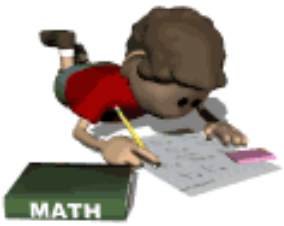
Math 8
Winter Enrichment Packet

PRINCE GEORGE'S COUNTY PUBLIC SCHOOLS
Office of Academic Programs
Department of Curriculum and Instruction

NOTE TO THE STUDENT

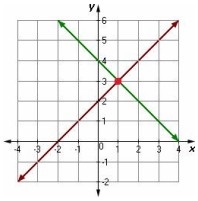
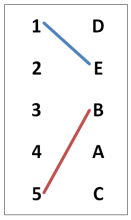
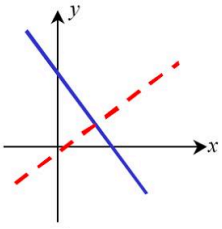
This Winter Enrichment Packet has been compiled to complement middle school mathematics classroom instruction aligned to the Maryland College and Career Ready Standards (MCCRS). The packet is intended for reviewing and practicing previously taught and new concepts.

We strongly encourage you to work diligently to complete the activities for the choice board. You may experience some difficulty with some activities in this packet, but we encourage you to think critically and creatively and complete them to the best of your ability. Upon returning to school, your teacher will discuss the activities with you.



Math 8 Winter Break Choice Board

Directions: Complete three activities in a tic-tac-toe (three in a row across, down, or diagonal) pattern. Follow all directions closely and complete each activity in its entirety. Use the rubrics to guide your work.

Activity 1 ***Power Up or Key It*** Create a PowerPoint, keynote or Google document of at least five slides. 	**Activity 2** ***It's Real*** Write and solve systems of linear equations to represent word problems. 	**Activity 3** ***Explain It*** Explain how you can determine if a relation is a function. explain it
Activity 4 ***All About Coding*** Complete a Code.Org coding activity. CODE STUDIO	**Activity 5** ***What's Your Solution?*** Create three different linear equations written in one variable that each have one of each of the following solutions: One solution; no solution; infinitely many solutions. *one* solution *no* solution *infinitely many* solutions	**Activity 6** ***Puzzle Time*** Complete a task in which you match systems of equations to their solutions as ordered pairs. 
Activity 7 ***Solve Them*** Solve systems of equations by **elimination** and **substitution.** 	**Activity 8** ***Map It Out*** Examine the street layout of Washington, D.C., and create your own mini street layout. 	**Activity 9** ***Create a Quiz*** Create a quiz on ProProfs Quiz Maker that assesses *Solving Linear Equations*. ProProfs Quiz Maker

Math 8 Choice Board Activity Directions

Activity 1: Power Up or Key It ***Standard 8.G.5***	**Activity 2: It's Real** ***Standard 8.EE.8***	**Activity 3: Explain It** ***Standard 8.F.1***
Create a PowerPoint, Keynote or Google Slides presentation of at least five slides on transversals. Include the following terms, their definitions, examples and/or pictures or videos: ● *Transversal* ● *Parallel Lines* ● *Vertical Angles* ● *Corresponding Angles* ● *Alternate Interior Angles* ● *Alternate Exterior Angles*	On loose leaf paper, write and solve a system of linear equations for each of the following word problems. State the solution to each system in a sentence. 1. A test has 20 questions and is worth 100 points. The test consists of True/False questions worth 3 points each and multiple choice questions worth 11 points each. How many multiple-choice questions are on the test? 2. Danielle is selling her handmade jewelry online. Yesterday, she sold 2 bracelets and 4 necklaces, for a profit of $118. Today, she made a profit of $132 by selling 4 bracelets and 4 necklaces. How much profit does Danielle earn from each piece?	On loose leaf paper, explain how you can determine if a relation *IS* or *IS NOT* a function from each of the representations below. Give a detailed example of a relation that IS a function and a relation that IS NOT a function to illustrate your explanation for each. ● *A set of ordered pairs* ● *A graph line* ● *A mapping diagram* ● *A table*

