shape in which only two sides are parallel.
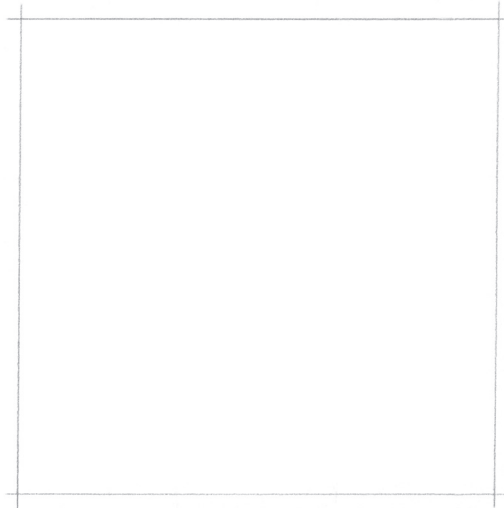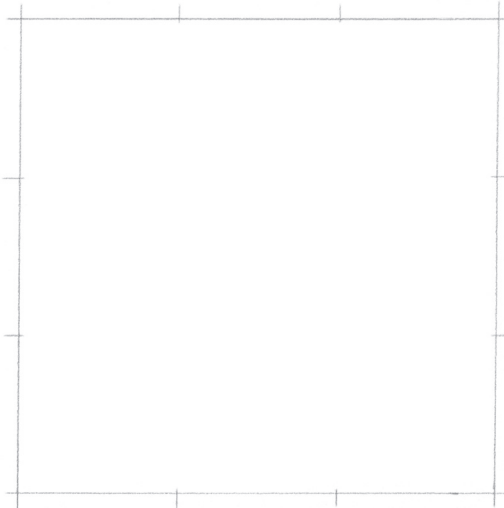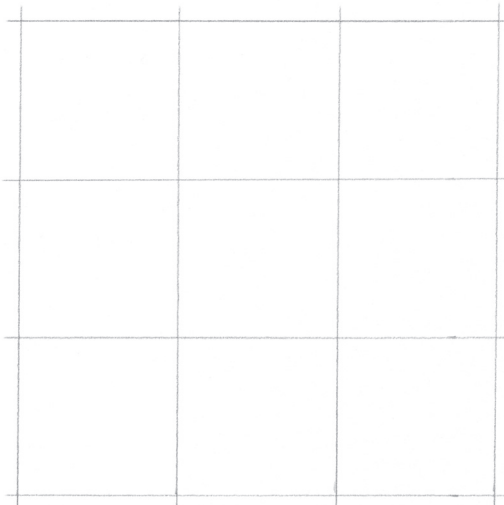
Figure 2

Figure 3

Figure 4

A good size for your square is 3 by 3 in (7.62 by 7.62 cm).

2. **Use a ruler to measure and divide each 3 in (7.62 cm) side into three 1 in (2.54 cm) lines, and mark each with a dot or short line (Figure 3).**

3. **Use a ruler to connect the opposite dots thereby creating nine 1 in (2.54 cm) squares inside your larger square (Figure 4).**

4. **Draw diagonal lines in each of the four corner squares.**

   Refer to Figure 5 on the next page.

