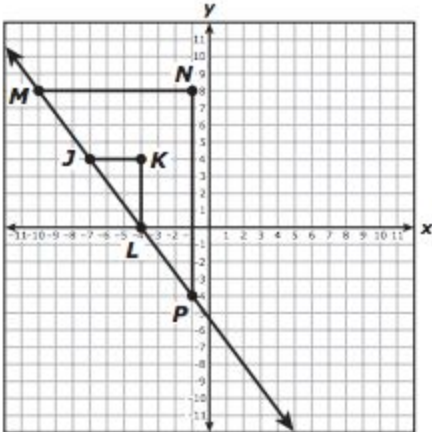# Summer Packet for Students going into Algebra I Honors

For students to reinforce foundational computational skills and concepts, students enrolled in Algebra I Honors are expected to preserve their mastery of Grade 7 and Grade 8 math concepts and skills over the summer. Students will be assessed on selected learning expectations (Texas Essential Knowledge and Skills—TEKS) from Grade 7 Math PAP during the first week returning to school in August. This diagnostic assessment will indicate a level of sustained mastery and will <u>not</u> be a grade.

In the chart below, each selected student learning target will have a hyperlinked resource and sample assessment item. These examples do not represent an exhaustive list of exercises. Answers to these example items are provided at the end of the document.
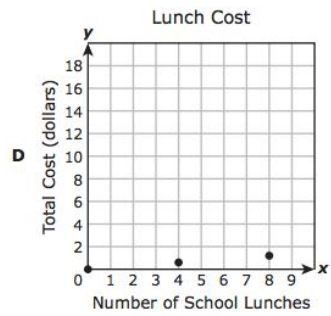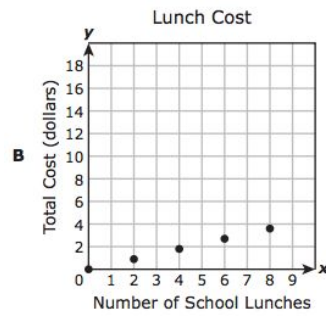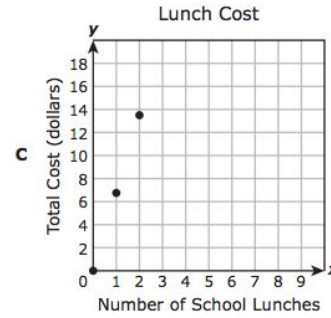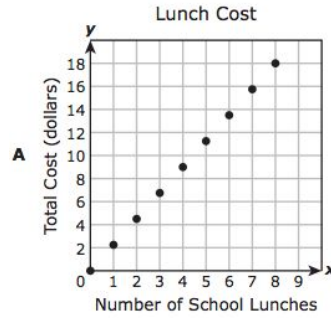
Several free online resources are available for additional learning support. Go to the Boerne ISD Student Portal and log in. Access the Math McGraw-Hill (online textbook) and Imagine Math. Also, Khan Academy and IXL.com/math provide free online learning platforms aligned to Texas standards.

Texas Essential Knowledge and Skills (TEKS)--learning target Links to online resources	Sample Item
8.4(A) use similar right triangles to develop an understanding that slope, m, given as the rate comparing the change in y-values to the change in x-values, $(y_2 - y_1)/(x_2 - x_1)$, is the same for any two points (x_1, y_1) and (x_2, y_2) on the same line Investigation 1 Investigation 2 Additional practice and self-check quizzes	Triangle *MNP* and triangle *JKL* are similar right triangles. Which proportion can be used to show that the slope of $\overline{JL}$ is equal to the slope of $\overline{MP}$? F $\quad \dfrac{0-(-7)}{4-(-4)} = \dfrac{-4-(-10)}{8-(-1)}$ G $\quad \dfrac{0-4}{-4-(-7)} = \dfrac{-4-8}{-1-(-10)}$ H $\quad \dfrac{0-(-4)}{4-(-7)} = \dfrac{-4-(-1)}{8-(-10)}$ J $\quad \dfrac{-4-(-7)}{0-4} = \dfrac{-1-(-10)}{-4-8}$

