DAY 10

Performance Objectives:

➤ Given an equation in standard form, students will be able to convert it to slope-intercept form 9 out of 10 times.

➤ Given an equation in point-slope form, students will be able to identify the slope, or convert the equation to slope-intercept form and then identify the slope 4 out of 5 times.

➤ Given the equation of a line in slope-intercept, standard or point-slope form, students will be able to recognize y-intercept from slope-intercept form or convert standard form or point-slope form to slope-intercept form 4 out of 5 times.

➤ Given a point that lies on the line and the slope of the line, students will be able to substitute the values appropriately into slope-intercept form and solve the resulting equation for the y-intercept 4 out of 5 times.

➤ Given the slope and the y-intercept, students will be able to substitute the values into slope-intercept form of the equation of a line 5 out of 5 times.

Materials and Resources Needed

Materials:

✓ PowerPoint about advanced examples of writing equations of lines: *Presentation-Day10* (See Appendix OO)

✓ Copies of exit ticket: *ExitTicket-Day10* (See Appendix PP)

✓ Key for exit ticket: *ExitTicket-Day10 KEY* (See Appendix QQ)

✓ Copies of tonight's homework assignment: *Homework-Day 10* (See Appendix RR)

Resources:

- ✓ Projector

- ✓ Computer with access to Microsoft Office: PowerPoint

- ✓ Whiteboard with markers and eraser (for teacher)

- ✓ Individual whiteboard with marker & eraser (paper towel works) for each student

- ✓ Wi-Fi

- ✓ Each student will need an internet enabled device to use the Desmos Scientific

  Calculator. Link: https://www.desmos.com/scientific

Time: 45 minutes.

Step 1: Pre-Instructional Activities: As students come in, direct them to get a whiteboard, marker and eraser for later in the lesson, this direction could be projected on the board as students come in or the teacher could put the appropriate supplies out on student desks. Review the previous night's homework by projecting the answers and address any questions the students may have.

Step 2: Content Presentation: The PowerPoint presentation has general instructions about how to go about solving the more complex examples. There are three basic steps, and within each step could be a variety of scenarios, so only the basics are listed.

1) Find the slope.

2) Find the y-intercept.

3) Substitute into slope-intercept form.

The presentation continues with several examples of advanced problems to work through. Remind students that they can use their Desmos Scientific Calculator as a tool to help them!

Students will be working the problems in their notebook, they will write their final answer on their whiteboard. As the instructor seems appropriate, and time allows, have students compare their answers with a neighbor and analyze each other's work if they have different answers. Students will take turns writing their answer and all supporting work on the whiteboard at the front of the classroom.

Answers to examples in the PowerPoint presentation.

1.

$$4x - 7y = 14$$
$$-4x \qquad -4x$$
$$-7y = -4x + 14$$
$$\frac{-7y}{-7} = \frac{-4x}{-7} + \frac{14}{-7}$$
$$y = \frac{4}{7}x - 2$$
$$\parallel m = \frac{4}{7}$$

$$3x + 4y = -12$$
$$-3x \qquad -3x$$
$$4y = -3x - 12$$
$$\frac{4y}{4} = \frac{-4x}{4} - \frac{12}{4}$$
$$y = -x - 3$$
$$b = -3$$

$$y = \frac{4}{7}x - 3$$

2.

$$10x - 5y = 20$$
$$-10x \qquad -10x$$
$$-5y = -10x + 20$$
$$\frac{-5y}{-5} = \frac{-10x}{-5} + \frac{20}{-5}$$
$$y = 2x - 4$$
$$\perp m = -\frac{1}{2}$$

$$y - 1 = -\frac{2}{3}(x + 12)$$
$$y - 1 = -\frac{2}{3}x - 8$$
$$\qquad +1 \qquad\qquad +1$$
$$y = -\frac{2}{3}x - 7$$
$$b = -7$$

$$y = -\frac{1}{2}x - 7$$

3.

$$y + 7 = -\frac{4}{3}(x - 9)$$

$-x + 6y = 8$

$+x \qquad\quad + x$

$6y = x + 8$

$$\frac{6y}{6} = \frac{x}{6} + \frac{8}{6}$$

$$y = \frac{1}{6}x + \frac{4}{3}$$

$$\| \, m = \frac{1}{6}$$

$$y + 7 = -\frac{4}{3}x + 12$$

$\quad -7 \qquad\qquad -7$

$$y = -\frac{4}{3}x + 5$$

$b = 5$

$$y = \frac{1}{6}x + 5$$

4.

$10x - 5y = 20$

$-10x \qquad\quad -10x$

$-5y = -10x + 20$

$$\frac{-5y}{-5} = \frac{-10x}{-5} + \frac{20}{-5}$$

$$\| \, m = -\frac{2}{3}x \qquad y = 2x - 4$$

$b = -4$

$$y = -\frac{2}{3}x - 4$$

5.

$-3x + 5y = 12$

$+3x \qquad\qquad +3x$

$5y = 3x + 12$

$$\frac{5y}{5} = \frac{3x}{5} + \frac{12}{5}$$

$$\perp \, m = -\frac{2}{7} \qquad y = \frac{3}{5}x + \frac{12}{5}$$

$$b = \frac{12}{5}$$

$$y = -\frac{2}{7}x + \frac{12}{5}$$

6.

$$-5x + 6y = -15$$
$$+5x \qquad +5x$$
$$6y = 5x - 15$$
$$\frac{6y}{6} = \frac{5x}{6} - \frac{15}{6}$$
$$y = \frac{5}{6}x - \frac{15}{6}$$
$$\| m = \frac{5}{6}$$

$$y + 0 = -\frac{9}{7}(x - 14)$$
$$y = -\frac{9}{7}x + 18$$
$$b = 18$$

$$y = \frac{5}{6}x + 18$$

Step 3: Learner Participation: Students will be completing problems independently. Students will also come to board to write their answer to the problem (with all supporting work). Occasionally students may also compare their answers and possibly engage in peer error analysis.

Step 4: Assessment: At the end of class students will complete an Exit Ticket-Day 10: *Fluency Check.* This *Fluency Check* is used with written permission from the author. Also, review problems at beginning of class, working examples during the main presentation of content, and tonight's independent practice (homework assignment). In addition to questions about this content on summative assessments.

Step 5: Follow-Through Activities: The next class, students will be completing a practice problem activity.