**28th October** **Higher Plus 5-a-day**

Corbettmaths

The numbers a, b and c are irrational numbers and not equal.

abc is rational.

Write down possible values of a, b and c

$\sqrt{2} \times \sqrt{3} \times \sqrt{6} = \sqrt{36} = 6$

$a = \sqrt{2}$ $b = \sqrt{3}$ $c = \sqrt{6}$

A sequence is defined by the term-to-term rule

$u_{n+1} = 5u_n + 2$

$u_2 = 22$

Find $u_1$

$5u_n + 2 = 22$

$5u_n = 20$

$u_n = 4$

Make x the subject of

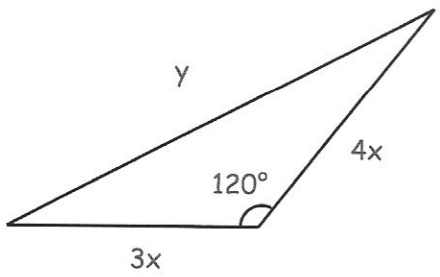
$$y = \frac{c}{(x+b)^3}$$

$y(x+b)^3 = c$

$(x+b)^3 = \frac{c}{y}$

$x + b = \sqrt[3]{\frac{c}{y}}$

$x = -b + \sqrt[3]{\frac{c}{y}}$




Work out the ratio $y : x$

$y^2 = 9x^2 + 16x^2 - 24x^2 \times \cos 120$

$y^2 = 37x^2$

$y = \sqrt{37}x$ $\sqrt{37} : 1$

A scientist wants to estimate the number of lions living in a region.
On Thursday, he locates and tags some lions. On Friday he locates 10 less lions than he had on Thursday. 4 were tagged.
The scientist works out an estimate for the total number of lions living in the region.

$\frac{x}{5x} = \frac{4}{x-10}$

$20x = 5x^2 - 10x$

$0 = x^2 - 30x$

He notices that the number of lions that he had caught on Thursday, was a fifth of the total number of lions.
How many lions live in the region?

$x = 0$ or $x = 30$

$5 \times 30 = 150$