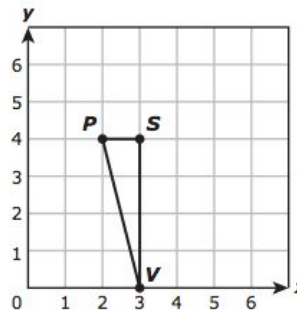| 8.4(B) graph proportional relationships, interpreting the unit rate as the slope of the line that models the relationship Video with investigation	Oscar buys his lunch in the school cafeteria. The cost of 15 school lunches is \$33.75. Which graph has a slope that best represents the average cost of the lunches in dollars per lunch? **Lunch Cost** A **Lunch Cost** C **Lunch Cost** B **Lunch Cost** D
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. Investigation using graph Investigation using table	Triangle *PSV* is shown on the coordinate grid. The coordinates of each vertex of the triangle are integers. What is the slope of $\overline{PV}$?

8.5(A) represent linear proportional situations with tables, graphs, and equations in the form of $y = kx$

Investigation using equation and graph

Investigation 2

On a map scale, 2 inches represents 60 miles. Which graph best shows the relationship between x, the number of inches on the map, and y, the actual distance in miles?

Map Scale (A)

Map Scale (C)

Map Scale (B)

Map Scale (D)
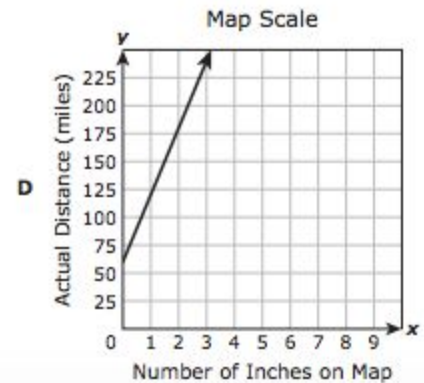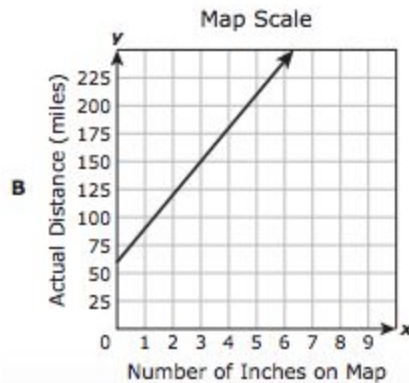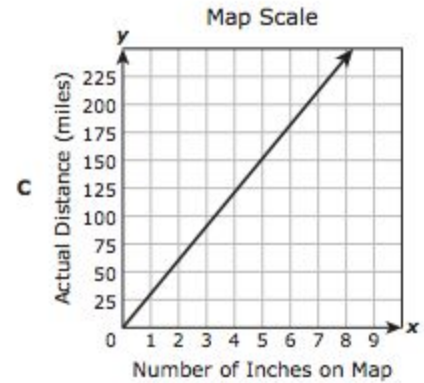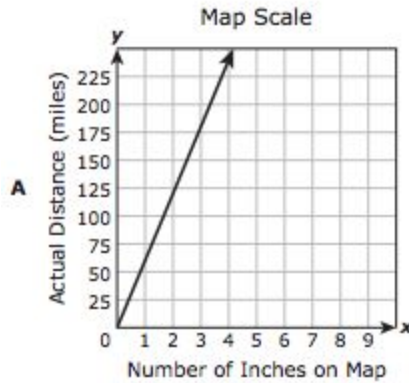
8.5(B) represent linear non-proportional situations with tables, graphs, and equations in the form of $y = mx + b$, where $b \neq 0$

