1st March **Higher Plus 5-a-day**

Corbettmaths

Simplify

$(2x-3)^3-(x-4)^3$

$(2x-3)(2x-3)(2x-3)$

$(4x^2-12x+9)(2x-3)$

$8x^3-36x^2+54x-27$

$(x-4)(x-4)(x-4)$ $= x^3-12x^2+48x-64$

$7x^3-24x^2+6x+37$

Express $\sqrt{8}+\sqrt{18}$ in the form $a\sqrt{2}$

$2\sqrt{2}+3\sqrt{2}$

$5\sqrt{2}$

A scientist wants to estimate the number of toads living near a lake.

On Friday she catches 90 toads and tags them. She then releases the toads.

On Saturday the scientist catches 50 toads and 7 of them are tagged.

Estimate the number of toads that live near the lake.

$\frac{90}{N}=\frac{7}{50}$

$N=642$ (or 643)

There are 12 counters in a bag.
8 are green
3 are white
1 is red

Conor takes two counters at random from the bag. Work out the probability that Conor takes two counters of different colours.

$1-P(\text{same})$

$P(GG)=\frac{8}{12}\times\frac{7}{11}=\frac{14}{33}$

$P(WW)=\frac{3}{12}\times\frac{2}{11}=\frac{1}{22}$

$\frac{31}{66}$

$1-\frac{31}{66}=\frac{35}{66}$

$x^2+16y^2=8xy$

$x>0$ and $y>0$

Find the ratio x : y

$x^2-8xy+16y^2=0$

$(x-4y)(x-4y)=0$

$(x-4y)^2=0$

$x=4y$ (as both positive)

$x:y=4:1$