mystery jigsaw puzzle – dilation edition

In your hands, you hold the coordinates of one piece of a larger picture. One fourth of it, to be exact.

directions:

Determine the missing coordinates in the table below after a dilation about the origin with a scale factor of 2. Once completed, determine which quadrant your coordinates should be in on a coordinate plane.

Original Point	Dilate by 2	Original Point	Dilate by 2
Start	Start	Start	Start
(4,4)		(0,10)	
(6,4)		(2,8)	
(6,6)		(2,5)	
(4,6)		(1,2)	
(4,4)		Stop	Stop
Stop	Stop		
		Start	Start
Start	Start		(2,2)
	(4,2)	???	???
	(10,4)	???	???
	(16,4)	???	???
	(20,0)		(2,2)
Stop	Stop	Stop	Stop

What quadrant is your piece of the puzzle located in? _____

Graph the figures on the correct quadrant of coordinate plane graph paper. *Use one color to graph the original coordinates and a different, new color for the dilated coordinates.*

After you've finished, find three other people in the classroom who have your missing quadrants to complete the picture. Tape it together and see the finished product!

hint You cannot connect the coordinates of the final figure until all of the quadrants come together!

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Original Point	Dilate by 2	Original Point	Dilate by 2
Start	Start	Start	Start
	(-2,4)		(-4,2)
	(-4,10)		(-10,4)
	(-4,16)		(-16,4)
Stop	Stop		(-20,0)
		Stop	Stop
Start	Start		
(-4,4)		Start	Start
(-6,4)		???	???
(-6,6)		???	???
(-4,6)		???	???
(-4,4)			(-2,2)
Stop	Stop	???	???
		Stop	Stop

What quadrant is your piece of the puzzle located in? _____

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Original Point	Dilate by 2	Original Point	Dilate by 2
Start	Start	Start	Start
(-4,-4)		(-8,-2)	
(-4,-6)		(-5,-2)	
(-6,-6)		(-2,-1)	
(-6,-4)		Stop	Stop
(-4,-4)		███████	███████
Stop	Stop	Start	Start
███████	███████	???	???
Start	Start	???	???
	(-4,-16)		(-2,-2)
	(-4,-10)	???	???
	(-2,-4)	???	???
Stop	Stop	Stop	Stop

What quadrant is your piece of the puzzle located in? _____

Graph the figures on the correct quadrant of coordinate plane graph paper. *Use one color to graph the original coordinates and a different, new color for the dilated coordinates.*

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Original Point	Dilate by 2	Original Point	Dilate by 2
Start	Start	Start	Start
(4,-4)			(16,-4)
(4,-6)			(10,-4)
(6,-6)			(4,-2)
(6,-4)		Stop	Stop
(4,-4)		■	■
Stop	Stop	Start	Start
■	■	???	???
Start	Start	(1,-1)	
(1,-2)		???	???
	(2,-10)	???	???
(2,-8)		???	???
	(0,-20)	Stop	Stop
Stop	Stop	■	■

What quadrant is your piece of the puzzle located in? _____

Graph the figures on the correct quadrant of coordinate plane graph paper. *Use one color to graph the original coordinates and a different, new color for the dilated coordinates.*

After you've finished, find three other people in the classroom who have your missing quadrants to complete the picture. Tape it together and see the finished product!

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answer key

Below are answer keys for the student versions of the tables. Quadrants are identified at the top and all coordinates are listed.

