Golden Numbers – The Golden Ratio

Read the article from the link below and answer the questions

https://www.mathscareers.org.uk/article/golden-numbers/
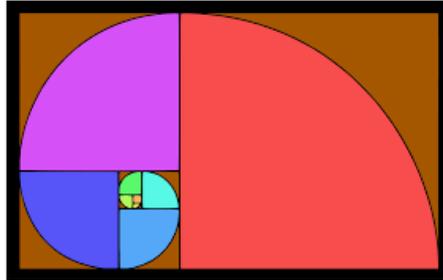
The Golden ratio is often associated with 'beautiful things'. The golden ratio has a symbol φ (Phi) and the value of 1.62. This might remind you of π (pi) which we use when calculating with circles. Both of these numbers are irrational and seem to appear in many parts of the natural world.

Starting from the diagram below
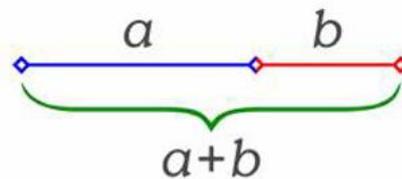
The golden ratio states that the ratio $a+b:a$ is equal to the ratio $a:b$

This can be written as

$$\frac{a+b}{a} = \frac{a}{b} = \varphi$$

Now show, by rearranging and substituting, how this ratio can become

$$\varphi + 1 = \varphi^2$$

Use what you know about solving quadratic equations to evaluate φ to 4 decimal places.

Research the golden ratio to find where in nature you may see this ratio appearing.

The Human Face is also purported to follow the golden ratio as shown in this article
https://www.goldennumber.net/face/

Hackney

Investigate with your own face. Do you have divine proportions on your face?

The golden ratio also features in architecture and house design. The article below shows how companies use the golden ratio when designing windows that are going to be pleasing to the eye https://westburyjoinery.com/blog/golden-ratio-architecture/

If we follow the golden ratio then what should be the missing dimensions for each window?

?

220cm

?

?

1.8m

?

0.9m

Kimberley Elam – The geometry of design

Kimberly points out at least two studies in the last 150 years or so which concluded that, given a choice, people have a significant preference for man-made objects which have proportions closest to the 5:8 ratio, the golden section. There is research which says people prefer TVs with aspect ratios approaching the golden mean as well. A quick look at the SONY 40" flat panel shows that it has as aspect ratio of 16:9 which is not the golden mean but falls into the segment of preferred proportions. While the screen itself is not exact a 1:1.618 rectangle, the bevel around the edge do form a golden rectangle.

If this TV screen has a 40" diagonal and an aspect ratio of 16:9 what are the dimensions of the sides of the TV?