STEM Sims™

Face Recognition

Face Recognition

About the cover:

In 1976, NASA's Viking I spacecraft orbiting the planet Mars captured this image of a rock formation that resembled a human face. Many people thought, and some still do to this day, that the image was evidence of life on Mars. In reality, the light shadows on the rock formation, combined with the human brain's ability to recognize faces, "tricked" many into seeing a person's face. Or was it really Bill Gates, former C.E.O. of Microsoft, looking for a new place to sell computer software?
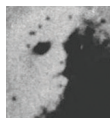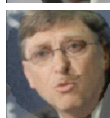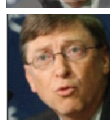
Recognizing a face is much like recognizing a simple shape. Look at the sample figures below. Try to find patterns you can use to identify other similar figures.

Name	Sample Figures				
Yap					
Yep					
Yip					
Yop					
Yup					

Now use the patterns you discovered to name each of the figures below. You can check your answers on page 4.

	Figures	Names
Sample 1		
Sample 2		
Sample 3		
Sample 4		
Sample 5		

The Man of Many Faces

Instead of recognizing a simple shape, what if you had to
recognize the face of a person who was trying to hide his identity?
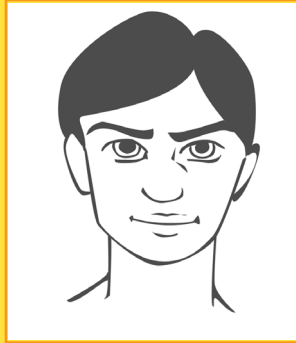
Model Face

Which of the following is the model face in disguise?

Face A   **Face B**   **Face C**

Hard to tell? Try using a millimeter ruler to make the following measurements
in the exact order for the model face and the other faces.

1. Center of the pupil of one eye to the center of the pupil of the other eye.
2. Inside corner of one eye to the inside corner of the other eye.
3. Outside corner of one eye to the outside corner of the other eye.
4. Width of mouth.
5. Draw a line from the center of one eye's pupil to the center of the pupil of the other eye.
   Measure the distance from this line to the top of upper lip.
6. Width of nose at widest part.

Use a calculator or spreadsheet to run a correlation between the model face's set of measurements
and the measurements of each other face. The correlation value nearest to a value of "1" is the best
match with the model face.

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Fun with Faces

Can you tell which celebrity photographs were morphed to make the images below?

Morph 1

Morph 2

Check your answers at the bottom of this page.

For more fun with faces, please visit STEMsims.com. Once there, your first step is to choose what you would like to investigate. You'll have access to a number of sites, including the My Heritage website. Some of your choices will include the following:

How does face recognition work?

Which parent do you more closely resemble?

Which celebrity do you look like?

Face Recognition Correlation: 0.987

Answers: Page 2 Answers: Sample 1 = yup; Sample 2 = yop; Sample 3 = yip; Sample 4 = yip; Sample 5 = yap **Page 3 Answers:** Model face = Face C **Page 4 Answers:** Morph 1 = Brad Pitt and Angelina Jolie; Morph 2 = Star Jones and Tyra Banks