Beauty in Proportion Project

"The good, of course, is always beautiful, and the beautiful never lacks proportion." Plato

Some people believe that a certain ratio (called phi) in works of art, architecture, nature, and even people's bodies makes them more appealing to humans. You will be investigating the faces of two famous people to determine their facial proportions, evaluating how closely their features match phi, and surveying your peers to see if they select the "more beautiful" person. All of your results will be presented in a poster with your conclusions.

Phi (Φ) is estimated to be 1.61 but, like pi (Π), it is irrational. Its value continues on forever without ever repeating.

Instructions:

1. Select appropriate pictures of two famous faces. The faces must be pointed directly at the camera so that different facial features can be measured accurately. The best pictures will also allow you to see the hairline of the person (no bangs covering their forehead, for example.)

    Good Choice: Bad Choice:

2. Measure the features listed in the data sheet table and record them there.
3. Calculate the ratio between certain features listed in the data sheet and then determine how closely they match phi using percent error.

4. Perform a survey asking 50 people which famous face they think is more beautiful. DO NOT reveal the results of your data study when asking their opinion. Record the responses in your data sheet.

5. Write a conclusion in four paragraphs that compares the results of your ratio data to the results of your survey: introduction, review of measurements, agreement among results, and conclusion. Within these paragraphs, explore your results. For example: Did the ratio data and the survey data conclude the same thing? Do you agree with the ratio data or the survey data? What influences your opinion of someone's beauty?

6. Create a poster including the two famous faces, the data and results of the facial measurements, the data and results of the survey, and your conclusions.

David Beckham is Phine!!   Lyle Lovett, maybe not so much...*

head length 46 : head width 27   head length 75 : head width 36
ratio A : B = 1.70 : 1   % error = 5.6%   ratio A : B = 2.08 : 1   % error = 29.2%
eyes to mouth 13 : nose length 8   eyes to mouth 21 : nose length 15
ratio E : F = 1.63   ratio E : F = 1.4

* (but his numbers didn't keep him from becoming a world-class musician and marrying a world-famous actress!)

Facial Feature Measurements

Ref.	Facial Feature	Description	Measurement
A	Head Length	Distance from the top of hair to the bottom of chin	
B	Head Width	Distance from inside edge of ear to inside edge of ear	
C	Top of Head to Eyes	Distance from top of hair to pupil line	
D	Eyes to Chin	Distance from pupil line to bottom of chin	
E	Eyes to Mouth	Distance from pupil line to line between lips	
F	Nose Length	Distance from pupil line to tip of nose	
G	Nose to Chin	Distance from tip of nose to bottom of chin	
H	Mouth to Chin	Distance from line between lips to bottom of chin	
J	Nose to Mouth	Distance from tip of nose to line between lips	
K	Hairline to Browline	Distance from hairline to bottom of eyebrow arch	
L	Browline to Base of Nose	Distance from bottom of eyebrow arch to bottom of nose	
M	Base of Nose to Chin	Distance from bottom of nose to bottom of chin	
N	Width of Eye	Distance from outside corner to inside corner of one eye	
P	Distance Between Eyes	Distance from center of one pupil to the center of the other pupil	

Feature Ratios

Ref.	Ratio Ref.	Facial Feature Ratios (Raw Data)	Calculated Ratio	% Error from Phi $\dfrac{\lvert actual - measured \rvert}{actual}$
1	A : B			
2	C : A *note: this ratio should be ½, not phi			
3	D : E			
4	E : F			
5	G : H			
6	F : J			
7	K : L *note: this ratio should be 1, not phi			
8	K : M *note: this ratio should be 1, not phi			
9	L : M *note: this ratio should be 1, not phi			
10	B : E *note: this ratio should be 5, not phi			
11	P : B *note: this ratio should be 0.46, not phi			

Beauty Survey

Ask 20 people to choose which of your famous faces is more beautiful. They should write their initials under their choice.

._____.	._____.
Famous Person #1's Name	Famous Person #2's Name