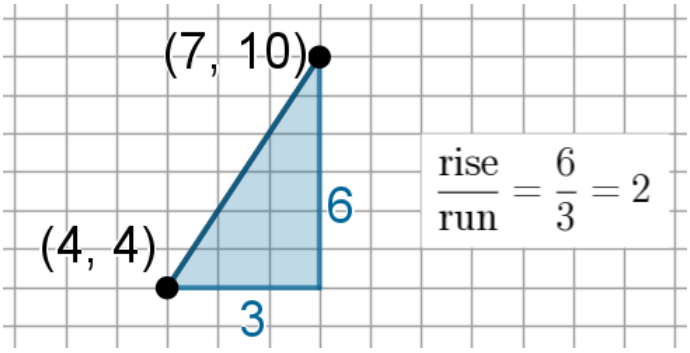
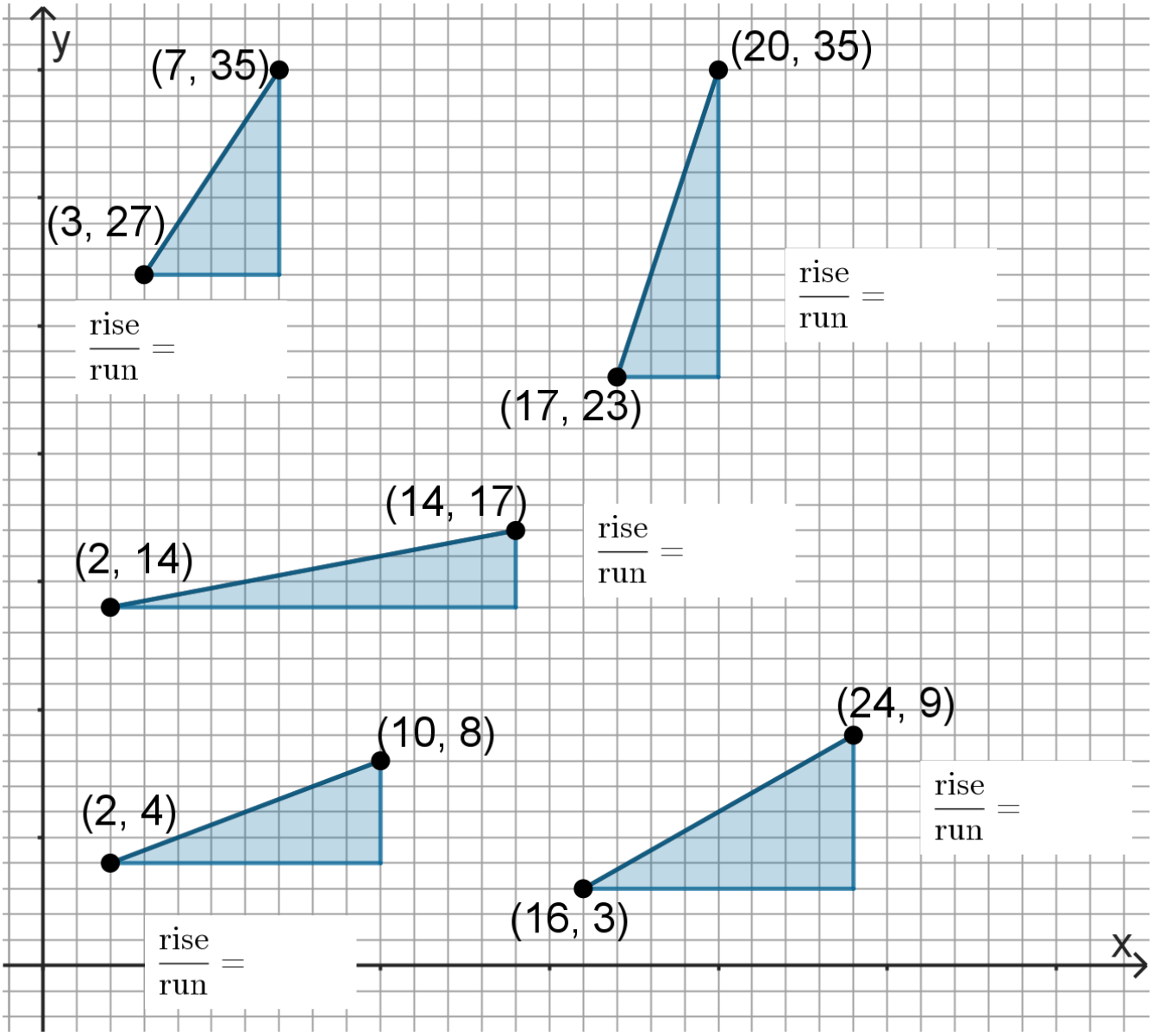
Grade 9 Numeracy B1 (Linear Functions)

Use the coordinates or the grid to calculate the horizontal and vertical lengths of each triangle.

Write the ratio $\frac{\text{rise}}{\text{run}}$ as a fraction in its simplest terms.





Substitute the x value into these linear relations to calculate the y value.

Remember that to multiply by $\frac{1}{4}$ is the same as to divide by 4. You may leave your answer either as a decimal or as a fraction.

	function	x	working	y
	$y = \frac{1}{4}x + 5$	$x = 8$	$y = \frac{1}{4} \times 8 + 5 = 2 + 5$	7
1.	$y = \frac{1}{4}x + 5$	$x = 24$		
2.	$y = \frac{1}{4}x + 5$	$x = 12$		
3.	$y = \frac{1}{4}x + 5$	$x = -12$		
4.	$y = \frac{1}{4}x + 5$	$x = 4$		
5.	$y = \frac{1}{4}x + 5$	$x = 0$		
6.	$y = \frac{1}{4}x + 5$	$x = 1$		
7.	$y = \frac{1}{4}x + 5$	$x = 2$		
8.	$y = \frac{1}{4}x + 5$	$x = 3$		
9.	$y = \frac{1}{4}x + 5$	$x = -4$		
10.	$y = \frac{1}{4}x + 5$	$x = -3$		