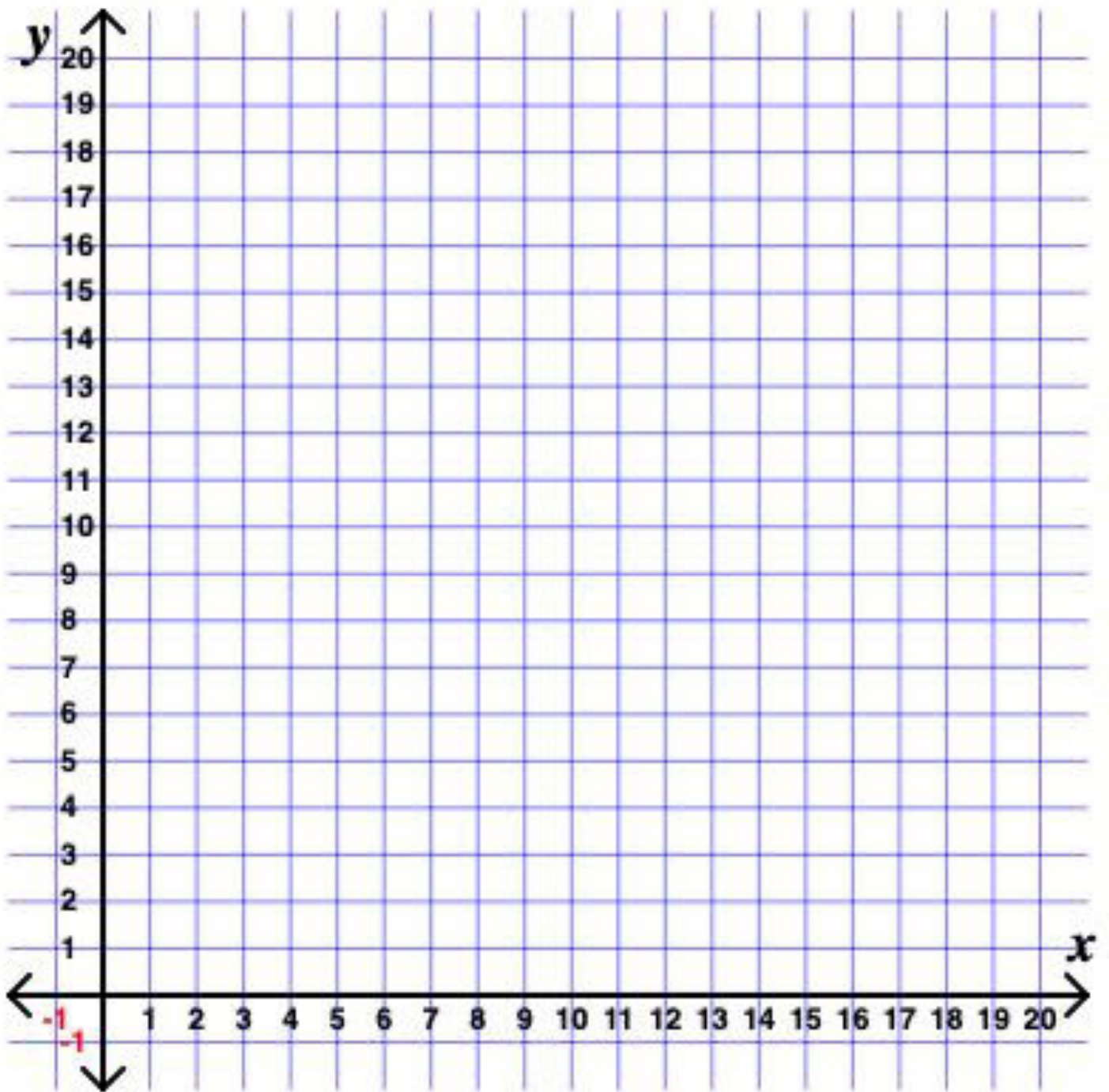| Quadrant I			
Original Point	Dilate by 2	Original Point	Dilate by 2
Start	Start	Start	Start
(4,4)	(8,8)	(0,10)	(0,20)
(6,4)	(12,8)	(2,8)	(4,16)
(6,6)	(12,12)	(2,5)	(4,10)
(4,6)	(8,12)	(1,2)	(2,4)
(4,4)	(8,8)	Stop	Stop
Stop	Stop		
		Start	Start
Start	Start	(1,1)	(2,2)
(2,1)	(4,2)	(1,-1)	(2,-2)
(5,2)	(10,4)	(-1,-1)	(-2,-2)
(8,2)	(16,4)	(-1,1)	(-2,2)
(10,0)	(20,0)	(1,1)	(2,2)
Stop	Stop	Stop	Stop

Quadrant II			
Original Point	Dilate by 2	Original Point	Dilate by 2
Start	Start	Start	Start
(-1,2)	(-2,4)	(-2,1)	(-4,2)
(-2,5)	(-4,10)	(-5,2)	(-10,4)
(-2,8)	(-4,16)	(-8,2)	(-16,4)
Stop	Stop	(-10,0)	(-20,0)
		Stop	Stop
Start	Start		
(-4,4)	(-8,8)	Start	Start
(-6,4)	(-12,8)	(1,1)	(2,2)
(-6,6)	(-12,12)	(1,-1)	(2,-2)
(-4,6)	(-8,12)	(-1,-1)	(-2,-2)
(-4,4)	(-8,8)	(-1,1)	(-2,2)
Stop	Stop	(1,1)	(2,2)
		Stop	Stop

