

Pre-Algebra – Unit 4: Proportions and Percents

Phoenixville Area School District

Stage 1 Desired Results		
<p>PA Core Standards: M07.A-R.1.1 Analyze, recognize, and represent proportional relationships and use them to solve real-world and mathematical problems.</p> <p>PSSA Assessment Anchors: M07.A-R.1 Demonstrate an understanding of proportional relationships.</p>	<i>Transfer</i>	
	<p>TRANSFER GOALS <i>Students will be able to independently use their learning to...</i></p> <ul style="list-style-type: none"> • Problem-Solving: Persistently apply various problem-solving strategies and organized approaches to accurately understand and solve problems and provide evidence to support response. • Mathematical Vocabulary: Interpret mathematical vocabulary and apply proper terminology to engage in meaningful oral and written expression that communicates mathematical thinking, problem-solving methods, and rationale. • Reasoning: Demonstrate mathematical resilience and conceptual understanding through the use of vocabulary, written expression, graphical representation, and alternate strategies. 	
	<i>Meaning</i>	
	<p>UNDERSTANDINGS <i>Students will understand that...</i></p> <ul style="list-style-type: none"> • The most appropriate way to solve a problem or represent a quantity depends on the situation, calculations may be done using; mental math or paper and pencil calculations using a variety of mathematically sound algorithms. • Mathematicians flexibly use symbols, numbers, words, and visual representations while maintaining the integrity of the relationship between quantities. • Mathematicians think about reasonableness throughout the problem-solving process. • Expressions are simplified using a predetermined order of operations. 	<p>ESSENTIAL QUESTIONS <i>Students will keep considering...</i></p> <ul style="list-style-type: none"> • What is the question asking? How do I get there? • When is it appropriate to use estimation? What would be a reasonable answer? • How do figures/quantities/numbers/operations relate to one another? • What does this quantity/number/expression/value mean? What are the ways to represent it? Is there a best way?

Knowledge and Skills Acquisition

KNOWLEDGE

Students will know...

- Ratios of lengths, areas, and other quantities measured in like or different units.
- Constant of proportionality will be used in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.
- Strategies and/or equations to use to solve proportions.
- Methods of a proportion or formula to solve for simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease.

VOCABULARY

- Ratio
- Unit Rate
- Percent
- Interest
- Proportional
- Proportion
- Mark-Up
- Discount

SKILLS

Students will be skilled at...

- Computing unit rates associated with ratios of fractions.
- Determining with different methods whether two quantities are proportionally related.
- Identifying the constant of proportionality (unit rate).
- Representing proportional relationships by equations.
- Explaining what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points $(0, 0)$ and $(1, r)$, where r is the unit rate.
- Using proportional relationships to solve multi-step ratio and percent problems.

Stage 2 – Evidence

Code A/M/T	Evaluative Criteria	Assessment Evidence	
<p style="text-align: center;">A/M/T</p> <p>Acquisition</p> <p>Meaning Making</p> <p>Transfer</p>	<p><i>What criteria will be used in each assessment to evaluate attainment of the desired results?</i></p>	<p>PERFORMANCE TASK(S) <i>Students will demonstrate understanding (meaning making and transfer) through complex performance by...</i></p> <p>Mixing Paint This task challenges a student to use ratios and percent in a practical problem.</p> <ul style="list-style-type: none"> • Goal: Your task is to mix paint colors to create a requested hue. • Role/Audience: You are working in a home goods store (Lowe’s, Home Depot) and preparing the paint for a customer. • Situation/Product: You will calculate the ratio of blue in brown given the ratio of red and blue in purple. • Success Criteria: Your solution will include the percent of brown paint that is made from the blue paint and an explanation. 	<p>Differentiation Considerations:</p>
<p style="text-align: center;">A/M/T</p> <p>Acquisition</p> <p>Meaning Making</p> <p>Transfer</p>	<p><i>What criteria will be used in each assessment to evaluate attainment of the desired results?</i></p>	<p>OTHER EVIDENCE</p> <p>Unit Test</p> <ul style="list-style-type: none"> • 3 Multiple Choice • True/False • Matching • Short Answer Computation • Explain the strategy used to find the percent of increase or decrease of a quantity. • Describe how markups are different from markdowns. • Would you prefer a job that offers commission or gratuities? Explain why. 	<p>Differentiation Considerations:</p>