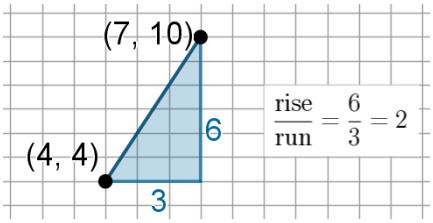


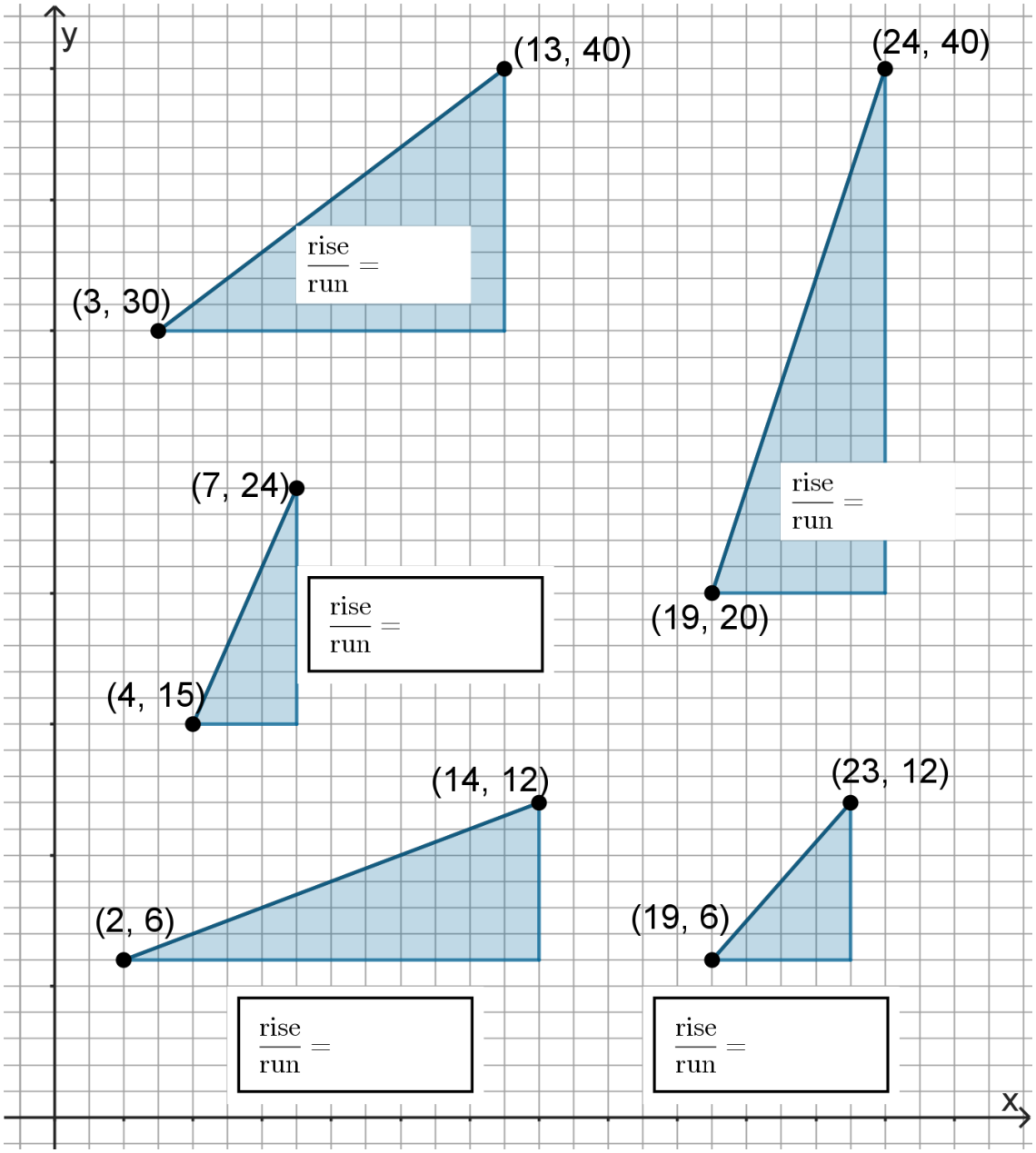
$\frac{1}{4} \times 8 = 2$ wholes.

Grade 9 Numeracy B2 (Unit 5 Linear Functions)

Use the coordinates or the grid to calculate the horizontal and vertical lengths of each triangle.

Write the ratio $\frac{\text{rise}}{\text{run}}$ as a fraction in its simplest terms.



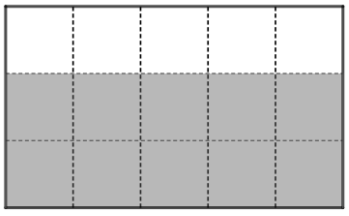


Substitute the x value into these linear relations to calculate the y value.

Remember that to multiply by $\frac{1}{3}$ is the same as to divide by 3.

Remember that to multiply by $\frac{2}{3}$ is the same as to $\div 3$ then $\times 2$

	function	x	working	y
	$y = \frac{1}{3}x + 5$	$x = 21$	$y = \left(\frac{1}{3} \times 21\right) + 5 = 7 + 5$	$y = 12$
1.	$y = \frac{1}{3}x + 5$	$x = 24$		$y =$
2.	$y = \frac{1}{3}x + 5$	$x = 12$		$y =$
3.	$y = \frac{1}{3}x + 5$	$x = -12$		$y =$
4.	$y = \frac{1}{3}x + 5$	$x = 6$		$y =$
5.	$y = \frac{1}{3}x + 5$	$x = 0$		$y =$
6.	$y = \frac{2}{3}x + 5$	$x = 18$		$y =$
7.	$y = \frac{2}{3}x + 5$	$x = 15$		$y =$
8.	$y = \frac{2}{3}x + 5$	$x = 21$		$y =$
9.	$y = \frac{2}{3}x + 5$	$x = -15$		$y =$
10.	$y = \frac{2}{3}x + 5$	$x = -3$		$y =$