Quadrant III			
Original Point	Dilate by 2	Original Point	Dilate by 2
Start	Start	Start	Start
(-4,-4)	(-8,-8)	(-8,-2)	(-16,-4)
(-4,-6)	(-8,-12)	(-5,-2)	(-10,-4)
(-6,-6)	(-12,-12)	(-2,-1)	(-4,-2)
(-6,-4)	(-12,-8)	Stop	Stop
(-4,-4)	(-8,-8)		
Stop	Stop	Start	Start
		(1,1)	(2,2)
Start	Start	(1,-1)	(2,-2)
(-2,-8)	(-4,-16)	(-1,-1)	(-2,-2)
(-2,-5)	(-4,-10)	(-1,1)	(-2,2)
(-1,-2)	(-2,-4)	(1,1)	(2,2)
Stop	Stop	Stop	Stop

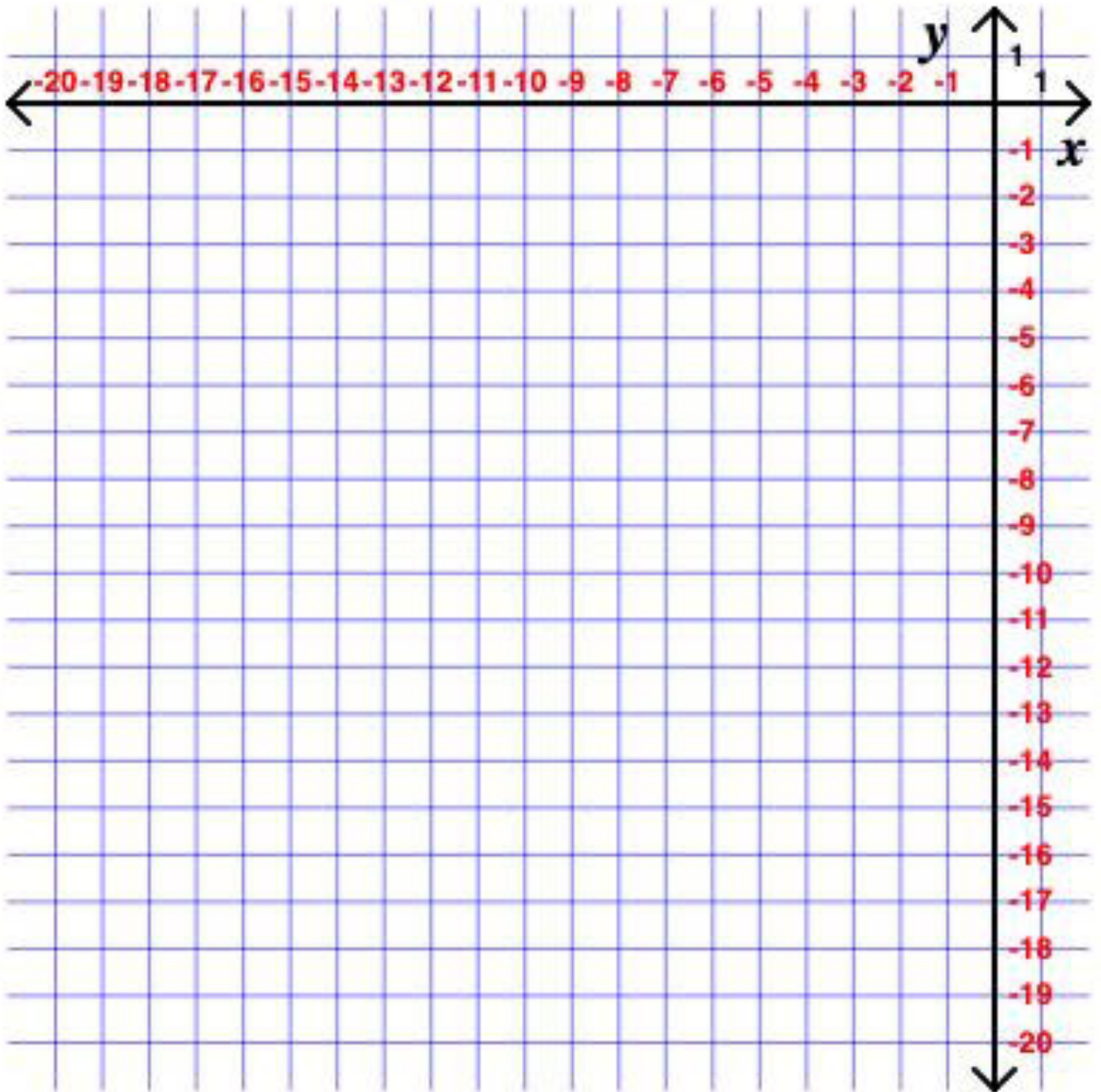| Quadrant IV			
Original Point	Dilate by 2	Original Point	Dilate by 2
Start	Start	Start	Start
(4,-4)	(8,-8)	(8,-2)	(16,-4)
(4,-6)	(8,-12)	(5,-2)	(10,-4)
(6,-6)	(12,-12)	(2,-1)	(4,-2)
(6,-4)	(12,-8)	Stop	Stop
(4,-4)	(8,-8)		
Stop	Stop	Start	Start
		(1,1)	(2,2)
Start	Start	(1,-1)	(2,-2)
(1,-2)	(2,-4)	(-1,-1)	(-2,-2)
(2,-5)	(2,-10)	(-1,1)	(-2,2)
(2,-8)	(4,-16)	(1,1)	(2,2)
(0,-10)	(0,-20)	Stop	Stop
Stop	Stop		

