

SURDS

INVESTIGATION

GOLDEN RATIO – PHI Φ

Q1. The ancient Greeks discovered amazing numbers such as π (pi) which is the circumference of a circle divided by its diameter or approximately 3.14... Here's another interesting number called Φ (phi). Work out the following to find Φ to 3 decimal places.

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



Q2. Another mathematician called Fibonacci discovered a pattern of numbers where each consecutive pair of numbers adds to make the next number 1, 1, 2, 3, 5, 8, 13, 21, 34 and so on.

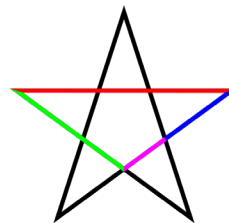
Work these out to 3 decimal places. What do you notice?

$1 + \frac{1}{2} =$	$1 + \frac{2}{3} =$	$1 + \frac{3}{5} =$
$1 + \frac{5}{8} =$	$1 + \frac{8}{13} =$	$1 + \frac{13}{21} =$

Q3. In the pentagram, use a ruler to measure the coloured lines. Find:

- (a) red line \div green line
- (b) green line \div blue line
- (c) blue line \div pink line

What do you notice?



Q4. Google "Golden ratio" and "phi" to find out more about this amazing number and its real life applications.