

PYTHAGOREAN THEOREM

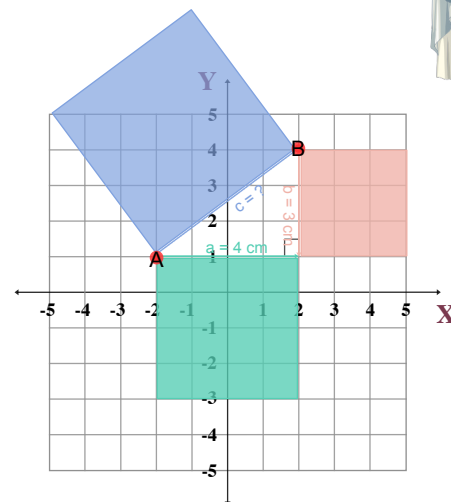
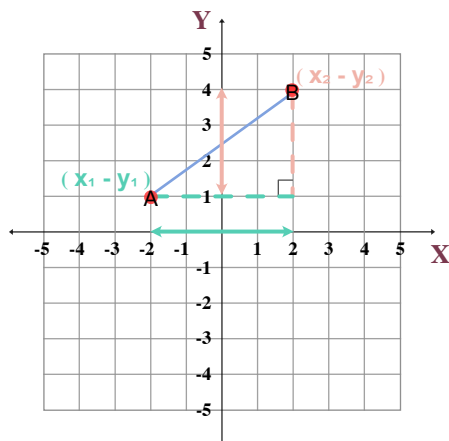
Distance Between Points

What is the formula for distance between two points with coordinates A(x₁ , y₁) and B(x₂ , y₂)?

Using Pythagoras' Theorem, the formula is the square of the distance between the points

A (x₁ - y₁) and B (x₂ - y₂).

$$\text{distance} = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$



Example:

Find the distance between points A and B in the figure above.

d = distance

A (x₁ , y₁) = -2, 1

B (x₂ , y₂) = 2, 4

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

$$d = \sqrt{(2 - -2)^2 + (4 - 1)^2}$$

$$d = \sqrt{(4)^2 + (3)^2}$$

$$d = \sqrt{16 + 9}$$

$$d = \sqrt{25}$$

$$d = 5$$

The distance between points A and B is 5.

Now, let's try the finding the distance between points A and B using the formula $a^2 + b^2 = c^2$.

Remember: The area of the square corresponding to the hypotenuse is equal to the sum of area of the squares corresponding to the other two sides. The same formula goes with equilateral triangles and semicircles.

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

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

$$16 + 9 = c^2$$

$$25 = c^2$$

$$\sqrt{25} = c$$

$$5 = c$$

Hence, the distance between points A and B is 5 cm.