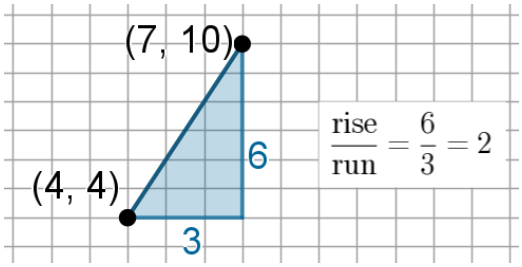


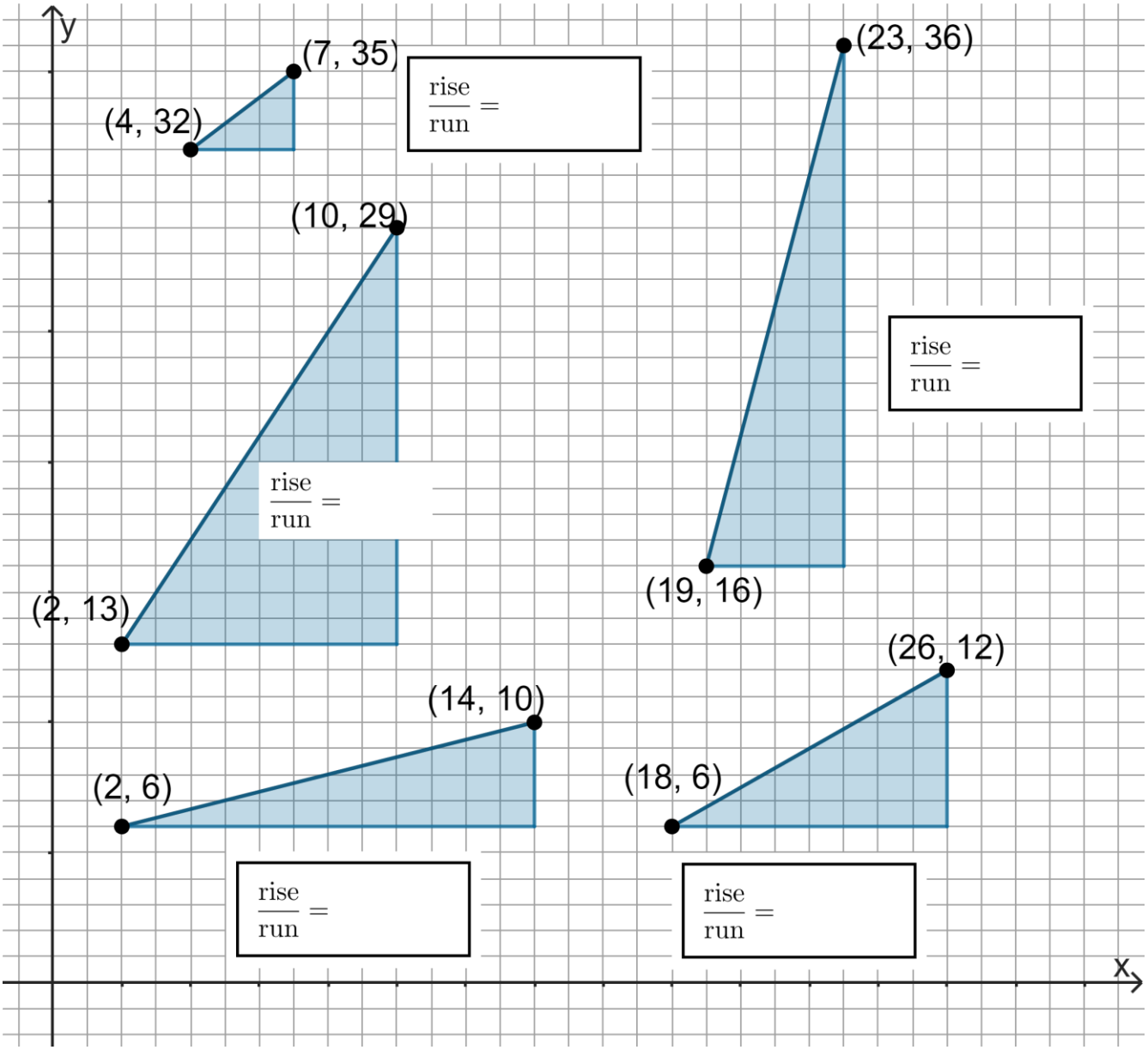
$$\frac{2}{3} \times 15 = 10$$

Grade 9 Numeracy B3 (Unit 5 Linear Functions) (Friday)

Use the coordinates or the grid to calculate the horizontal and vertical lengths of each triangle.

Write the ratio $\frac{\text{rise}}{\text{run}}$ as a fraction in its simplest terms.





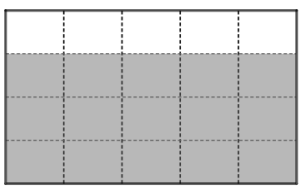
Substitute the x value into these linear relations to calculate the y value.

Remember that to multiply by $\frac{1}{4}$ is the same as to divide by 4.

Remember that to multiply by $\frac{3}{4}$ is the same as to $\div 4$ then $\times 3$

	function	x	working	y
	$y = \frac{3}{4}x - 2$	$x = 20$	$y = \left(\frac{3}{4} \times 20\right) - 2 = 15 - 2$	$y = 13$
1.	$y = \frac{3}{4}x - 2$	$x = 24$		$y =$
2.	$y = \frac{3}{4}x - 2$	$x = 12$		$y =$
3.	$y = \frac{3}{4}x - 2$	$x = -12$		$y =$
4.	$y = \frac{3}{4}x - 2$	$x = 8$		$y =$
5.	$y = \frac{3}{4}x - 2$	$x = 0$		$y =$
6.	$y = \frac{3}{4}x - 2$	$x = 16$		$y =$
7.	$y = \frac{3}{4}x - 2$	$x = 44$		$y =$
8.	$y = \frac{3}{4}x - 2$	$x = 28$		$y =$
9.	$y = \frac{3}{4}x - 2$	$x = -32$		$y =$
10.	$y = \frac{3}{4}x - 2$	$x = -4$		$y =$

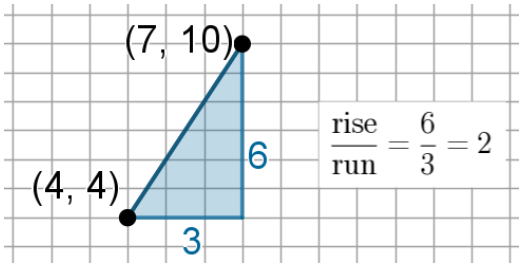
$\frac{3}{4} \times 20 = 15$

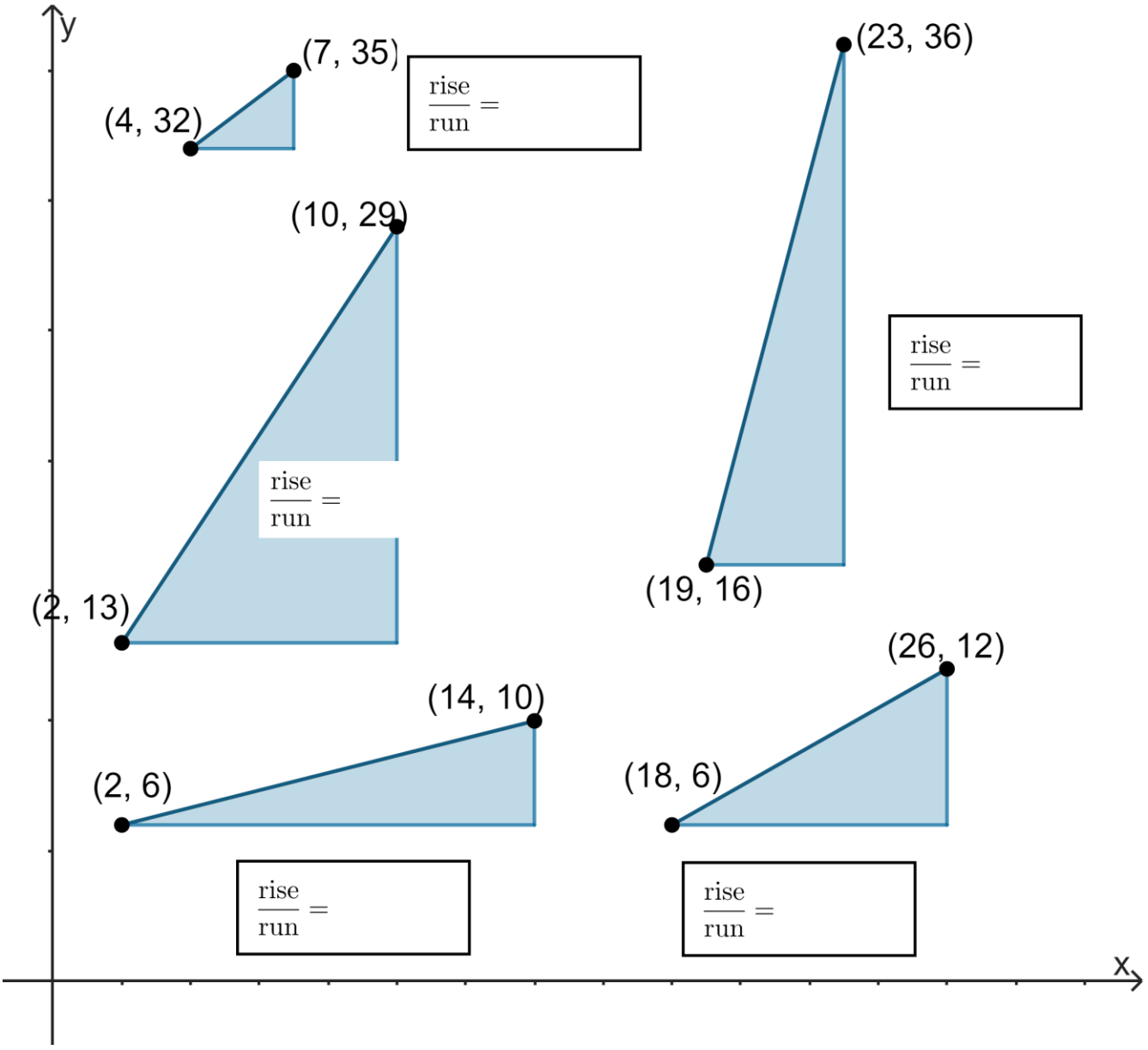


Grade 9 Numeracy B3 (Linear Functions)

Use the coordinates or the grid to calculate the horizontal and vertical lengths of each triangle.