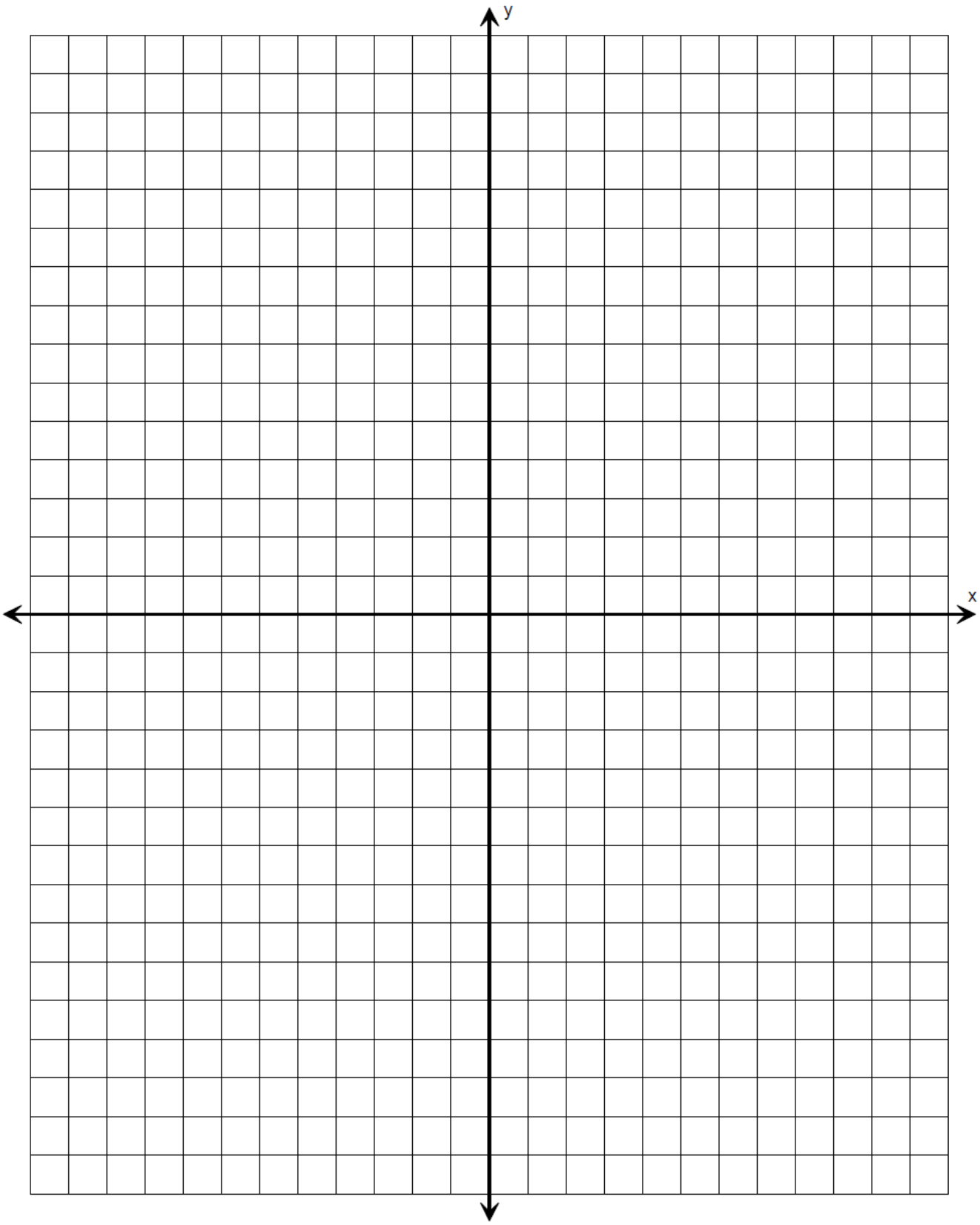
Math 8 Choice Board Activity Directions

Activity 4: All About Coding ***Standards in 8.F***	**Activity 5: What's Your Solution?** ***Standard 8.EE.7***	**Activity 6: Puzzle Time** ***Standard 8.EE.8***
Complete the Farmer coding activity at the following link: https://studio.code.org/s/20-hour/stage/8/puzzle/1 1. Watch the video on "Functions" 2. Click on the **orange** tab "Finished! Continue to next stage" 3. Work through the stages of the coding activities. Take a selfie that shows your computer screen AND YOUR NAME in the frame of the photo after you have completed the 11th stage. 4. For three videos that appear throughout the Farmer coding activity (shown below), write one sentence that summarizes the main idea of each video. ● *Repeat Times* Block (Mark Zuckerberg) ● *While* Block (Makinde Adeagbo) ● *If* Block (Bill Gates)	On loose leaf paper, create three different linear equations with one variable but that have variable terms on each side of the equal sign. One equation each should have the following answers: ● *One Solution* ● *No Solution* ● *Infinitely Many Solutions*	On the coordinate grids contained in this packet or on other coordinate grids that you print or create: ● Graph the systems of equations from the puzzle sheet ***5.1 Puzzle Time***. ● Determine the solutions to the systems of equations. ● Identify the solutions on the puzzle sheet and find the words that correspond to the answers. ● Write the answer to the riddle on the puzzle sheet or on loose leaf paper.

Math 8 Choice Board Activity Directions

Activity 7: Solve Them ***Standard 8.EE.8***	**Activity 8: Map It Out** ***Standard 8.G.5***	**Activity 9: Create a Quiz** ***Standard 8.EE.7***
