



# Rosetta Phone

**STEM Sims**

## Lesson 2: Turning Numbers into Pictures

The binary system is a base-two system with only two digits: 0 and 1. You have the binary code, now what is the message hidden in the ones and zeros? In this lesson, you'll translate the digital code created by another person into letters that make up a secret word. Enter the numbers carefully and decipher the mystery of the hidden word.

### Doing the Science

1. Start the Rosetta Phone Simulation.
2. Note the numeric code in Table 1 below.
3. Select the “Decode” button at the bottom-left of the screen. Use the “0” and “1” buttons to enter the code into the simulation. After you have entered the entire code for a given letter, write the letter formed by the image in Table 1. Select the “Done” button.
4. Repeat the process for the four other letter codes.
5. Write the five-letter word in the space below Table 1. Check with your classmate to see if you successfully decoded the word.

**Table 1. Code for Letters**

Numeric Code	Letter
Letter 1 = 1110010000011000010011000	
Letter 2 = 1111100100001000010000100	
Letter 3 = 1111110000111001000011111	
Letter 4 = 0010001010100011111110001	
Letter 5 = 1000111011101011000110001	
<b>Five-letter Decoded Word =</b>	

### Do You Understand?

1. Did any letter or letters cause you more difficulty in their recognition than other letters? Discuss why this difficulty occurred.

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2. What would happen to the quality of how a letter appeared in this simulation if the boxed grid had 1,000 boxes instead of 25 boxes? Provide a reason to support your answer.

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3. Use a magnifying glass to examine an image on a computer or television screen. Describe what you see with the magnifying glass.

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4. How does what you saw with a magnifying glass when looking at an image on a screen related to the investigation you conducted in the simulation?

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5. Would you describe the screen on a computer or television as a binary device? Support your response with a reason.

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6. With respect to pixels, how did the 25 squares screen in the simulation compare to the screen you viewed using the magnifying glass?

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