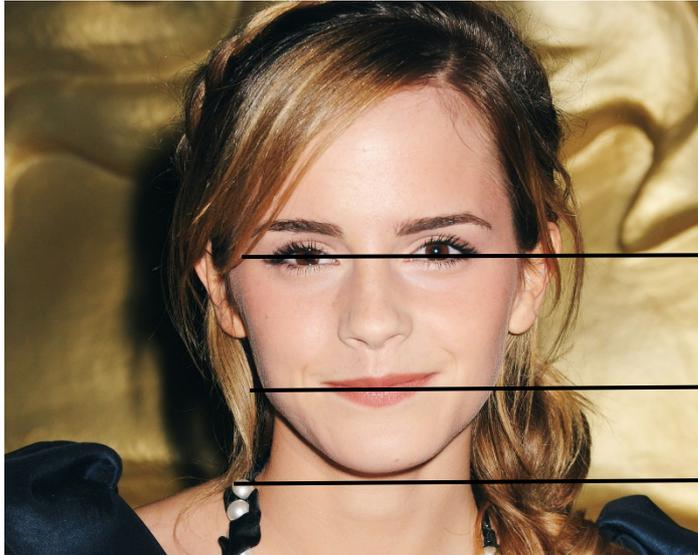# The Golden Face.

Emma's Face.

From early times the ideal proportion of the human body has fascinated artists and mathematicians. Greek sculptors of 2500 years ago measured their work closely and they used 1.618.
They thought 1.618 showed a perfect face!!

B

A

$$\frac{B}{A} = 1.618$$

The actor Emma Watson has a perfect face according to the Greeks!!
Do you have a perfect face?

Task One.   Your face!

Take a photograph of your face.
Use an i-phone, a smart phone, a camera.
Print the image on to paper.

Now draw the lines across your face as we have done Emma.
The tip of the chin is difficult to draw the line too.
This can be adjusted up or down!

Measure the distances between your lines.
Divide the larger distance by the smaller distance.
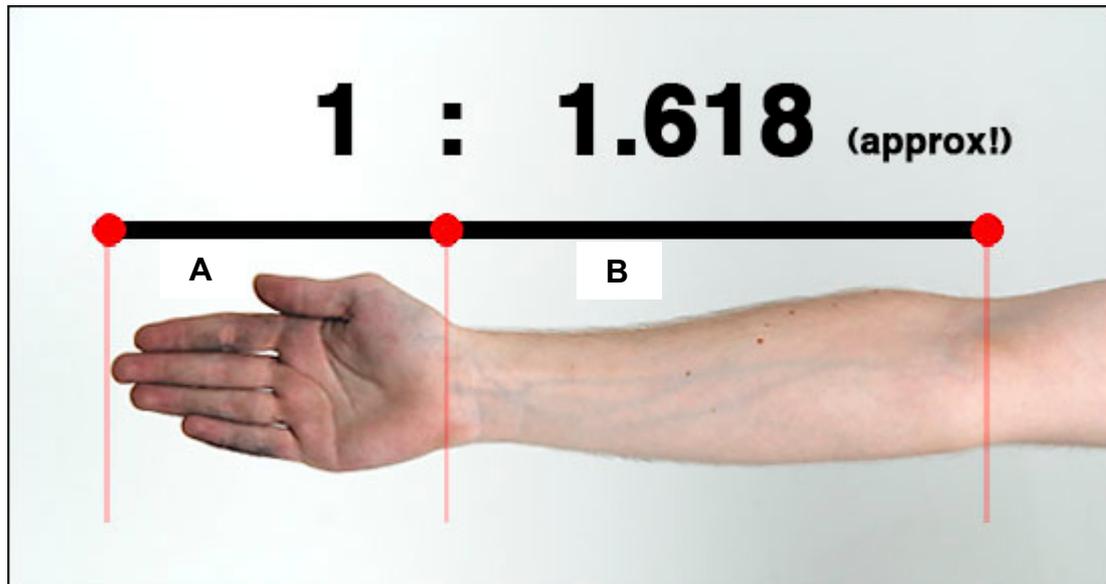**Do you get 1.6 ?**
If you do you are perfect!!
If you do not, don't worry, keep calm, most of us aren't perfect!!