quadrant i (1)

quadrant ii (2)
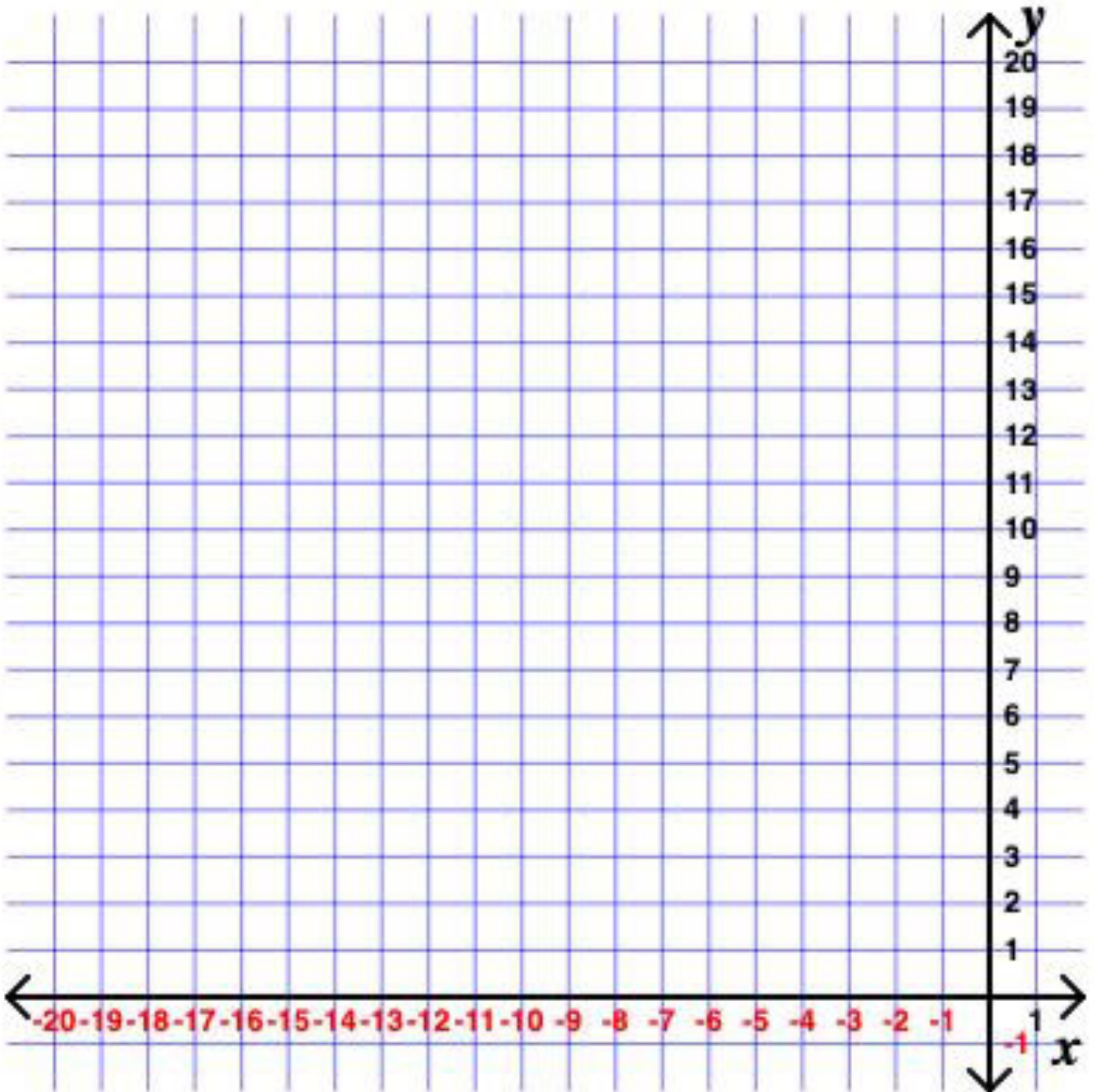
quadrant iii (3)

quadrant iv (4)