# Eighth Grade Math Assignment

This assignment is strongly aligned to the standards.

Assignment Page 1

Task: Anna and Jason have summer jobs stuffing envelopes for two different companies. Anna earns $14 for every 400 envelopes she finished. Jason earns $9 for every 300 envelopes he finishes.
a. Draw graphs and write equations that show the earnings, y as functions of the number of envelopes stuffed, n for Anna and Jason.

Then the student has drawn a graph as demanded.

b. Who makes more from stuffing the same number of envelopes? How can you tell this from the graph?

The student wrote "Anna makes more because her line is above Jason's. 14/400=.035; 9/300=.03" Assignment Page 2

c. Suppose Anna has savings of $100 at the beginning of the summer and she saves all her earnings from her job. Graph her savings as a function of the number of envelopes she stuffed, n. How does this graph compare to her previous earnings graph? What is the meaning of the slope in each case?

The student has drawn another graph based on the given task and below it written "The graph is higher up but its parallel because she earned the same amount just had more money to start with. The slope is .035 and it means you go up 0.35 and over."  


Overview

Eighth-grade students draw graphs and write equations to represent a real-world scenario about earning money by stuffing envelopes, and then interpret the meaning of the rate associated with each graph/equation. The assignment is strongly aligned to eighth-grade standards because it involves graphing proportional relationships and finding and interpreting the unit rate of these graphs.

Related Standards

We looked at how well the assignment aligned to the following standards:

KY.8.EE.5 Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways.’

KY.8.F.4 Construct a function to model a linear relationship between two quantities.

a. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or from a graph.

b. Interpret the rate of change and initial value of a linear function in terms of the situation it models and in terms of its graph or a table of values.

Why is this assignment Strongly aligned?

Students explore proportional relationships through tables, equations, and graphs in seventh grade (standard KY.7.RP.2), and extend the concepts of proportional relationships to linear equations in eighth grade. Because the assignment asks students to interpret the unit rates/rates of change of two graphs in the context of the situation being modeled, it connects and extends their understanding from seventh grade in a manner appropriate to eighth grade.

Standards KY.8.EE.5 and KY.8.F.4 target conceptual understanding, procedural skill, and application, and the assignment addresses each of those. Students build conceptual understanding when they determine which envelope-stuffing rate is greater, use procedural skill by graphing the two relationships, and apply mathematics to a real-world scenario.

[**Practice Standards**](https://tntp.org/student-work-library/view/strongly-aligned-8th-grade-math-assignment)The assignment provides an opportunity for students to engage with Mathematical Practice Standard #2 (“Reason abstractly and quantitatively”). For instance, they decontextualize the math—that is, they think about the numbers and math separate from the real-world context—to construct a graph for each situation, then recontextualize—or consider the meaning of the numbers and the math in terms of the real-world context—as they use the graph and rate to determine who earns more for stuffing envelopes.