Write the ratio $\frac{\text{rise}}{\text{run}}$ as a fraction in its simplest terms.





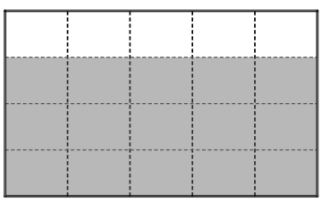
Substitute the x value into these linear relations to calculate the y value.

Remember that to multiply by $\frac{1}{4}$ is the same as to divide by 4.

Remember that to multiply by $\frac{3}{4}$ is the same as to $\div 4$ then $\times 3$

	function	x	working	y
	$y = \frac{3}{4}x - 2$	$x = 20$	$y = \left(\frac{3}{4} \times 20\right) - 2 = 15 - 2$	$y = 13$
1.	$y = \frac{3}{4}x - 2$	$x = 24$		$y =$
2.	$y = \frac{3}{4}x - 2$	$x = 12$		$y =$
3.	$y = \frac{3}{4}x - 2$	$x = -12$		$y =$
4.	$y = \frac{3}{4}x - 2$	$x = 8$		$y =$
5.	$y = \frac{3}{4}x - 2$	$x = 0$		$y =$
6.	$y = \frac{3}{4}x - 2$	$x = 16$		$y =$
7.	$y = \frac{3}{4}x - 2$	$x = 44$		$y =$
8.	$y = \frac{3}{4}x - 2$	$x = 28$		$y =$
9.	$y = \frac{3}{4}x - 2$	$x = -32$		$y =$
10.	$y = \frac{3}{4}x - 2$	$x = -4$		$y =$

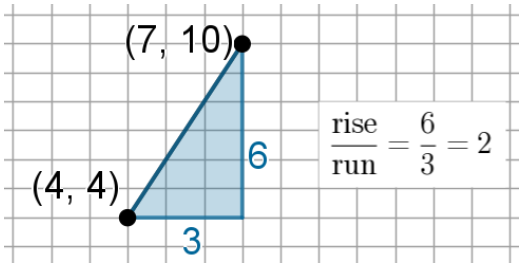
$\frac{3}{4} \times 20 = 15$

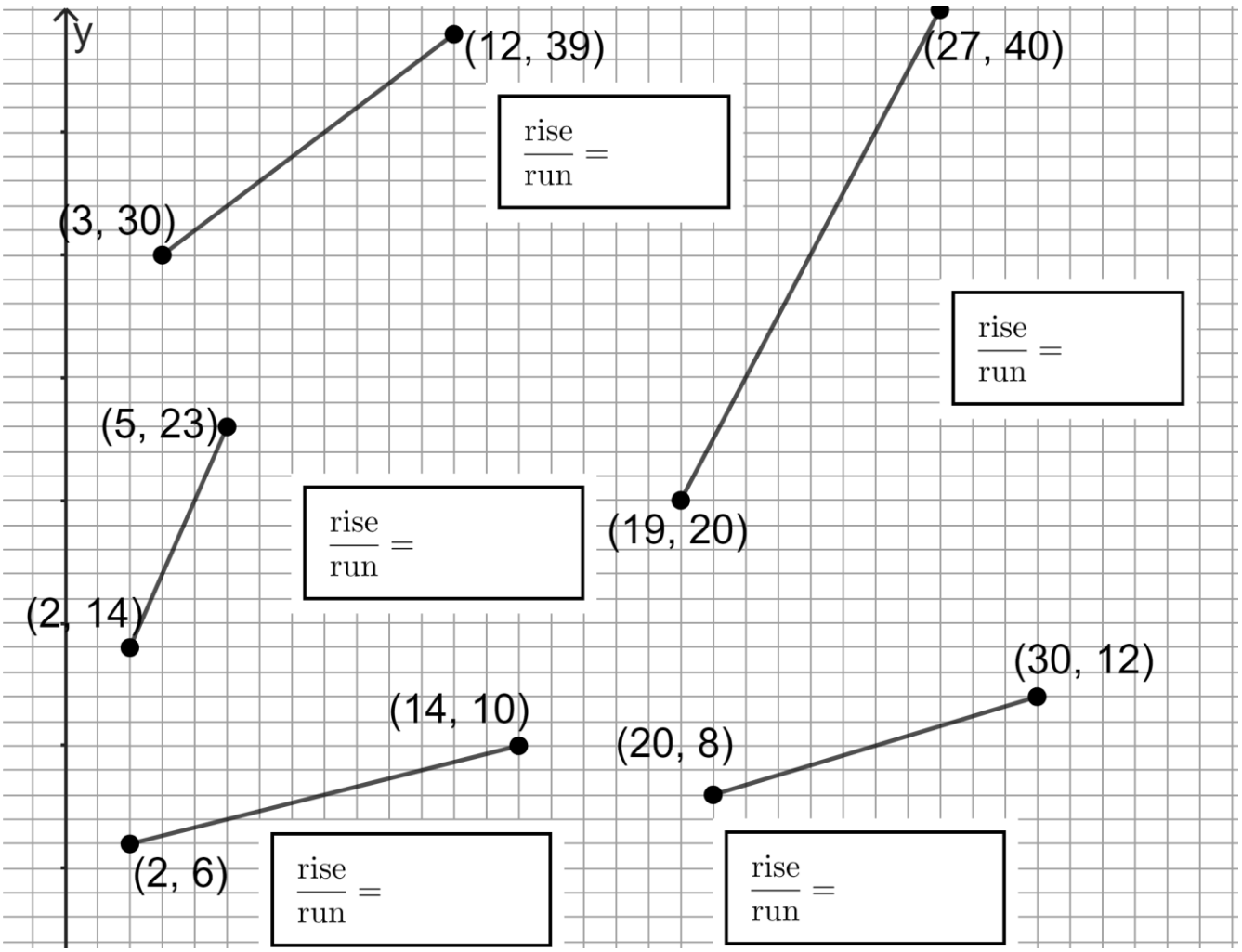


Grade 9 Numeracy B4 (Unit 5 Linear Functions) (Monday)

Use the coordinates or the grid to calculate the horizontal and vertical lengths of each triangle.