Investigation using equation and graph

Investigation using equation, table and graph

Rudolfo has 15 toys in his toy box, and he adds 2 new toys every month. Based on this information, which representation best shows this relationship between the number of toys Rudolfo has in his toy box, y, and the number of months that have passed, x?
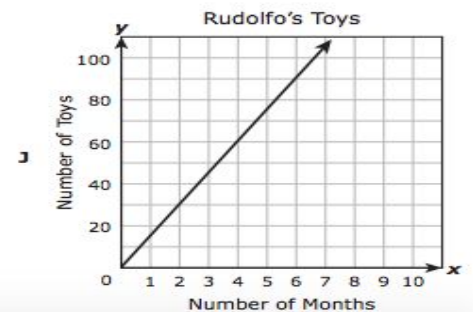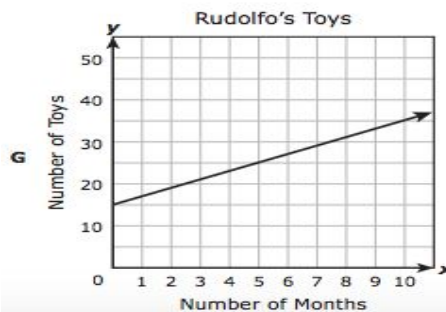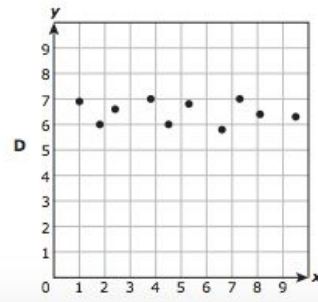
Rudolfo's Toys (F)

x	y
4	8
6	12
11	22
13	26

Rudolfo's Toys (H)

x	y
1	17
4	68
7	119
11	187

Rudolfo's Toys (G)
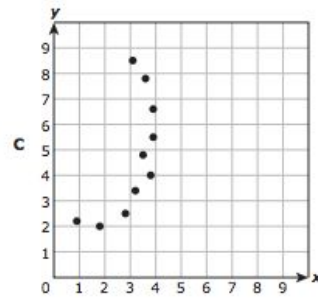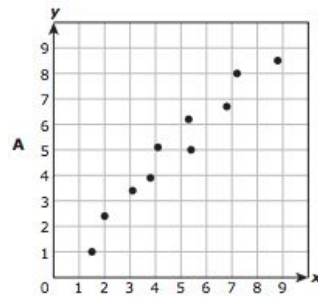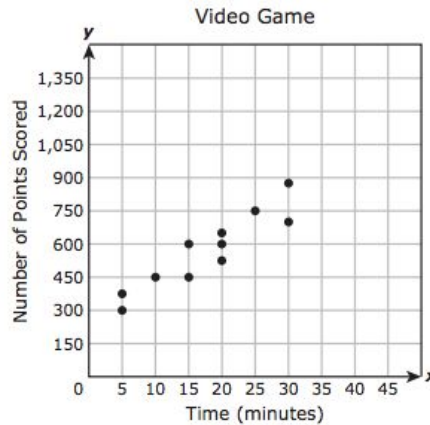
Rudolfo's Toys (J)

| 8.5(C) contrast bivariate sets of data that suggest a linear relationship with bivariate sets of data that do not suggest a linear relationship from a graphical representation	Which scatterplot does NOT suggest a linear relationship between x and y?
8.5(D) use a trend line that approximates the linear relationship between bivariate sets of data to make predictions	The scatterplot shows the time spent playing a video game and the number of points scored by several students. Video Game Based on the scatterplot, which is the best prediction of the number of points scored by a student who spends 45 minutes playing the video game? A 1,200 B 920 C 1,060 D 1,300
8.5(E) solve problems involving direct variation Investigation with Self-check	The amount of water an electric dishwasher uses to wash dishes varies directly with the number of loads of dishes. The dishwasher uses 32 gallons of water to wash 4 loads of dishes. How many gallons of water will the dishwasher use to wash 10 loads of dishes?
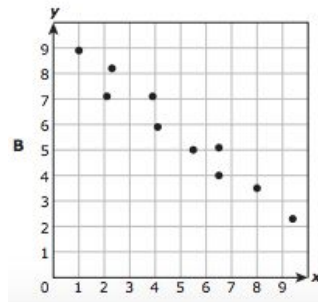
| 8.5(F) distinguish between proportional and non-proportional situations using tables, graphs, and equations in the form $y = kx$ or $y = mx + b$, where $b \neq 0$

Video | Which graph appears to show a proportional relationship between x and y?

