Lesson Plan Template Draft: 3.5 SACC Active Learning Guide Book

Teaching point / Objectives:	Length of lesson:	Materials:

1. *Graph a linear equation*
     Ø *By using the slope-intercept form*
 2. *Write an equation of a line:*
     Ø *When its slope is known;*
     Ø *When its slope is unknown;*
     Ø *When its slope is implied;*
	45 to 50 minutes	***Textbook***: *Beginning & Intermediate Algebra 6th Edition by Elayn Martin-Gay*
		 Active Learning Strategy: *Think-Pair-Share*
		 ü I.D. Cards (for students to use as rulers)
		 ü Graphing paper for teacher and students

Active learning strategies that this lesson employs:

Think-Pair-Share:

ü **Step 1**: Each student attempts independently to solve the world-problem (see problem below in real-world connection section)

ü **Step 2**: Students work in pairs to share responses and exchange information

ü **Step 3**: The teacher leads a class discussion of the problem

Real-world connection / focus / word problem connecting lesson to real-world:

(What is the connection between this content and a student's future study or the "real world"? What is the context of this lesson? What problem will you use to hook students into the lesson to make a real-world connection to content that they are going to learn today?)

A web-based T-shirt company has learned that by pricing a clearance sale T-shirt at , sales will reach per day. Raising the price to will cause the sales to fall to per day. Assuming that the relationship between sales price and number of T-shirts sold is linear, write an equation describing it.

How are you using this context to introduce or reinforce the teaching point? *By asking the following questions?*

1. Assuming that the number of T-shirts sold depends on the sale price, give 2 examples of ordered pair solutions:

    I. When the price is , how many T-shirts were sold? Answer: ***2000; (6,2000)***

    II. When the price is , how many T-shirts were sold? Answer: ***1500; (8,1500)***

2. How is the change of price related to the change of the number of T-shirts sold? (Answer: As the sales price ***increases*** *by , the number of T-shirts sold* ***decreases*** *by* ***1500***)

3. Additional Question here…

Anticipated time	Stage and aim	Procedure

| 10 min | **Test-** Use Think-Pair-Share activity:
ü Independent work
ü Collaborative work | ü Write the real-world problem on the board
ü Read it out loud to help students understand it better
ü Give students 3 min to solve the solve the problem independently
ü Give students 3 min to work in pairs to reinforce information
ü Actively circulate classroom during the "pairing" step to clarify any confusion
ü Discuss the problem with the whole class in the remaining 4 min |

| 25-30 min | **Teach-**
ü Review/cover content that is unclear.
ü Define important terms
ü Teach in the gap of the problem | v Congratulate students for their efforts on solving the word independently and as a group
v Begin lesson by defining the slope formula:
· Changes of the dependent variable **over** changes of independent variable.
v Then, remind students of the 3 forms of a line:
<u>Slope-intercept form</u>:
<u>Point-Slope form</u>:
<u>Standard form</u>:
v <u>Follow-up question leading to lesson</u>:
o Is the **slope known** and the *y-intercept* **known**?
· Use the Slope-intercept form
o Is the **slope known** and **any other point known**?
· Use the Point-Slope form
o Are any **2 Points** known?
· Use the Slope formula for slope and the Point-slope form for the equation.
o Is any Point known and the slope implied?
· Horizontal, vertical, parallel, perpendicular lines
· Use the Point-Slope formula

v *<u>Question</u>: Why is it useful to have the linear equation written in the Slope-intercept form?*
· *<u>Solution</u>:*
The form tells the **slope** and the **y-intercept**.
The slope tells the direction of the graph and the y-intercept is a point where the graph crosses the y-axis.
v Teacher introduces the mathematical terminology by saying/ asking the following: "What do we need to write an equation of a straight line?"
v Student/Teacher: *A slope and a point*.
v **Conclusion:**
Teacher will then summarize as the students will take notes:
Use the Slope formula to find the slope and the Point-Slope formula or Slope-intercept form to write an equation of a line. |

10 min	**Test-** Assess what students have understood. ü Do another activity ü Monitor **Practice Activities-** To provide students with practice and to generate an opportunity for more questions	ü Write the real-world problem on the board ü Read it out loud to help students understand it better ü Give students 4 min to solve the solve the problem independently ü Actively circulate classroom during the "pairing" step to clarify any confusion ü Give students 4 min to work in pairs to deepen knowledge ü Discuss the problem with the whole class in the remaining 2 min

Anticipated problems and potential solutions in this lesson (These can be either problems with logistics / timing, or problems to anticipate with students' knowledge / grasp of the content. Where will students have difficulties? What would you want a newer teacher to anticipate?)

v Students may encounter difficulty writing a linear equation when:

Ø It's to be written in the standard form: as the Slope-intercept is the **default** and the easiest.

Ø Dealing with parallel lines as the slope is found by rewriting the equation in the slope-intercept form (if necessary)

Ø Dealing with perpendicular lines as the slope is found by rewriting the equation in the slope-intercept form (if necessary) and taking its negative reciprocal

Differentiation: **In what places in the lesson are you differentiating for students in different ability groups?** v The *Think-Pair-Share* activity engages all types of learners- auditory, visual, and kinesthetic. v During the "Think-Pair" components of the activity, I: ü Write the problem on the board (Visual); ü Read the problem out loud (Auditory); v During the "Share" component of the activity ü I give the students the chance come on the board (Kinesthetic) Giving everyone an opportunity to access this lesson no matter what the students' background knowledge is. v Practice activity will also have questions for learners who are still grabbling with the content and more challenging questions for learners who're ready to take on the more challenging questions related to the content	**Where are these on your lesson plan?** v My lesson begins with an activity that requires students to take the time to internalize a problem and solve this problem at their own pace- this aids independent learners v *Think-Pair-Share* activity v Teach, Test, and Practice activities component of lesson

Ideas for extensions, notes, considerations, or alternative plans:

Ø   It is important to keep in mind that in the test-teach-test approach to this lesson, the professor monitors and listens to the students to see where they are struggling during the opening activity. You will then use this as a teaching point to introduce new vocabulary such as – x-intercept, y-intercept, vertical line, horizontal line, and linear equation in 2 variables.

Ø The purpose of pairing the *Think-Pair-Share* activity and the test-teach-test approach is:
ü To encourage both independent and collaborative work.
ü To engage students in higher-order thinking
ü To deepen and consolidate learning