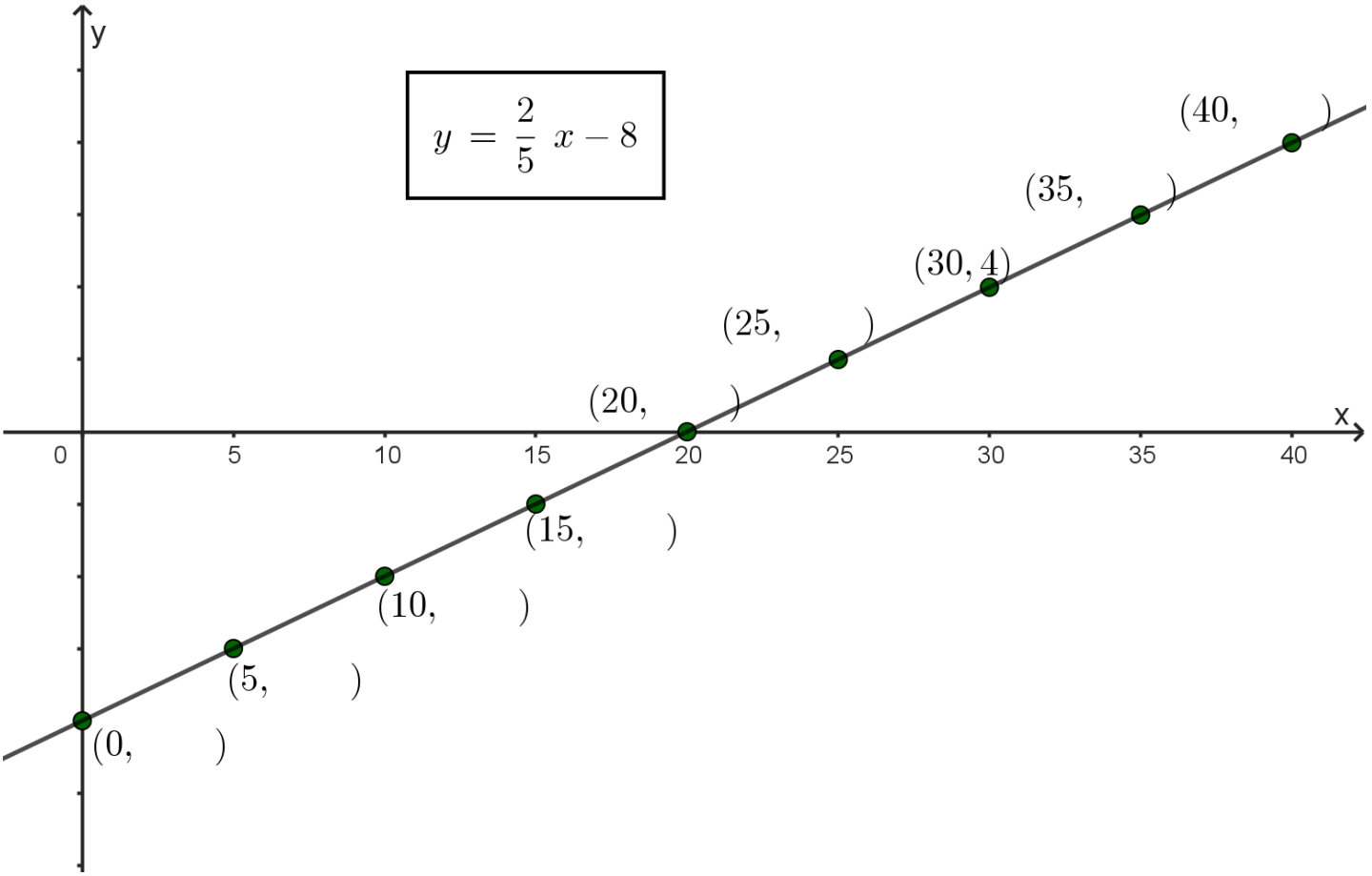
Write the ratio $\frac{\text{rise}}{\text{run}}$ as a fraction in its simplest terms.





On the next page, use the formula to calculate the y coordinate of each point.

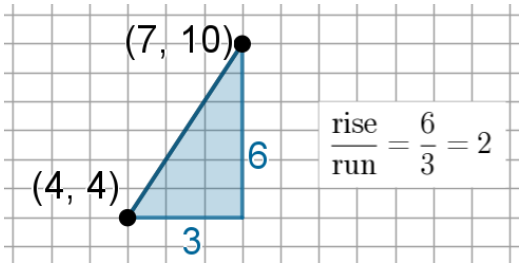
Remember that to multiply by $\frac{2}{5}$ is the same as to divide by 5 then multiply by 2.

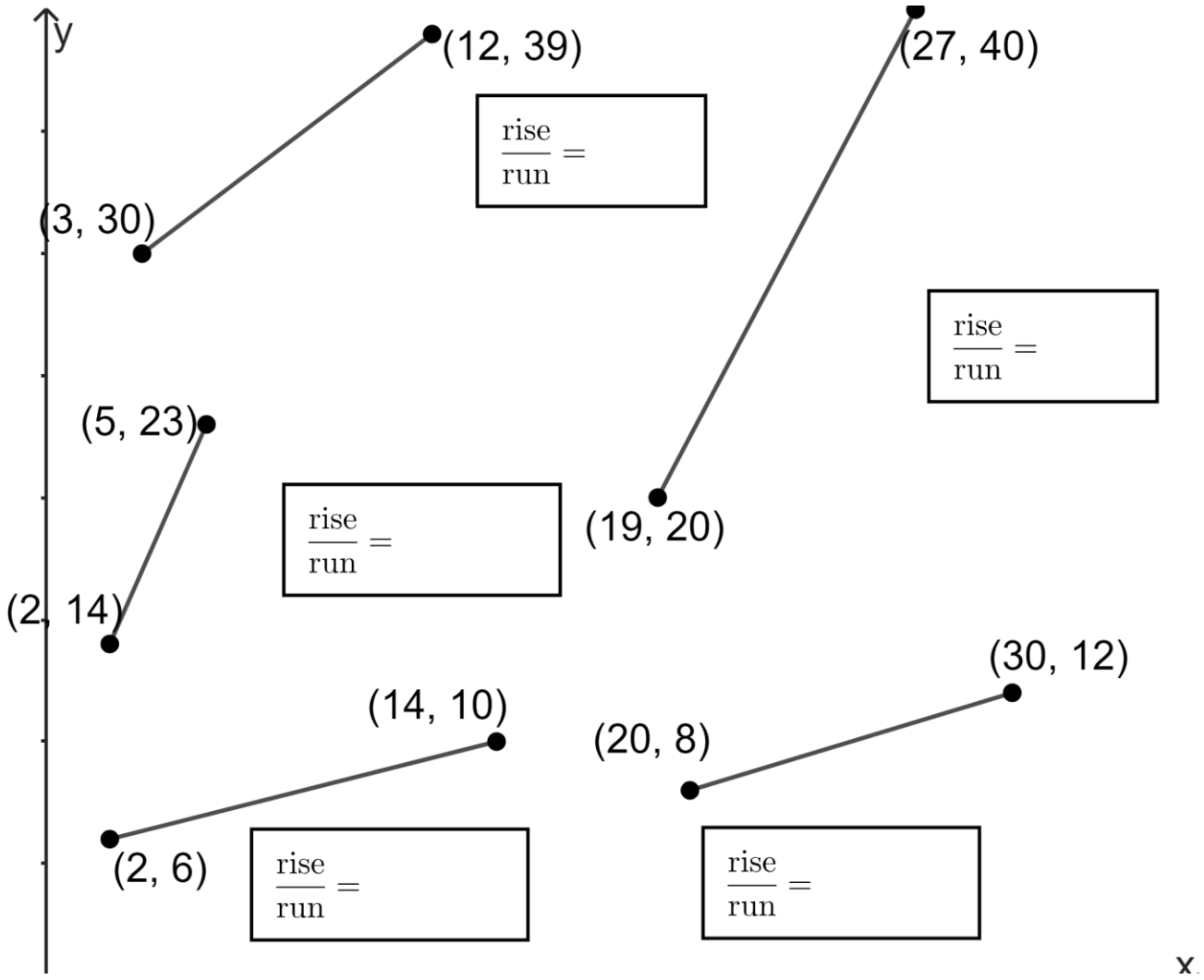


Grade 9 Numeracy B4 (Unit 5 Linear Functions) (Monday)

Use the coordinates or the grid to calculate the horizontal and vertical lengths of each triangle.