5. **Erase eight of the straight lines until you are left with only the five shapes shown in Figure 6.**
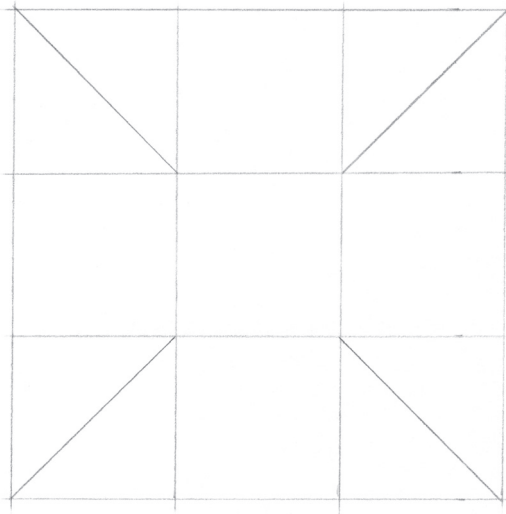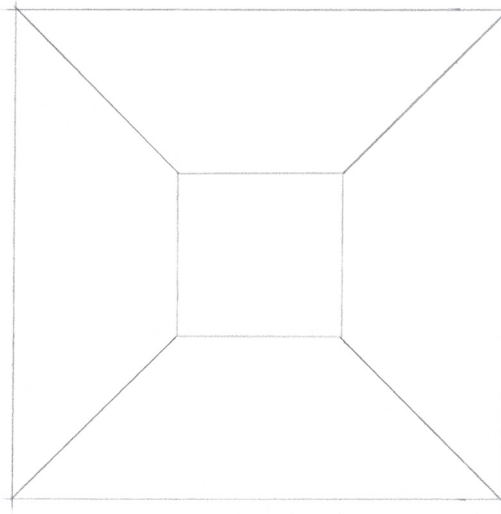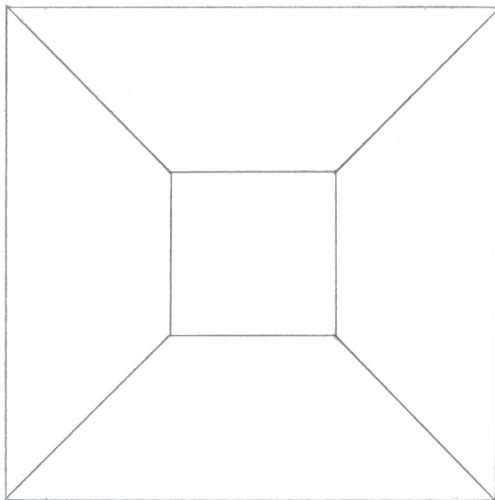
Figure 5

Figure 6

You now have a square surrounded by four trapezoids.

Figure 7

Figure 8

Tip!

Prepare your HB, 2B, 4B, and 6B pencils as shown in Figure 8.

Refer to *3.1.A1 Shade Simple Value Scales* to refresh your memory of how to prepare your pencils and create shading with pencils sharpened in this way.
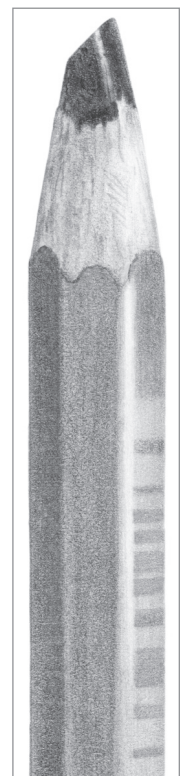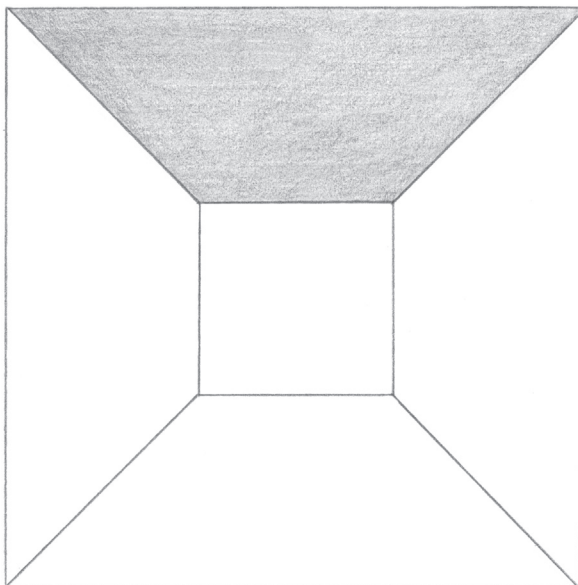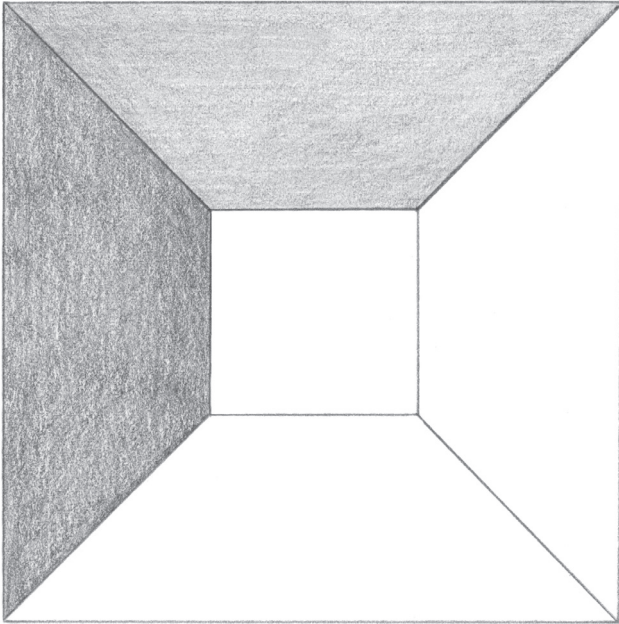
6. **Erase any unnecessary lines and marks and redraw any lines that may have been inadvertently erased (Figure 7).**

