Today's lesson and objectives:

Rectangular coordinates

- Plot points on the Cartesian Plane
- Determine the distance between two points
- Determine the midpoint of a segment
- Model and solve real-life problems

Rectangular coordinates

Vocabulary

Rectangular coordinate system (Cartesian plane)

x-axis

y-axis

origin (0,0)

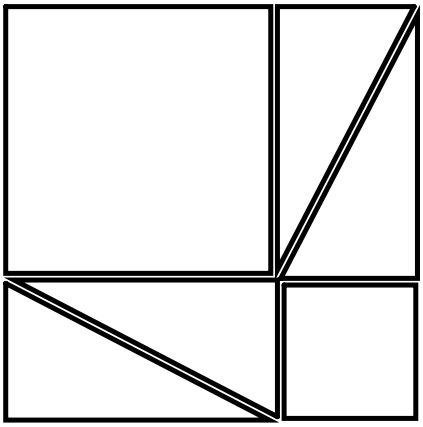
Quadrants

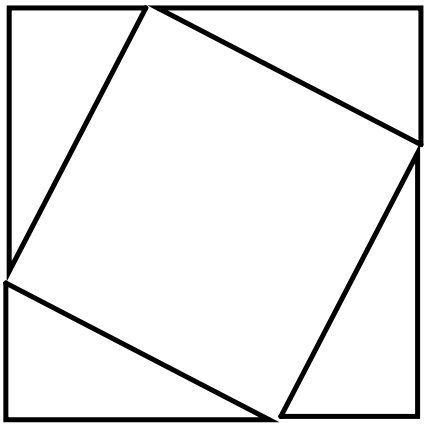
Ordered pair (x,y)

Pythagorean Theorem

Only true for right triangles!