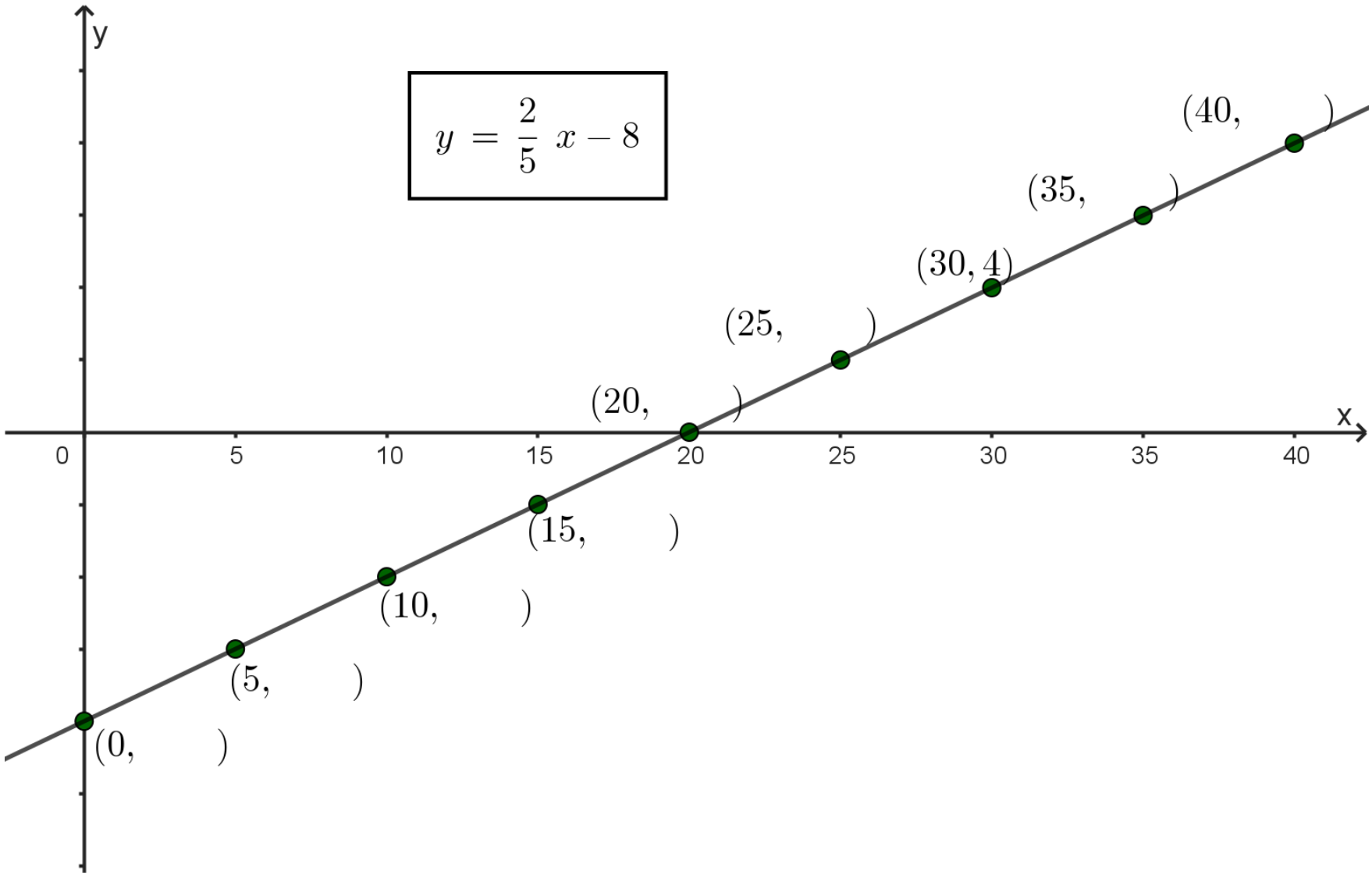
Write the ratio $\frac{\text{rise}}{\text{run}}$ as a fraction in its simplest terms.





On the next page, use the formula to calculate the y coordinate of each point.

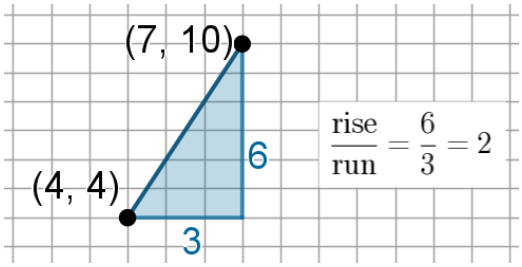
Remember that to multiply by $\frac{2}{5}$ is the same as to divide by 5 then multiply by 2.


y
x
$y = \frac{2}{5}\,x - 8$
0
5
10
15
20
25
30
35
40
(0,)
(5,)
(10,)
(15,)
(20,)
(25,)
(30, 4)
(35,)
(40,)

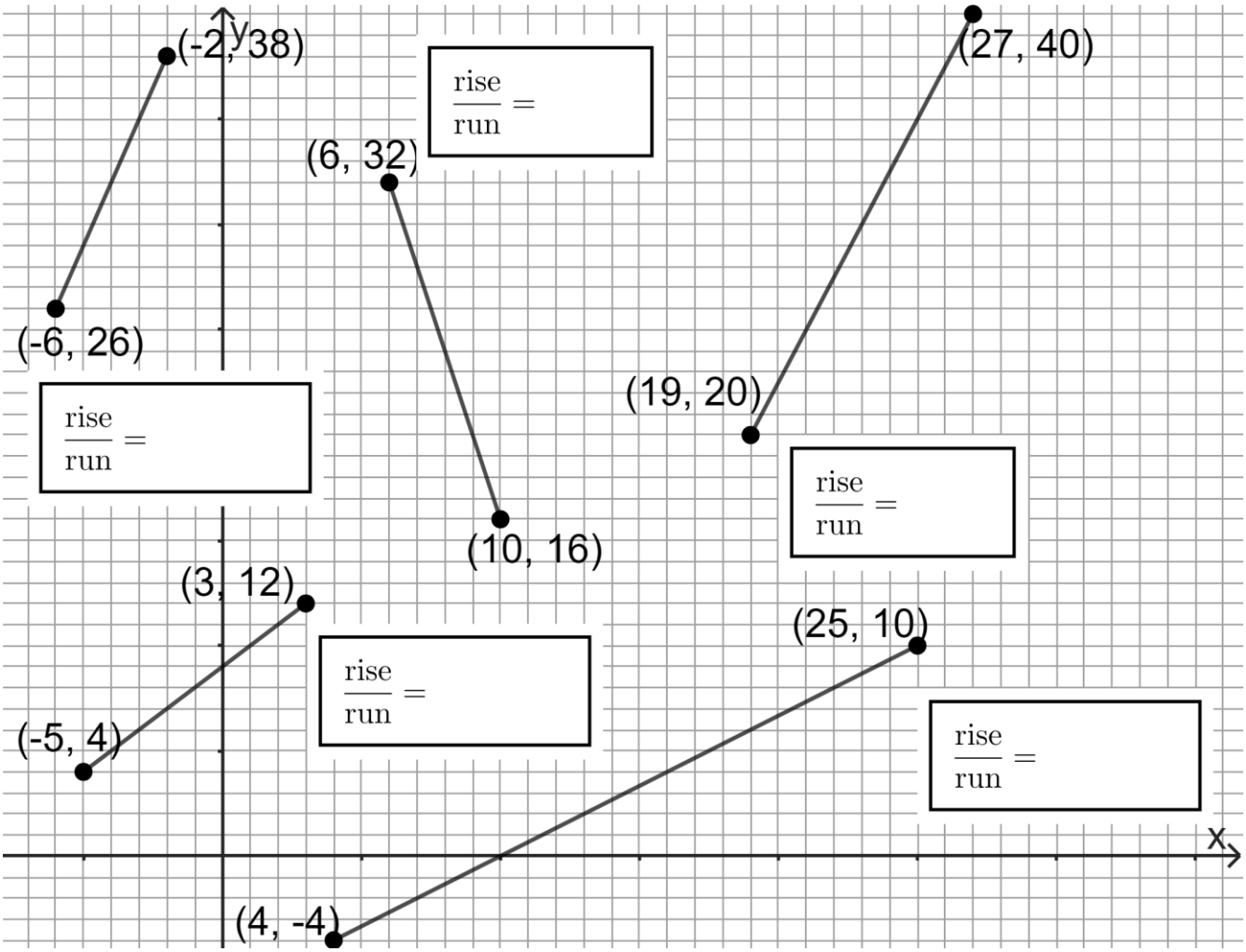
Grade 9 Numeracy B5 (Unit 5 Linear Functions) (Tuesday: QUIZ)

Use the coordinates or the grid the formula $m = \frac{y_2 - y_1}{x_2 - x_1}$ to calculate slope of each line segment.

