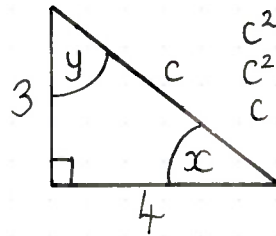


# The Complete Mathematics Conference



$$c^2 = 3^2 + 4^2$$

$$c^2 = 25$$

$$c = 5$$

$$\sin x = \frac{3}{5} \quad \sin y = \frac{4}{5}$$

$$\cos x = \frac{4}{5} \quad \cos y = \frac{3}{5}$$

$$\tan x = \frac{3}{4} \quad \tan y = \frac{4}{3}$$

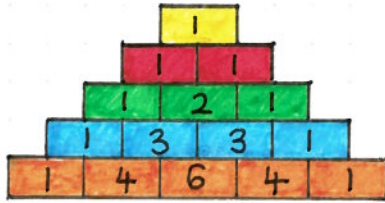
Cosine rule:

$$c^2 = 3^2 + 4^2 - 2(3)(4)\cos 90^\circ$$

## What has x got to do with y?

JONATHAN HALL @StudyMaths

### PASCAL'S TRIANGLE



$$(x+y)^0 = 1$$

$$(x+y)^1 = 1x + 1y$$

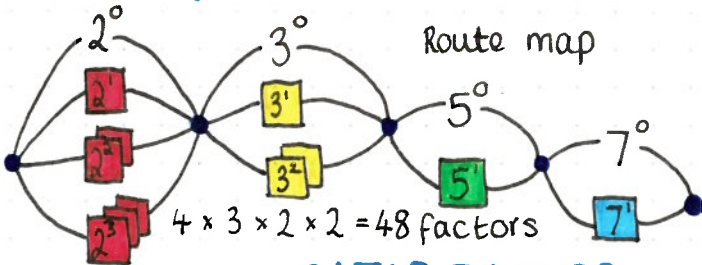
$$(x+y)^2 = 1x^2 + 2xy + 1y^2$$

$$(x+y)^3 = 1x^3 + 3x^2y + 3xy^2 + 1y^3$$

2520

$$2^3 \times 3^2 \times 5 \times 7$$

How many factors?



### RATIO TABLES

$$3:2 = 15:y$$

$$3x+1:x+1 = 5:x-1$$

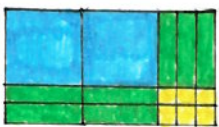
$$\frac{3}{15} = \frac{2}{y} \quad \frac{3}{2} = \frac{15}{y}$$

$$\frac{3}{15} = \frac{2}{y}$$

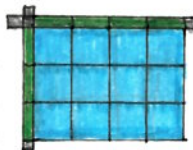
or,  $3 \times y = 15 \times 2$

or,  $(3x+1)(x-1) = 5(x+1)$

Factorise  $2x^2 + 7x + 6 = (2x+3)(x+2)$



x	2x	+3
x	2x <sup>2</sup>	3x
+2	4x	6



$$2x^2 \times 6 = 3x \times 4x$$

### SCALED TIMES TABLES

1	2	3	4	5
2	4	6	8	10
3	6	9	12	15
4	8	12	16	20
5	10	15	20	25

$$(1+2+3+4+5)^2 = 1^2 + 2^2 + 3^2 + 4^2 + 5^2$$

### PYTHAGORAS & SURDS

How many different lengths can you draw on a 5x5 grid

...What about other grid sizes?

Sketchnote by Charlotte Hawthorne @mrshawthorne7

SketchCPD.com