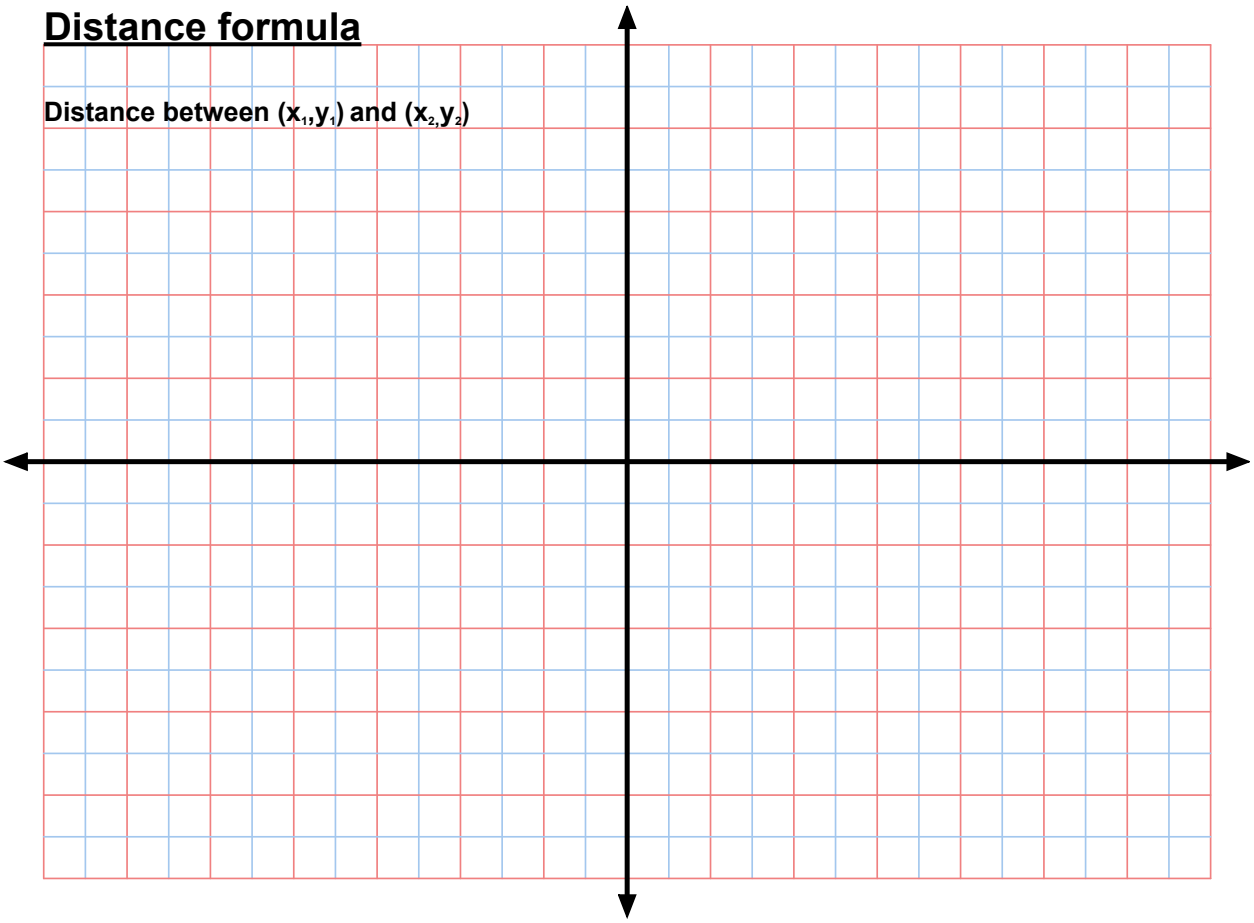
$a^2+b^2=c^2$





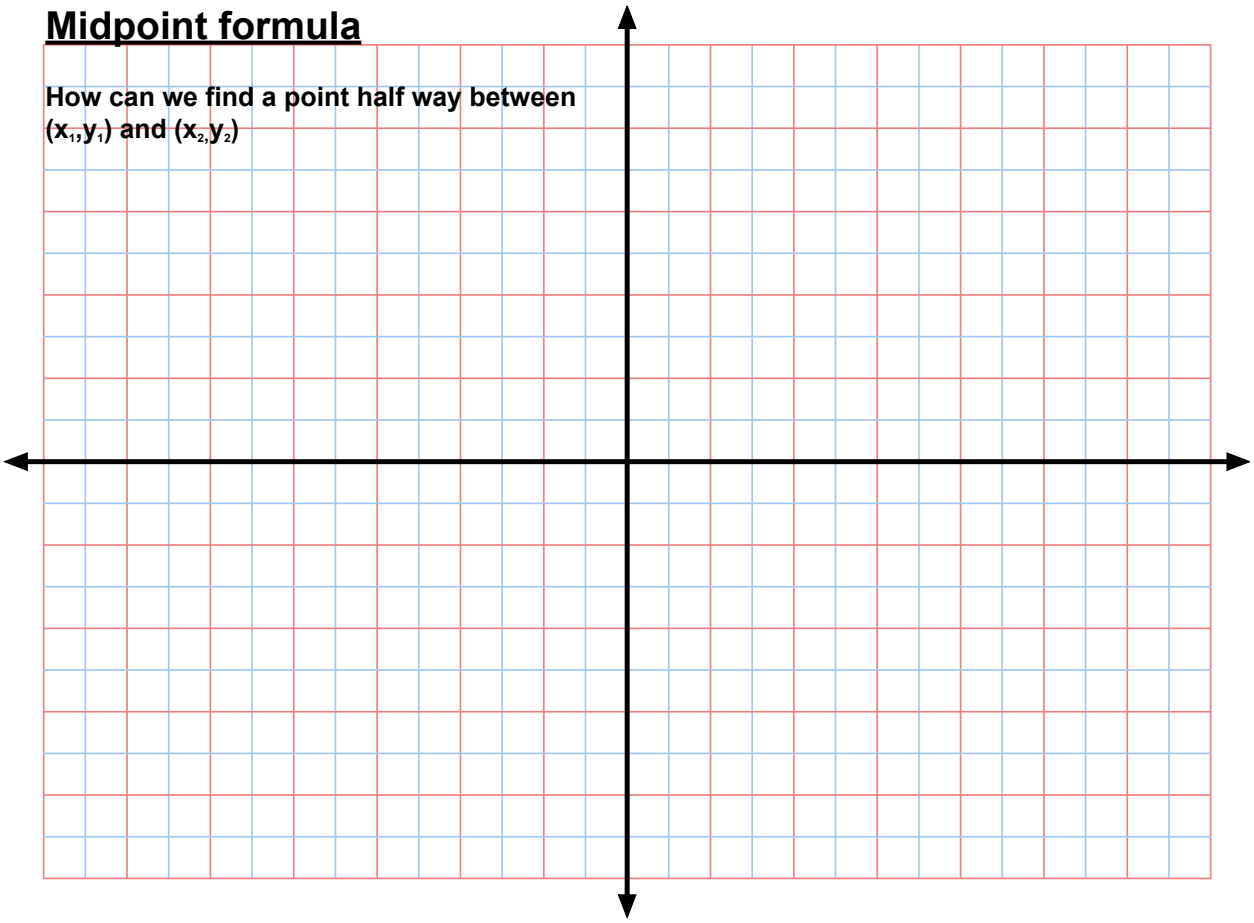
Distance formula

Distance between (x_1,y_1) and (x_2,y_2)



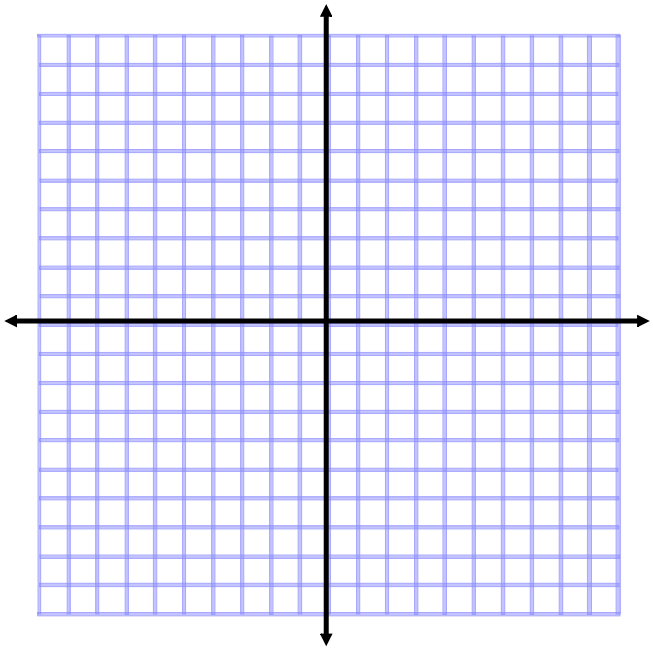
Midpoint formula

How can we find a point half way between (x_1,y_1) and (x_2,y_2)



1) Find the coordinates of a point ten units to the left of the y-axis and 3 units up from the x-axis.

2) If -x > 0 and y < 0, what quadrant is (x,y) in?



3) Find the distance between (-3,-2) and (4,1)

4) Find the midpoint of the segment in part 3.

4) An airplane flies from Naples, Italy in a straight line to Rome, Italy which is 120 km north and 150 km west of Naples.

How far does the plane fly?

5) A room is 1.5 times as long as it is wide and the perimeter is 25 meters. Find the dimensions of the room.