Write the ratio $\frac{\text{rise}}{\text{run}}$ as a fraction in its simplest terms.



(Note - one of these line segments has a negative slope)



BONUS: Calculate the equation $y = mx + b$ for any one of the line segments.

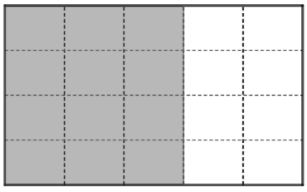
Substitute the x value into these linear relations to calculate the y value.

Remember that to multiply by $\frac{1}{5}$ is the same as to divide by 5.

Remember that to multiply by $\frac{3}{5}$ is the same as to $\div 5$ then $\times 3$

	function	x	working	y
	$y = \frac{3}{5}x + 7$	$x = 20$	$y = \left(\frac{3}{5} \times 20\right) + 7 = 12 + 7$	$y = 19$
1.	$y = \frac{3}{5}x + 7$	$x = 25$		$y =$
2.	$y = \frac{3}{5}x + 7$	$x = 10$		$y =$
3.	$y = \frac{3}{5}x + 7$	$x = -20$		$y =$
4.	$y = \frac{3}{5}x + 7$	$x = 40$		$y =$
5.	$y = \frac{3}{5}x + 7$	$x = 0$		$y =$
6.	$y = \frac{3}{5}x + 7$	$x = 35$		$y =$
7.	$y = \frac{3}{5}x + 7$	$x = 45$		$y =$
8.	$y = \frac{3}{5}x + 7$	$x = 5$		$y =$
9.	$y = \frac{3}{5}x + 7$	$x = -10$		$y =$
10.	$y = \frac{3}{5}x + 7$	$x = -15$		$y =$

$$\frac{3}{5} \times 20 = 12$$

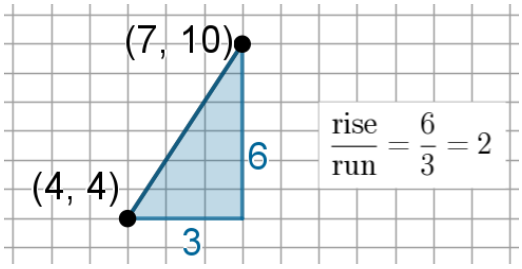


Bonus – how does the diagram of the rectangle illustrate that 3/5 of 20 is 12?

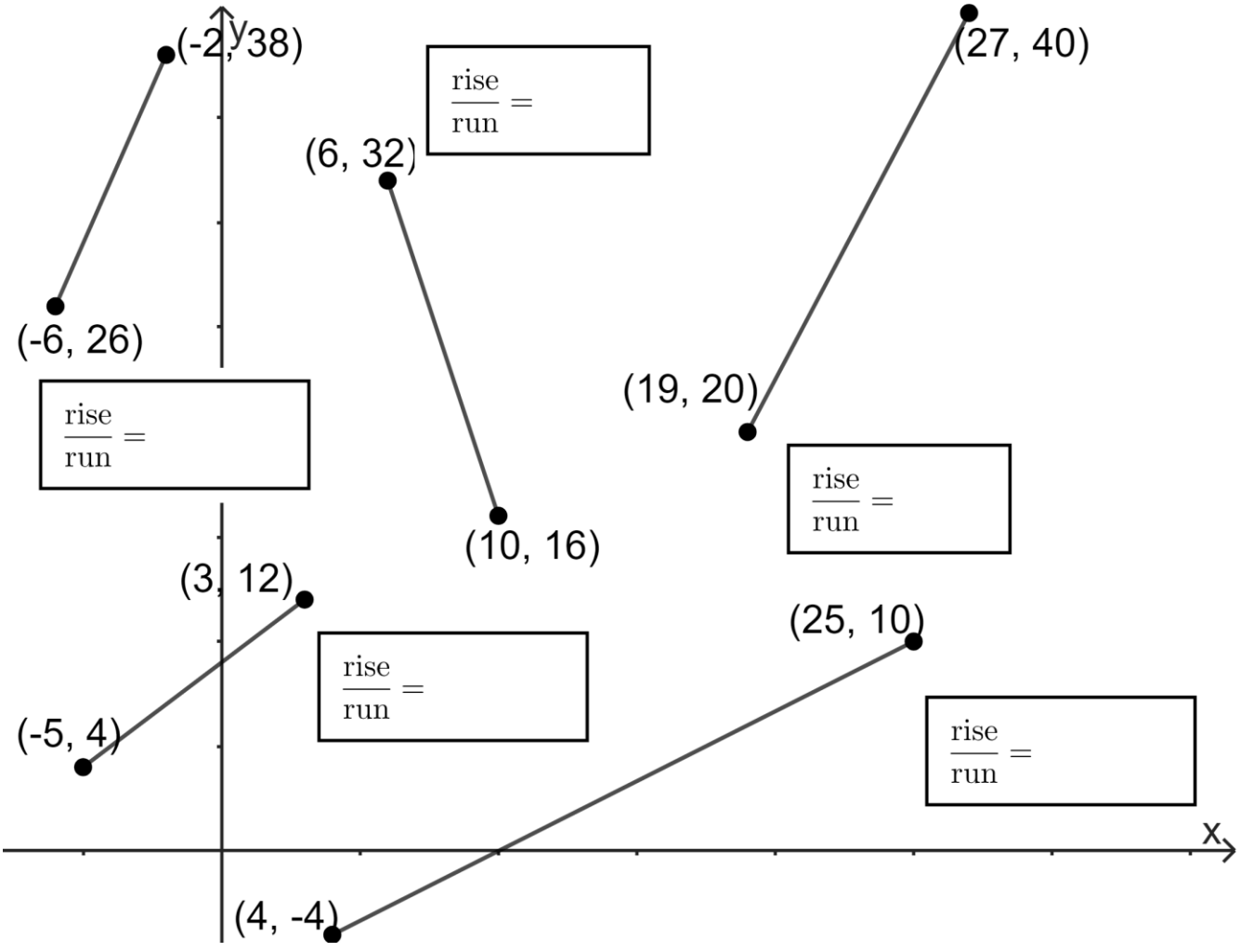
Grade 9 Numeracy B5 (Unit 5 Linear Functions) (Tuesday 9th: QUIZ)

Use the coordinates with or without the formula $m = \frac{y_2 - y_1}{x_2 - x_1}$ to calculate slope of each line segment.

Write the ratio $\frac{\text{rise}}{\text{run}}$ as a fraction in its simplest terms.



