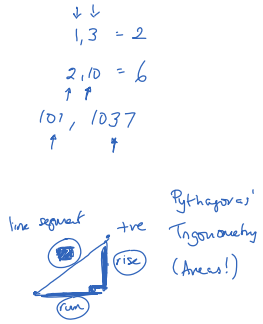
Length and midpoint of a line segment

Sunday, 28 January 2018 1:14 pm

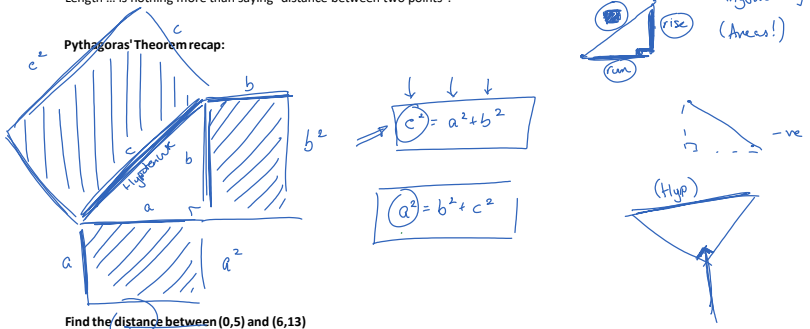
Lesson 3	1H Length and midpoint of a line segment Let's start: *Developing the rules* Key ideas Examples 22, 23, 24	Exercise 1H Page 46	2, 3(½)	—
			4-5(½)	4-5(½)
			6, 7-8(½)	7-8(½), 9
			10, 11	11, 12
			—	13

Key questions:
How do I find the length of a line segment?
How to I find the midpoint between two points.

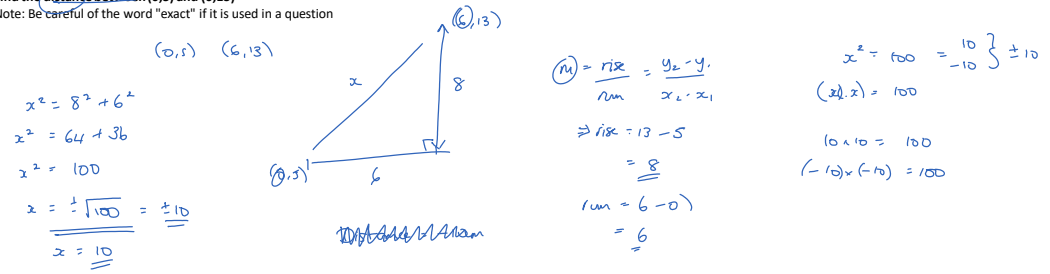
Back to basics!
When you have two points, you can draw a straight line between them.
This will, probably, lead to a "slanted" line ...
Any slanted line can be turned into a Right Angled Triangle.
Any Right Angled Triangle can have Pythagoras' Theorem applied to it.
Pythagoras' Theorem is simply a way to find the length of sides.
Length ... is nothing more than saying "distance between two points".



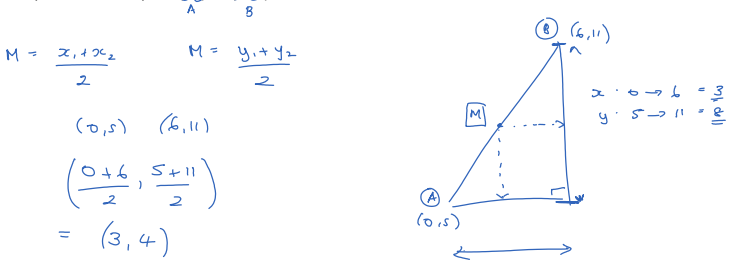
Pythagoras' Theorem recap:



Find the distance between (0,5) and (6,13)
Note: Be careful of the word "exact" if it is used in a question



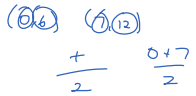
Finding the midpoint between two points:
Find the midpoint between the points (0,5) and (6, 11)
A B



Confusing things? Using a formula

$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$ ⇒ Distance

$M = (\frac{x_1 + x_2}{2}, \frac{y_2 + y_1}{2})$ → Midpoint



Doing things backwards!

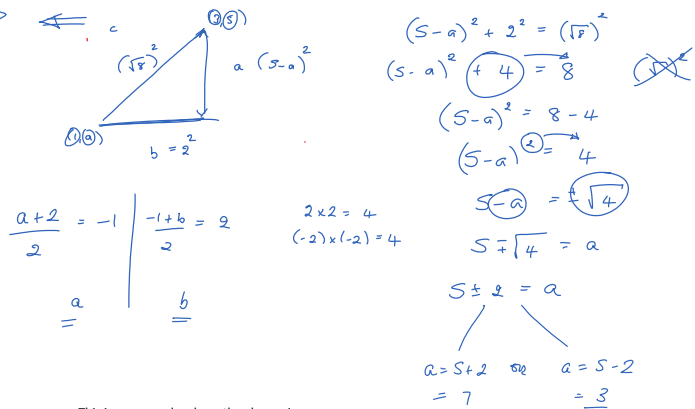
BACKWARDS

Find the values of *a* when:

a The distance between $(1, a)$ and $(3, 5)$ is $\sqrt{8}$.

b The midpoint of $(a, -1)$ and $(2, b)$ is $(-1, 2)$.

÷2



Remember, in Mathematics, what you can do forwards you can do backwards. Hence, sometimes, they will give you the answer and part of the question and you have to find the missing part of the question. These types of questions test your **understanding**. Rarely will exams have lots of skills questions where you just change numbers around.

This is an example where they have given you an answer, and a missing y-value for one of the co-ordinates and checked your understanding by asking you to do it backwards.