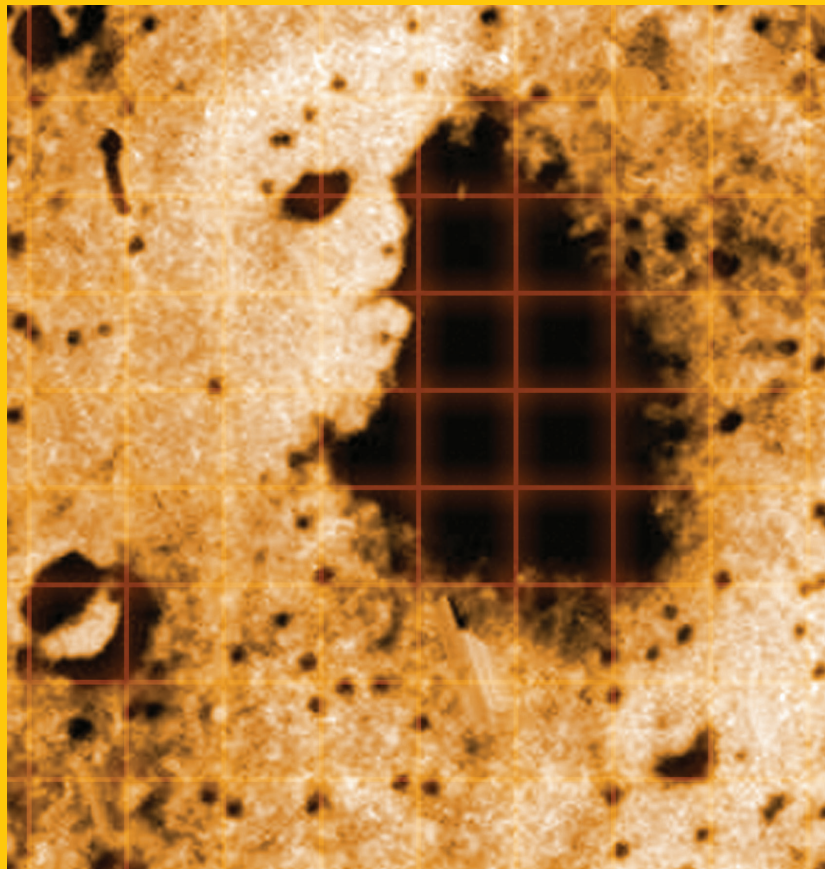


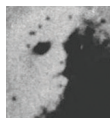
Face Recognition



Face Recognition

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.

About the cover:



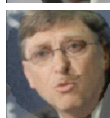
In 1976,
NASA's Viking
I spacecraft



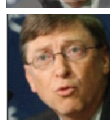
orbiting the
planet Mars



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?

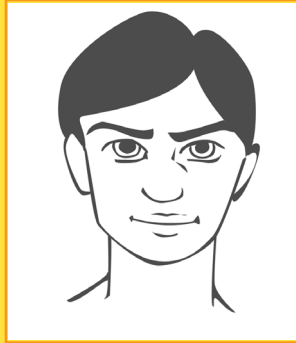
Name	Sample Figures				
Yap					
Yep					
Yip					
Yop					
Yup					

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.

Face Recognition

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](https://www.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:

Which parent do you more closely resemble?



How does face recognition work?

Which celebrity do you look like?

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

The Science Fair Kits project was funded in part under the Department of Homeland Security Science and Technology Directorate grant contract #N10PC20003. Its contents are solely the responsibilities of the authors and do not necessarily represent the official views of the Department of Homeland Security.

© 2024 STEM Sims. All rights reserved. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. The information presented in this document does not form part of any quotation or contract, is believed to be accurate and reliable, and may be changed without notice. No liability will be accepted by the publisher for any consequence of its use. Publication thereof does not convey nor imply any license under patent or other industrial or intellectual property rights.