# CH. 2, L4 – EQUATIONS OF LINEAR FUNCTIONS

Objective: Given a graph or table, I will write the equation (using slope-intercept form) of a linear function.

> **Big Idea: The rate of change and y-intercept are needed to write an equation in slope intercept form.**

Think About It: Label all key information and features of the line graphed below. Write an equation that represents this line.
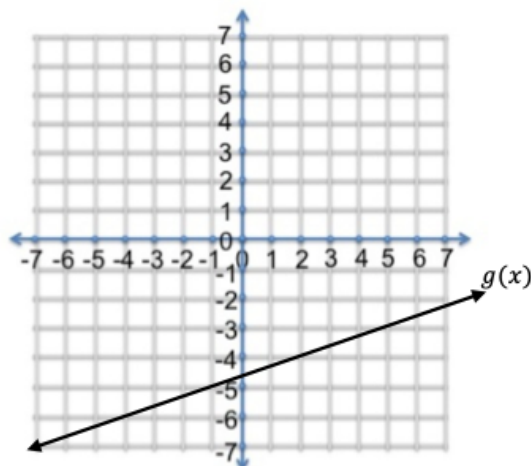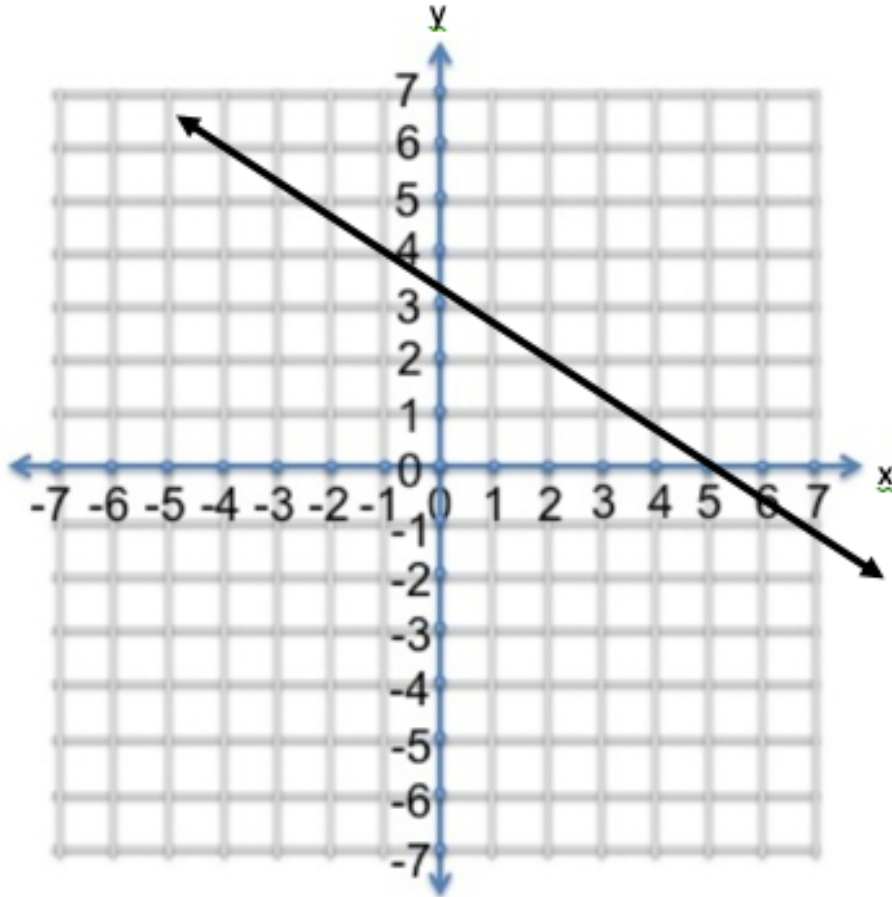

X

1. Important information is highlighted and question/prompt is circled
2. Slope intercept form is written out and substituted for
3. All work is shown to calculate rate of change and y-intercept
4. Final equation written in slope-intercept form