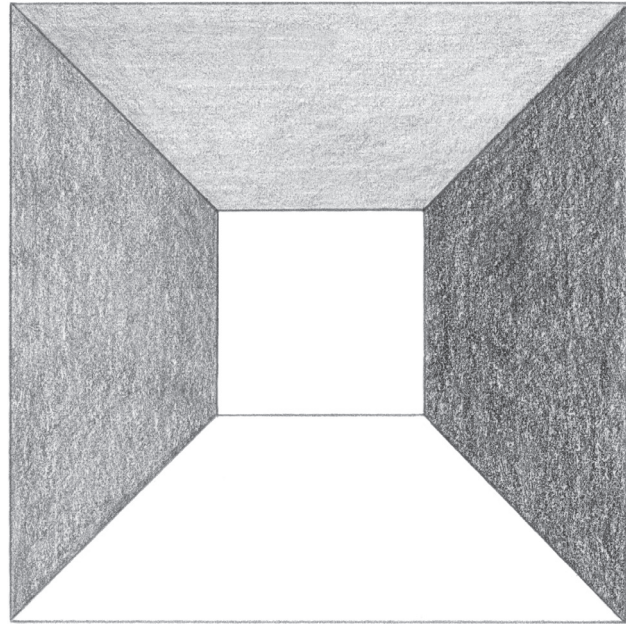Figure 9

Add Shading with Four Pencils

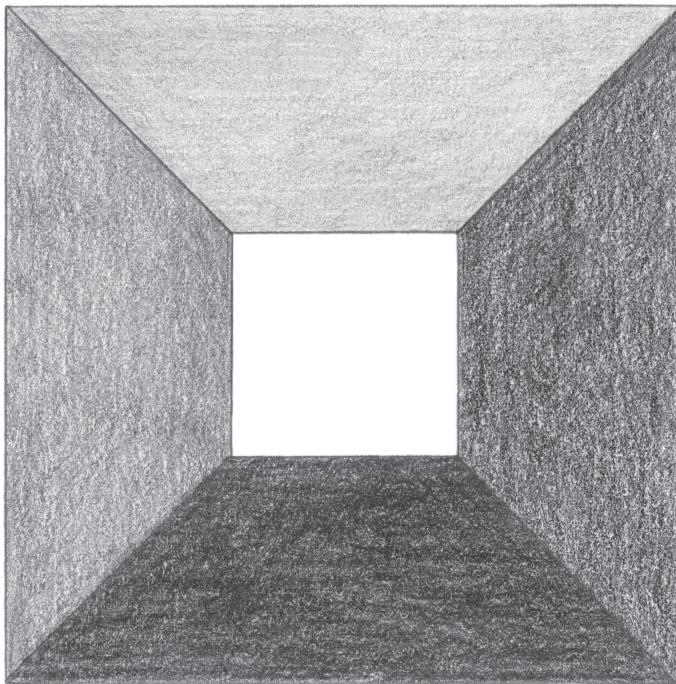7. **Use an HB pencil to add shading to the upper trapezoid (Figure 9).**

Figure 10

8. Use a 2B pencil to add shading to the trapezoid on the left (Figure 10).

Figure 11

9. Use a 4B pencil to add shading to the trapezoid on the right (Figure 11).

Figure 12

10. Use a 6B pencil to add shading to the lower trapezoid (Figure 12).

Challenge!

Examine your drawing until you can see:

- the square move closer to you than the trapezoids.
- the trapezoids move closer to you than the square.