Task Two.   Your arm.
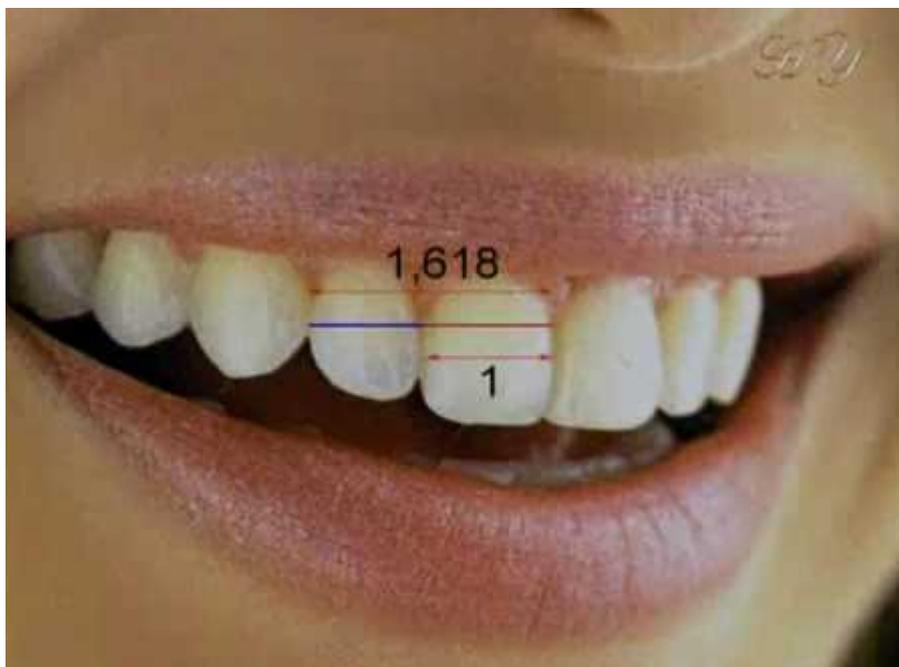

Measure yours!

Calculate B / A.

Task Three.   Your Teeth.

**It is difficult to measure your own teeth. Perhaps from a photograph.
But it is interesting to know the width of your teeth shows 1.618 .**

Task Four.

Your hand!

Fibonacci sequence in our hand allows for it to form a perfect curl when we clench our fist.
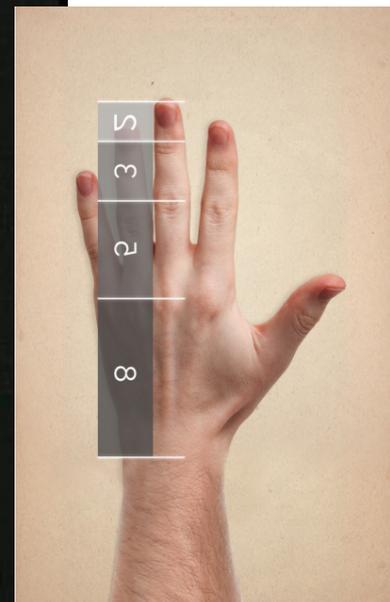
Complete the divisions taken from the measurements

3/2 =

5/3 =

8/5 =

What do you notice?

Try clenching your hand and see what happens.

