

Pathways Reading Guide M2 I4 Constant Rate of Change and Linearity

Please read Module 2, section 4 in your e-book, pp. 21 – 34 - lots of reading! (Click on Module 2, then “text.”) You might find the video walk-through of the tortoise and hare problem on p. 26 helpful.

Be sure to *read with a pencil in hand* and attempt the examples before you read the solution given. Take notes of important definitions and ideas as you read. I don’t expect you to have 100% comprehension of everything in the section, but spending significant time trying to understand the main ideas will assist you as you work on the Investigation during our next class.

Key Ideas:

1. The Problem Solving Framework (PSF) describes an effective approach for solving novel problems.
2. (Very key!): When rate of change between two quantities is constant, *the new value of the second quantity = old value second quantity + (rate of change) × (change in first quantity)*.
3. Two quantities are related by a constant rate of change if and only if the graph of one with respect to the other is a line; they are proportional if and only if the line passes through the origin.
4. Slope of a line = the constant rate of change.
5. Key skill: write an equation that relates two quantities that are related by a constant rate of change.

Be able to:

- List and describe the steps in the Problem Solving Framework (PSF).
- Use the PSF when asked to solve a novel problem.
- Study the tortoise & hare problem, carefully identifying the constant and changing quantities.
- Given a constant rate of change between two varying quantities and one value for each quantity (input and output), find a new value of the output, given a new value of the input. The examples on p. 26-28 should help.
- Write an equation that relates two quantities that are related by a constant rate of change. You will probably find the videos on pp. 28 & 29 helpful as you work on this skill.
- Understand and be able to interpret the graphical representation of varying quantities with a constant rate of change. Example 15 on p. 29 is good.
- Write a linear function given two varying quantities in context that are related by a constant rate of change. Studying example 16 on p. 32 and Example 17 on p. 33 will help you develop this skill. Remember to try to write a function yourself before reading the solution give in the ebook.
- Understand the slope-intercept form of a video function. See the video on p. 34.