

HPISD CURRICULUM
(MATH, GRADE 8)

EST. NUMBER OF DAYS: 8

UNIT NAME	PROPORTIONAL UNDERSTANDING	
Unit Overview	Students extend their understanding of proportionality to include representations on a coordinate plane and applications, including slopes of lines. They contrast proportional relationships that are not proportional.	
Generalizations/Enduring Understandings	<ul style="list-style-type: none"> Linear relationships are characterized by a constant rate of change. Linear relationships may be proportional or non-proportional. Changes in dimensions affect linear and area measures of two-dimensional figures. Understand that the variables, k and m, in the equations $y=kx$ or $y=mx+b$, both represent the slope of the given equation. 	
Concepts	Comparison - Numbers, expressions, and measures can be compared by their relative values. Proportionality - If two quantities vary proportionally, that relationship can be represented as a linear functions	
Guiding/Essential Questions	<ul style="list-style-type: none"> What are the properties of linear relationships? How are proportions related to linear relationships? How is a proportion similar and different to a ratio? What kinds of problems can be solved using proportional relationships? What are the characteristics of linear relationships that are NOT proportional? How do multiplicative changes in dimensions affect linear and area measures of two-dimensional figures? What are the characteristics of similar figures and how does this help find missing measurements such as side lengths or angle measures? What distinguishes a proportional vs. non-proportional relationship when looking at a table or equation? 	
	<i>Performance Levels</i>	<i>Learning Progression (***) Decision Point)</i>
Learning Targets	LEVEL 4: <u>LEVEL 3:</u> LEVEL 2:	<ul style="list-style-type: none"> Students will represent, apply, and analyze proportionality.
	LEVEL 4: <u>LEVEL 3:</u> LEVEL 2:	
Formative Assessments	<i>Title</i>	
Summative Assessments	<i>Title</i>	
	TEKS	<i>Specifications</i>

<p>TEKS (Grade Level) / Specifications</p>	<p>8.4(B) Graph proportional relationships, interpreting the unit rate as the slope of the line that models the relationship 8.4(C) Use data from a table or graph to determine the rate of change or slope and y-intercept in mathematical and real-world problems. 8.5(A) Represent linear proportional situations with tables, graphs, and equations in the form of $y = kx$; 8.5(B) Represent linear non-proportional situations with tables, graphs, and equations in the form of $y = mx + b$ 8.5(E) Solve problems involving direct variation 8.5(F) Distinguish between proportional and non-proportional situations using tables, graphs, and equations in the form $y = kx$ or $y = mx + b$ 8.5(H) Identify examples of proportional and non-proportional functions that arise from mathematical and real-world problems 8.1(A) apply mathematics to problems arising in everyday life, society, and the workplace 8.1(B) use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution 8.1(C) select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems 8.1(D) communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate 8.1(E) create and use representations to organize, record, and communicate mathematical ideas 8.1(F) analyze mathematical relationships to connect and communicate mathematical ideas 8.1(G) display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication</p>	
<p>Processes and Skills</p>	<p><u>What students should be able to DO</u></p> <ul style="list-style-type: none"> • Identify proportional relationships in real contexts. • Determine and apply direct variation. • Compare and contrast proportional relationships. • Solve problems involving proportional relationships. • Measure lengths and areas indirectly using proportional relationships. 	<p><u>What students should KNOW</u></p> <ul style="list-style-type: none"> • A proportion is a relationship of equality between two ratios. • In any proportion, the ratio of two quantities remains constant as the corresponding values of the quantities change. • A rate is a set of infinitely many equivalent ratios. • Understand that the variables, k and m, in the equations $y=kx$ or $y=mx+b$, both represent the slope of the given equation.
<p>Topics</p>	<p>Direct variation Non-proportional relationships Proportions Proportions in context Rates Ratios</p>	

Language of Instruction	constant of proportionality direct variation proportion rate ratio similar figures slope
State Assessment Connections	
National Assessment Connections	
Resources	