Day 6: Y-intercepts = b = beginning

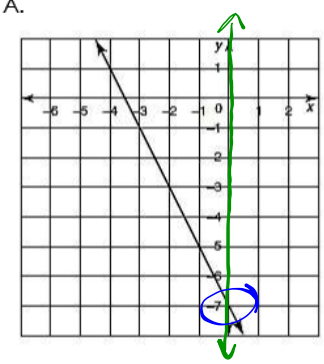
A **y-intercept** is the point where the graph crosses the y-axis. Its coordinate will always be the point (0, b), where b stands for the number on the y-axis where the graph crosses and the value of the x-coordinate will always be 0.

$y = mx + b$ ← y-intercept

slope

Ex. Identify the y-intercept in the following representations:

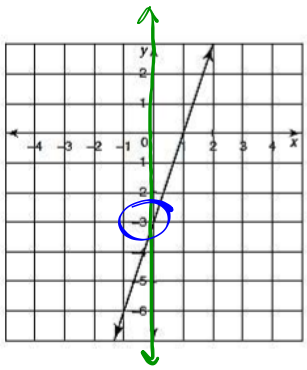
A.



(0, -7)

b = -7

B.



(0, -3)

b = -3

C.

x	y
-1	13
0	-2
4	-62
10	-152

(0, -2)

b = -2

D.

x	y
0	8
3	14
7	22
9	26

(0, 8)

b = 8

Foundations of Algebra Unit 5: Linear Functions Notes

Real World Y-Intercepts

In a real world situation, the y-intercept represents the **starting value** or starting point. Determine the y-intercept for the following table:

A. How many pills were in the bottle to start?

Days Passed	Vitamins Remaining in Bottle
7	25
8	23
9	21
10	19

$m = \frac{+2}{-1} = -2$

y-int: (0,?)

x	y
0	39
1	37
2	35
3	33
4	31
5	29
6	27
7	25
8	23
9	21
10	19

y-intercept (0,39) b

days, vitamins

$y = mx + b$

$19 = -2(10) + b$

$19 = -20 + b$

$+20 \quad +20$

$39 = b$

(0,39)

B. How much was admission to the carnival?

Number of Carnival Ride Tickets	Cost (dollars)
4	9
8	12
16	18
32	30

$\frac{-12}{-16} = \frac{3}{4}$

$m = \frac{\text{rise}}{\text{run}} = \frac{-3}{-4} = \frac{3}{4}$

$y = mx + b$

$30 = \frac{3}{4}(32) + b$

$30 = 24 + b$

$-24 \quad -24$

$6 = b \quad (0,6)$

x	y
0	6
4	9
8	12
16	18
32	30

c. Alberto is saving for a new video game. After adding two weeks of his allowance to a savings account, he has $105. After adding three more weeks of his allowance, his savings is now at $150. Determine the y-intercept and explain what the y-intercept means in terms of the problem.

(wk) x	y ($)
0	75
1	90
2	105
3	120
4	135
5	150

$m = \frac{\text{rise}}{\text{run}} = \frac{45}{3} = 15$

$y = mx + b$

$105 = 15(2) + b$

$105 = 30 + b$

$-30 \quad -30$

$75 = b$

$b = 75$

(0,75)