PRINCETON INDEPENDENT SCHOOL DISTRICT	**Campus:** Clark & Southard Middle School	
Author(s): Lawrence, Smith, Thompson	**Date Created / Revised:** 7/28/2021	
Six Weeks Period: 2	**Grade Level & Course:** 7th & 8th Math, 7th Grade Honors	
Timeline: 4 days	**Unit Title:** Unit 5 Graphs and Two-Variable Equations	**Lesson # 1**

Stated Objectives: **TEK # and SE**	7.4 Proportionality. The student applies mathematical process standards to represent and solve problems involving proportional relationships. 7.4(A) Represent constant rates of change in mathematical and real-world problems given pictorial, tabular, verbal, numeric, graphical, and algebraic representations, including d=rt 7.4(C) Determine the constant of proportionality (k = y/x) within mathematical and real-world problems 7.7 Expressions, equations, and relationships. The student applies mathematical process standards to represent linear relationships using multiple representations. 7.7(A) Represent linear relationships using verbal descriptions, tables, graphs, and equations that simplify to the form y = mx + b

See Instructional Focus Document (IFD) for TEK Specificity

Key Understandings	Understanding how two quantities vary together (covariation) and can be reasoned up and down in situations involving invariant (constant) relationships builds flexible proportional reasoning in order to make predictions and critical judgements about the relationship. Equations can be modeled, written, and solved using various methods to gain insight into the context of the situation and make critical judgments about algebraic relationships and efficient strategies.
Misconceptions	• Some students may think the constant rate of change and the constant of proportionality are the same value rather than understanding the constant of proportionality is represented by k = and may equal the constant rate of change for the linear equation y = mx + b only if b = 0. • Some students may not relate the constant rate of change to m in the equation y = mx + b. • Some students may think that the ratio for rate of change in a linear relationship is m = , since the x-coordinate (horizontal) always comes before the y-coordinate (vertical) in an ordered pair, instead of the correct representation that rate of change in a linear relationship is m =
Key Vocabulary	• Coefficient • Constant • Constant of proportionality • Constant rate of change • Linear relationship • Rational numbers • Unit rate

Suggested Day 5E Model	Instructional Procedures (Engage, Explore, Explain, Extend/Elaborate, Evaluate)	Materials, Resources, Notes
Day 1 *Engage* *Explore* *Explain* *Extend/Elaborate* *Evaluate* TEKS 7.4AC 7.7A	**Learning Objective:** Students will learn Constant of Proportionality and Proportionality & Tables **Instructional Procedures:** Bellwork - Students work on IXL 7th **7th** **Engage:** Students use their previous knowledge and discuss their observation of proportional relationships with tables. **Explore:** Students explore and observe more proportional relationships with tables. **Explain:**Teacher and students discuss proportional relationships in real-world situations. Teacher explains the key words. **Extend/Elaborate:** Students extend their knowledge and create word problems with tables, focusing on vocabulary that indicates proportional relationships. Students work in pairs, guided by a teacher, or independently. **Evaluate:** Students independently complete IXL 7th Grade K. **Closing Task:** Write a proportional relationship word problem with a table.	• IXL 7th • Constant of Proportionality - Notes and Assignments • Proportionality and Tables - Notes and Assignments • Quizlet C.O.P.

Day 2 *Engage* *Explore* *Explain* *Extend/* *Elaborate* *Evaluate* TEKS 7.4AC 7.7A	**Learning Objective:** Students will learn Proportional Relationship with Graphs and Equations. **Instructional Procedures:** Bellwork - Students work on IXL 7th K **7th** **Engage:** Students use their previous knowledge and discuss their observation of proportional relationships with graphs and equations. **Explore:** Students explore and observe more proportional relationships with graphs and equations. **Explain:** Teacher and students discuss proportional relationships in real-world situations. Teacher explains the key words. **Extend/Elaborate:** Students extend their knowledge and create word problems with graphs and equations, focusing on vocabulary that indicates proportional relationships. Students work in pairs, guided by a teacher, or independently. **Evaluate:** Students independently complete IXL 7th Grade K. **Closing Task:** Write a proportional relationship word problem with a graph and an equation.	• IXL • Proportionality and Graphs - Notes and Assignments • Proportional Relationships - Notes and Assignments
Day 3 *Engage* *Explore* *Explain* *Extend/* *Elaborate* *Evaluate*	**Learning Objective:** Students will learn Non-Proportional Relationship with Tables, Graphs and Equations. **Instructional Procedures:** Bellwork - Students work on IXL 7th K **7th** **Engage:** Students use their previous knowledge and discuss their observation of non-proportional relationships with tables, graphs and equations. **Explore:** Students explore and observe more non-proportional relationships with tables, graphs and equations. Students discuss the difference between	• IXL • Non-Proportional Relationships - Notes and Assignments • Multiple Representations - Notes and Assignments

TEKS 7.4AC 7.7A	proportional and non-proportional relationships. **Explain:** Teacher and students discuss non-proportional relationships in real-world situations. Teacher explains the key words. Teacher and students discuss the difference between proportional and non-proportional relationships. **Extend/Elaborate:** Students extend their knowledge and create word problems with tables, graphs and equations, focusing on vocabulary that indicates non-proportional relationships. Students work in pairs, guided by a teacher, or independently. **Evaluate:** Students independently complete IXL 7th Grade K. **Closing Task:** Write a non-proportional relationship word problem with a table, a graph and an equation. **Pass out Linear Relationship Study Guide to work on at home**	• Linear Relationship Study Guide • Quizlet Proportional Situations
Day 4 *Engage* *Explore* *Explain* *Extend/* *Elaborate* *Evaluate* TEKS 7.4AC 7.7A	**Learning Objective:** Students take the Linear Relationships Unit Test Bellwork - Students work on IXL 7th Grade. **Extend/Elaborate:** Teacher and students go over the study guide. **Evaluate:** Students take the Linear Relationships Unit Test. **Closing Task:** Students write the difference between proportional and non-proportional relationships.	• IXL • Linear Relationship Study Guide • Linear Relationships Unit Test