

Lesson 3
(Cover 1.4)

Assignment:
Read: Section 1.5
Do: Webwork, Team Homework

Announce/Remind:
Gateway (opens 1/10, closes 1/26)

The most important math points and skills on formulas for linear functions:

- Given the coordinates of two points, students should be able to calculate the slope and the vertical intercept of the linear function whose graph goes through them.
- Given a table of values that can be represented by a linear function, students should be able to calculate the slope and vertical intercept of the linear function.
- Given the graph of a linear function, students should be able to read the coordinates of two points from the graph and calculate the slope and vertical intercept of the linear function.
- Given a linear situation described in words, students should be able to translate the words into a formula for a linear function.
- Students should be able to evaluate a given linear function (e.g. formula or graph) at given x -values.
- Students should recognize a linear function expressed in slope-intercept, point-slope and standard forms, and be able to express formulas for linear functions in these algebraic formats.

0-10 Use this time for a **short quiz on the Student Guide**. Watch out for cheating. Announce the time allowed immediately before you distribute the quiz, and **stick to that allotment**.

10-25 When you have finished the quiz, briefly go over the answers and clarify any remaining confusion over course policies. You may review some of the last section by looking at some of the tables in **Section 1.3 #'s 1-6 on page 24**.

25-35 Have the students start with an example that involves finding the equation of a linear function based on table data. For instance, ask the students to try **Chapter 1 Review #12 on page 50** in their groups. Have the students first demonstrate that the table could indeed represent a linear function. Students should be able to determine the slope of the function from the table data. Ask the students to find the equation of the linear function in the form of $f(t) = b + mt$.

35-45 Next have the students practice finding the formula of linear function given a graph by working on **Section 1.4 #30 on page 32** in groups. Ask the students to interpret the physical meaning of the vertical and horizontal intercepts. Ask for volunteers to present the solution. If any groups finish early, have them work on **Section 1.4 #20 on page 32**.

45-55 Present a mini-lecture on the three alternate forms for the equations of linear functions, which are defined on page 31. Be sure to point out that all of these equations can be rearranged into slope-intercept form. You might try **Section 1.4 #4 and 5 on page 32** as examples to demonstrate this. Explain how sometimes one form may be easier to use to find a formula, depending on the information given.

- 55-65** Have the students attempt **Section 1.4 #43 on page 34** in their groups. Constraint problems are often difficult for students, so make sure to circulate the room and address student questions. In particular, figuring out the coordinates of the two points on the line may be more challenging for the students that you might expect. Be prepared to help them figure this out.
- 65-75** In groups, have the students work on **Section 1.4 #42 on page 34**. Make sure to emphasize that velocity measures both speed and direction and ask the students how negative velocity values should be interpreted. Be careful to ensure that all students are following the discussion. (You may have students who are very comfortable with these ideas due to experience in physics. However, most likely, not all of your students will feel this way.)
- 75-80** Spend the last few minutes of class discussing the **Gateway**. Make sure students know how to access the gateway and the deadline.

Discuss incentives for students to pass the Gateway early. Remind students that they will lose 1/3 of a letter grade if they fail to pass the gateway. Inform the students that the Tools sections at the end of Chapters 1, 2, 3, and 9 review algebraic manipulation skills if the students need review. Also, the “**Prep Math Site**” can be very helpful.

Remind students they are not allowed to use calculators for the gateway and that they need their student IDs to check in when they take the proctored gateway.