F

H

G
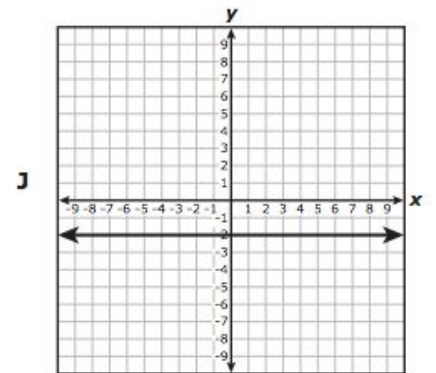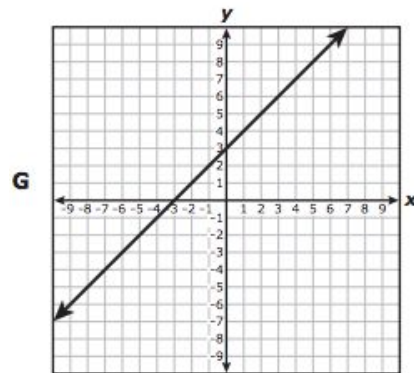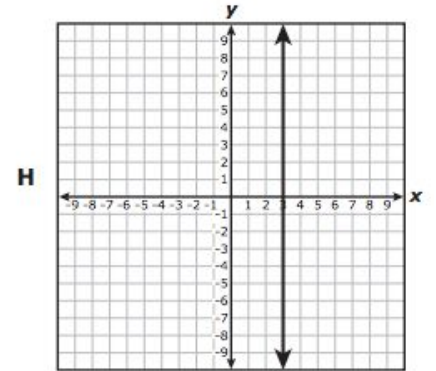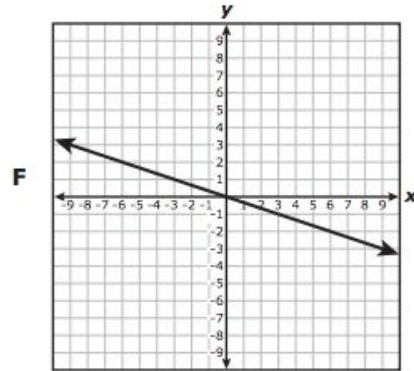
J |
| --- | --- |
| 8.5(G) identify functions using sets of ordered pairs, tables, mappings, and graphs

Khan Academy video | Which graph represents y as a function of x?