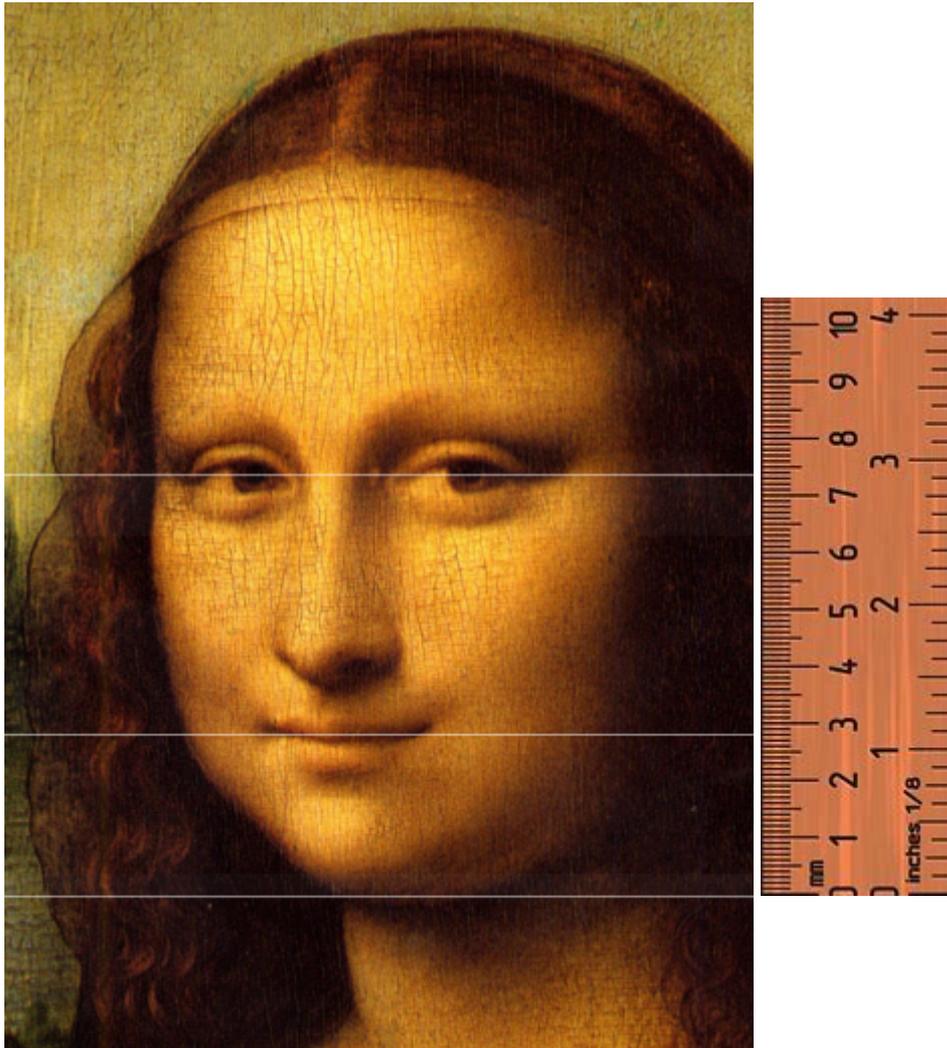# Task Five.

Your calculation.

Calculate the value of

$$\frac{1 + \sqrt{5}}{2}$$

Task Six.   Mona Lisa's face.

For the famous painting Mona Lisa use the ruler to measure

B =

A =

Calculate B / A.

Is it the Golden ratio?

Teacher's notes and answers.

- ✓ **Students may get enthused about today's work.**

- ✓ **It does give an interesting use for the number 1.618**

- ✓ **Several documentaries feature the number and how it relates to the human body.**

- ✓ **The documentary "The Human Face" with John Cleese is one of the best and most informative. It is available on YouTube.**

- ✓ **https://www.youtube.com/watch?v=mVVroi8g0Y0**

- ✓ **The short movie "Donald in Mathmagic Land" is easily the best maths movie that has been made. It was made in 1959 but apart from the music has aged well. Students really enjoy the movie and gain a lot from it – most particularly the snooker scene!**

- ✓ **"Donald in Mathmagic Land" is available as a full movie of about 20 minutes on YouTube. It's great for your class.
  https://www.youtube.com/watch?v=U_ZHsk0-eF0**

- ✓ **"Donald in Mathmagic Land" shows off the Golden Ratio really well. Just remember that 1.618 = 1/0.618
  In the movie it is mentioned as 0.618**

Answers.

Task One.   Your face! In all of these 1.6 is a really good answer!
Few people will get this! Measuring problems!!

Task Two.   Your arm.
Task Three. Your Teeth.
Task Four.   Your hand! 3/2 = 1.5   5/3 = 1.667   8/5 = 1.6

Task Five.   Your calculation.

$$\frac{1 + \sqrt{5}}{2}$$

= (1   + 2.23606798…) / 2
= 3.23606798… / 2
= 1.61803399…   (1.61803 39887 49894 84820 45868 34365 …)
This calculation does give the exact value of phi.

Task Six.   Mona Lisa's face.
A= 2.8   B=7.35 – 2.8   A=2.8   B=4.55   B/A = 1.625
Pretty good !