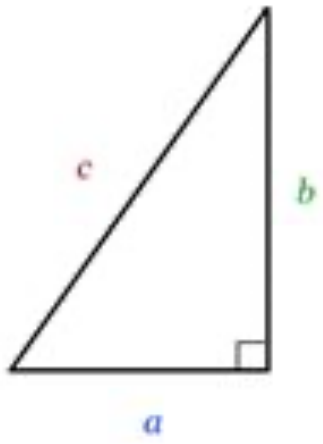
S.M.ART School **MBA3 Homework for MS12 due 11-31-2022**

Pythagorean Theorem and Right Triangle Definitions

The Pythagorean Theorem, named after the Greek mathematician Pythagoras, is a formula used to calculate the length of the sides of a right triangle. The theorem states: In a right triangle, the square of the hypotenuse is equal to the sum of the squares of the legs.

A right triangle is a triangle containing a right angle (90 degrees). The hypotenuse is a side opposite the right angle. The legs are the two shorter sides, which meet at the right angle. If the legs are labeled *a* and *b* and the hypotenuse is labeled *c*, then, the Pythagorean Theorem formula is as follows:

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



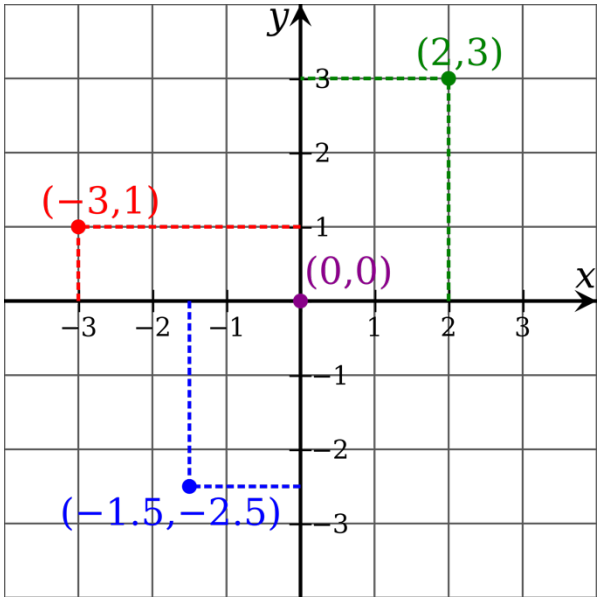
T1 Let's assume that on the picture above: a = 8, and b = 15.
Using Pythagorean Theorem compute the length of hypotenuse c.

T2 Let's assume that on the picture above: a = 6, and b = 8.
Using Pythagorean Theorem compute the length of hypotenuse c.

T3 Let's assume that on the picture above: c = 13, and b = 12.
Using Pythagorean Theorem compute the length of the leg a.

Definition of Cartesian system of coordinates

We talked about Cartesian System of Coordinates (also known as Rectangular System of Coordinates).



And we illustrated the definitions by the graph above.
System of coordinates is a system of two real number lines which are perpendicular to each other.

They have their "zero points" coincide. The intersection point of two "zeros" is called origin of the system of coordinates. First real

number line is called X-axis, and the other one, which is a result of counterclockwise rotation by 90° of the first real number line, is called Y-axis.

We also discussed the process of computing distance between point on a coordinate plane, using Pythagorean Theorem.

F1 Find the distance between two points A(3, 7) and B(12, 7)

F2 Find the distance between two points A(0, 0) and B(12, 5)

F3 Find the distance between two points A(0, 0) and B(24, 10)

F4 Find the distance between two points A(-1, -1) and B(4, 4)?

Solve a system by "Substitution" technique

S1 $x + y = 7$ AND $x - y = 1$

S2 $-3x + 2y = 11$ AND $3x - y = -10$

S3 $2x + y = -7$ AND $-3x + y = 3$

P1 What % of 0.064 is 3.2?

P2 20 % of what number of 4% of 0.64?

P3 What % of 6.4 is 32% of 0.8?

Solve Equations

E1 $(x + 3) / (2*x + 1) = 3$

E2 $6*x / 5 - (3 - 2*x) / 4 = 1/10$

Combine ratios

C1 $8*x / (3*y) - 10*y / (9*x) =$

C2 $4*x / (11*y) - 3*y / (22*x) =$

C3 $11 * y / (4*x) - 22 *x / (3*y) =$