A

C

B

D |

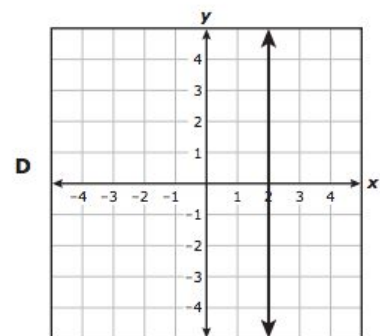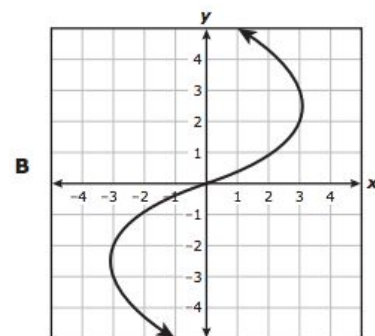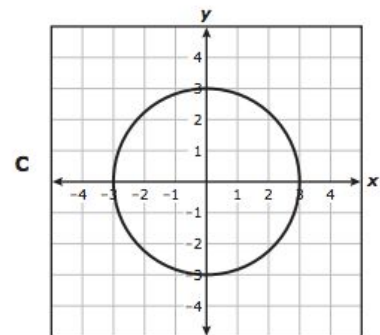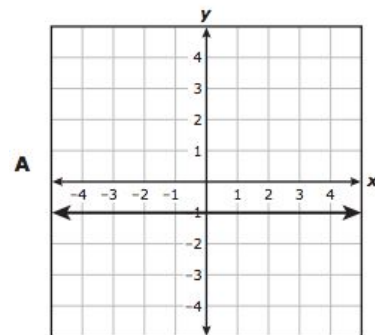|	
8.5(H) identify examples of proportional and non-proportional functions that arise from mathematical and real-world problems Math4Texas help	Which situation could NOT represent a proportional relationship? **F** The number of gallons of water in x barrels with 42 gallons of water in each barrel **G** The amount an employee who makes $8.50 per hour earns in h hours **H** The weight in x weeks of a puppy that gains 2 pounds per week if its starting weight is 8 pounds **J** The cost of purchasing p pounds of bananas for $0.55 per pound
8.5(I) write an equation in the form $y = mx + b$ to model a linear relationship between two quantities using verbal, numerical, tabular, and graphical representations. Geogebra Practices	A coach is ordering shirts for a team. • The coach pays a one-time fee of $24. • The coach also pays $8 for each shirt ordered. Which function can be used to find c, the total amount the coach pays in dollars when k shirts are ordered? **F** $c = 8k + 32$ **G** $c = 8k + 24$ **H** $c = 32k + 8$ **J** $c = 24k + 8$
8.8(A) write one-variable equations or inequalities with variables on both sides that represent problems using rational number coefficients and constants Math4Texas help	Jerry has a new job and earns a salary of $45,000. Victoria has a new job and earns a salary of $54,000. Jerry will receive a salary increase of $2,500 per year, and Victoria will receive a salary increase of $1,500 per year. Which equation can be used to find x, the number of years it will take Jerry to earn the same salary as Victoria? **F** $45,000x + 2,500x = 54,000x + 1,500x$ **G** $45,000x + 2,500 = 54,000x + 1,500$ **H** $45,000 + 2,500x = 54,000 + 1,500x$ **J** $45,000x + 2,500x = 54,000x + 1,500$
8.8(B) write a corresponding real-world problem when given a one-variable equation or inequality with variables on both sides of the equal sign using rational number coefficients and constants Math4Texas help	Which situation can be represented by this equation? $$7x + 1 = 10x$$ **F** Brody ran at a constant rate of 7 miles per hour in a race. Candice ran at a constant rate of 10 miles per hour in a race and started 1 mile in front of the starting point. What is x, the number of hours that Brody and Candice would have to run in order for their distance to be the same? **G** Brody played a game where he scored 8 points per hour. Candice played the game and scored 10 points per hour. What is x, the number of hours that Brody and Candice would each have to play the game in order for their scores to be the same? **H** Brody went to two different amusement parks. The first park charged $7 per hour and gave a 1% discount for showing a student ID. The other park charged $10 per hour. What is x, the number of hours that Brody would have to stay at each park to have to pay the same amount? **J** Brody rode his bicycle on two different days. The first day he rode 7 miles per hour and started 1 mile from his house. The second day he started from his house and rode 10 miles per hour. What is x, the number of hours that Brody would have to ride his bicycle to travel the same distance on both days?

8.8(C) model and solve one-variable equations with variables on both sides of the equal sign that represent mathematical and real-world problems using rational number coefficients and constants Practice with Self-Check (click on start arrow, go to Solve It and begin at any level) Practice with Self-Check Math4Texas help Video	What value of x makes this equation true? $$12x - 15 = 6 - 3x$$

Answer Key:
8.4A: G
8.4B: A
8.4C: -4
8.5A: C
8.5B: G
8.5C: C
8.5D: C
8.5E: 80
8.5F: F
8.8G: A
8.8H: H
8.8I: G
8.8A: H
8.8B: J
8.8C: 7/5