(Note - one of these line segments has a negative slope)



eXt: Calculate the equation $y = mx + b$ for any two of the line segme nts.

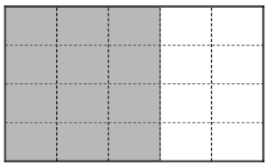
Substitute the x value into the linear relation to calculate the y value.

Remember that to multiply by $\frac{1}{5}$ is the same as to divide by 5.

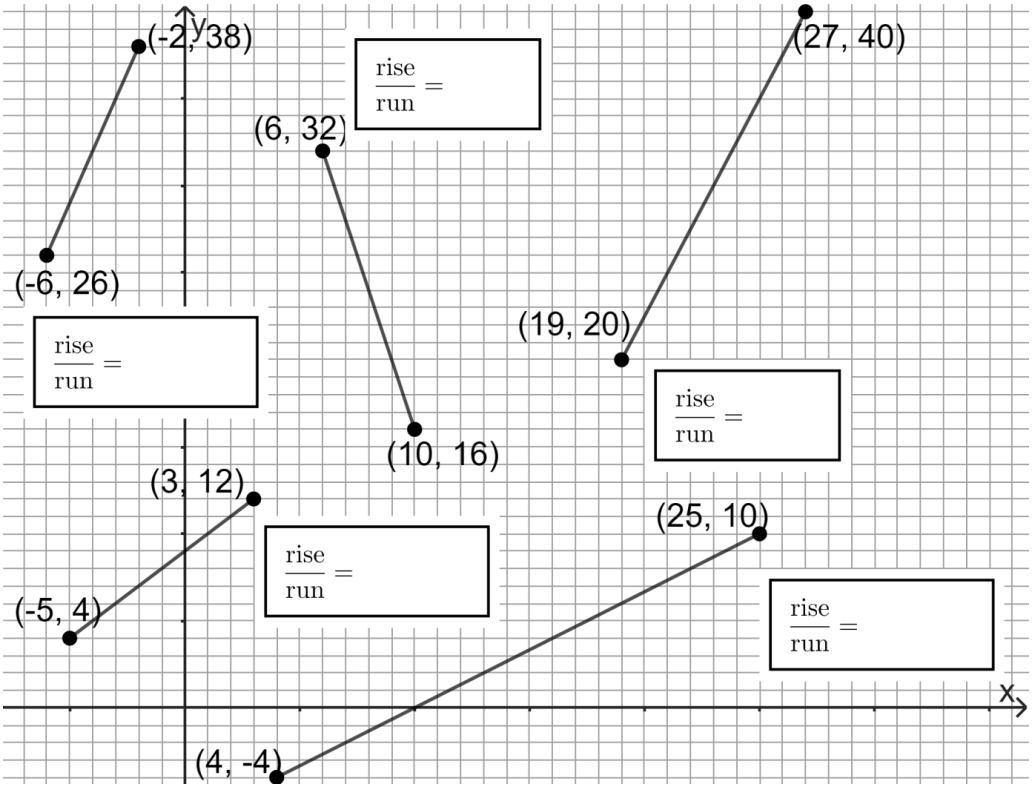
Remember that to multiply by $\frac{3}{5}$ is the same as to $\div 5$ then $\times 3$

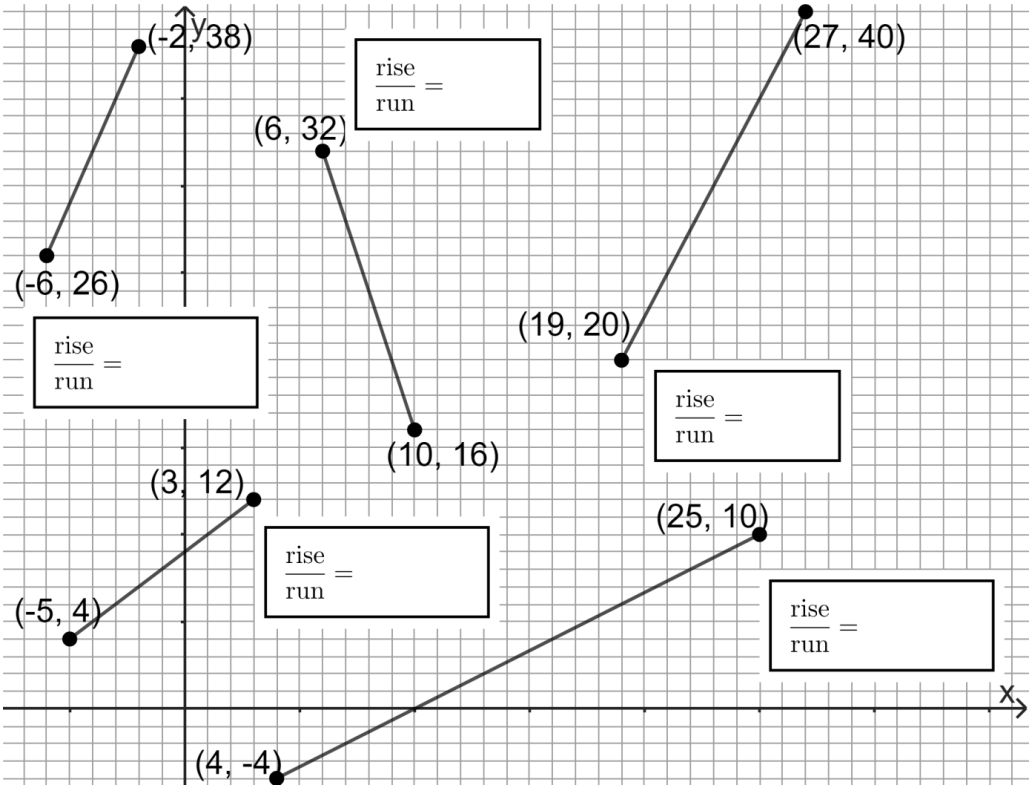
	function	x	working	y
	$y = \frac{3}{5}x + 7$	$x = 20$	$y = \left(\frac{3}{5} \times 20\right) + 7 = 12 + 7$	$y = 19$
1.	$y = \frac{3}{5}x + 7$	$x = 25$		$y =$
2.	$y = \frac{3}{5}x + 7$	$x = 10$		$y =$
3.	$y = \frac{3}{5}x + 7$	$x = -20$		$y =$
4.	$y = \frac{3}{5}x + 7$	$x = 40$		$y =$
5.	$y = \frac{3}{5}x + 7$	$x = 0$		$y =$
6.	$y = \frac{3}{5}x + 7$	$x = 35$		$y =$
7.	$y = \frac{3}{5}x + 7$	$x = 45$		$y =$
8.	$y = \frac{3}{5}x + 7$	$x = 5$		$y =$
9.	$y = \frac{3}{5}x + 7$	$x = -10$		$y =$
10.	$y = \frac{3}{5}x + 7$	$x = -15$		$y =$

$$\frac{3}{5} \times 20 = 12$$



Bonus – how does the diagram of the rectangle illustrate that 3/5 of 20 is 12?


y
x
(-2, 38)
(-6, 26)
(6, 32)
(10, 16)
(3, 12)
(-5, 4)
(4, -4)
(27, 40)
(19, 20)
(25, 10)
rise / run =
rise / run =
rise / run =
rise / run =
rise / run =


y
x
(-2, 38)
(-6, 26)
(6, 32)
(10, 16)
(3, 12)
(-5, 4)
(4, -4)
(27, 40)
(19, 20)
(25, 10)
rise / run =
rise / run =
rise / run =
rise / run =
rise / run =