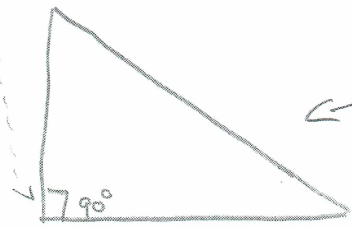
Using Pythagoras theorem

This theorem (technique) only works with right angled triangles eg



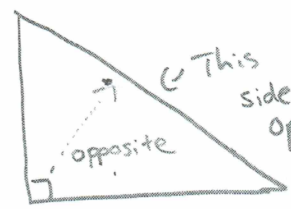
A 90° angle is a right angle

This theorem states

$$a^2 + b^2 = c^2$$

well, whats a, b + c ?

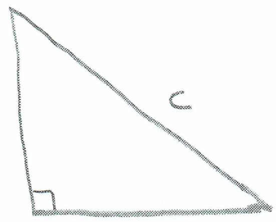
This can be a or b



This is c, the side that is opposite the 90° angle

This can be a or b

Lets look at an example



So we don't know the length of c
but we know the length of a + b

lets put it into the formula

$a^2 + b^2 = c^2$ $\quad$ 4^2 means 4×4

$4^2 + 6^2 = c^2$

$16 + 36 = c^2$

$52 = c^2$ ← now we need to get rid of the c^2 and make it into a c.

$\sqrt{52} = \sqrt{c^2}$ ↖ so we apply a square root ($\sqrt{\ }$) to both sides.

$\sqrt{52} = \cancel{\sqrt{c^2}}$ ← The $\sqrt{\ }$ + ^{2} cancel each other out

$7.2 = c$ ↖ use your calculator to find $\sqrt{52}$

The theorem can also be written $c = \sqrt{a^2 + b^2}$, can you see why?
Use whichever you prefer!

How to use the distance formula

Step one : Write out the formula $\sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$

Step two : Write out the co-ordinates and label them $\dashrightarrow$ $x_1\ y_1$ $x_2\ y_2$

eg $(-3, 6)$ $(5, 2)$

Step three : Draw out a template $\sqrt{(\ -\ )^2+(\ -\ )^2}$

and fill it in, but be careful of minus numbers

$\sqrt{((5)-(-3))^2+((2)-(6))^2}$

$(- \times - = +)$

STEP four : Do the sums inside the brackets $\sqrt{(8)^2+(-4)^2}$

STEP Five : Square the numbers inside the brackets $\sqrt{64+16}$

STEP Six : Add the numbers and find the square root of that number $\rightarrow$ $\sqrt{80}$

use a calculator $\rightarrow$ $8 \cdot 9$ or $4\sqrt{5}$