Partner Practice: *(Low Difficulty)*

1. Write an equation in slope intercept form for the two functions shown below.

x	$f(x)$
0	10
1	4
2	-2
3	-8
4	-14

a)

b)

2. SAT Problem: Which of the following is the graph of the equation $y = 2x - 5$ in the xy-plane?

3. Pick an incorrect answer choice to number 2 and write the equation of its line. Explain why a scholar might mistakenly pick this answer on the SAT.
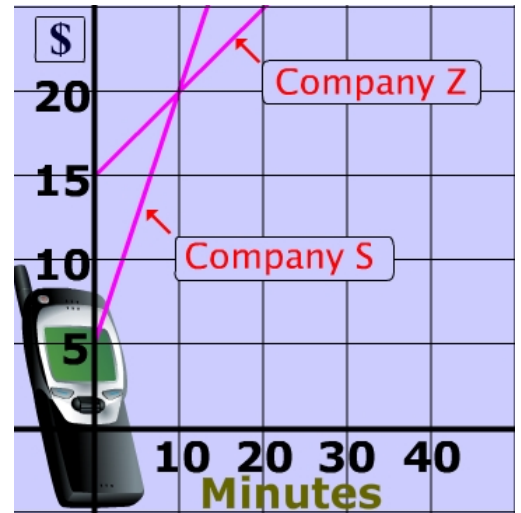
CFS: 2
1. Important information is highlighted and question/prompt is circled
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Partner Practice: *(Medium Difficulty)*

4. Two different cell phone companies charge different amounts for the time that you use the phone. Write an equation for each company and provide a verbal description of what the slope and y-intercept represent.

Company Z:

Company S:

Verbal description:

5. REGENTS Problem!

Each day Toni records the height of a plant for her science lab. Her data are shown in the table below.

Day (n)	1	2	3	4	5
Height (cm)	3.0	4.5	6.0	7.5	9.0

The plant continues to grow at a constant daily rate. Write an equation to represent $h(n)$, the height of the plant on the nth day.

6. What will be the height of the plant, in question 5, after two weeks?

CFS:
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3. All work is shown to calculate rate of change and y-intercept
4. Final equation written in slope-intercept form

7. Ms. Berman surveyed scholars in her class and asked them how many hours they studied for their most recent math test and matched it up with the score they get on that test. If the data collected represents a linear relationship, complete the following steps:

Step A: Write an equation that could be used to predict the score a scholar will earn based on the number of hours they study.

Hours studied	Test score
2	64
5	85
7	99

Step B: Margo scored a 74.5%. How many hours do you predict she studied for? Show all of your work to justify your answer.

Step C: What does the y-intercept represent in the context of the problem?

_____

_____

8. At the start of the school year, Ron buys school supplies for $100. Then, each day that he comes into school, he buys an Arizona iced tea for $1 and a bacon, egg, and cheese sandwich for $3.50. Assuming there are 200 school days during the year, how much money will he spend in total?   Explain why you were able to use a linear equation to solve the problem.

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9. Chris wants to buy the new Nintendo Switch which costs $380. He has a little money in his bank account but needs to earn and save more to buy the console. Each week he cuts his neighbor's lawn to earn money which he puts into his savings account and records his total savings in a table. If he earns the same amount each week, complete the table for Chris' first seven weeks of cutting lawns and determine the number of weeks it will take for him to earn enough to buy the Nintendo Switch.

Total Savings		37		81				
Number of Weeks	0	1	2	3	4	5	6	7

Partner Practice: *(Hard Difficulty)*

10. The standard form of a linear equation is Ax+By=C. Rewrite this equation in slope-intercept form. What is the slope? What is the y-intercept?

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11. The point slope form of a linear equation is $y - d = m(x - c)$ where the slope is given as m and one point on the line is given as (c,d). Rewrite this equation in slope-intercept form. What is the value of the y-intercept (your answer should have two terms). Use your equation to determine the y-intercept of a line with a slope of 4 and passing through the point (3,8).

Rewrite: $y - d = m(x - c)$	**Determine equation of line:**

CFS:
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3. All work is shown to calculate rate of change and y-intercept
4. Final equation written in slope-intercept form