On loose leaf paper, solve each system of equations by **elimination** *and* **substitution**. Explain your steps for each method used. $\{2x + 4y = 7\ x + 2y = 3$ $\{4x + 4y = -\ 8\ 3x - 2y = 19$	Using a computer, iPad or mobile device: ● Go to the "Maps" app or Google Earth or Google Maps. Search for "Washington D.C." ● On a sheet of loose leaf paper, describe the layout of the city's streets in at least five sentences. For example, you may write about how the city is divided into quadrants; the direction and arrangement of numbered, lettered, and state-name streets, etc. ● On the coordinate grid sheet in this packet, draw parallel lines that represent two streets. ● Create two more streets that cross the parallel streets at non-right angles and name them. The cross streets cannot be parallel to each other. ● Label each of the angles formed by numbers: *L*1, *L*2, *L*3, *L4*, etc. ● Explain the relationship between all congruent pairs of angles that are formed by the cross streets to the parallel lines. Name all pairs of *Vertical Angles, Corresponding Angles, Alternate Interior Angles,* and *Alternate Exterior Angles*.	Go to www.proprofs.com. ● Click on the link for *Quizzes* ● Click on the link for *Create a Quiz* ● Click on the link for *Create a Scored Quiz* ● Title your quiz "*Solving Linear Equations*". ● Each question should have a problem that requires solving a linear equation with variables on both sides. ● Create five multiple-choice questions and include the four answer choices. Mark the correct answer with a . ● After you have created your five problems: ● **Email your teacher the link to your quiz.** MAKE SURE TO INCLUDE YOUR NAME in your message. ● You may also print out your quiz and submit it to your teacher.

Coordinate Grid for *Map It Out* Activity



5.1 Puzzle Time

Why Did The Student Eat His Homework?

A	B	C	D	E	F
G	H	I	J		

Complete each exercise. Find the answer in the answer column. Write the word under the answer in the box containing the exercise letter.

Solve the system of linear equations by graphing.

A. $y = x$
$y = -x$

B. $y = x + 1$
$y = -x - 3$

C. $y = 2x$
$y = 4x + 2$

D. $y = -4x + 2$
$y = 2x + 2$

E. $y = -\frac{1}{4}x + \frac{3}{4}$
$y = \frac{1}{4}x - \frac{3}{4}$

F. $y = \frac{1}{2}x - 1$
$y = -x + 2$

G. $x + y = 3$
$y = x - 1$

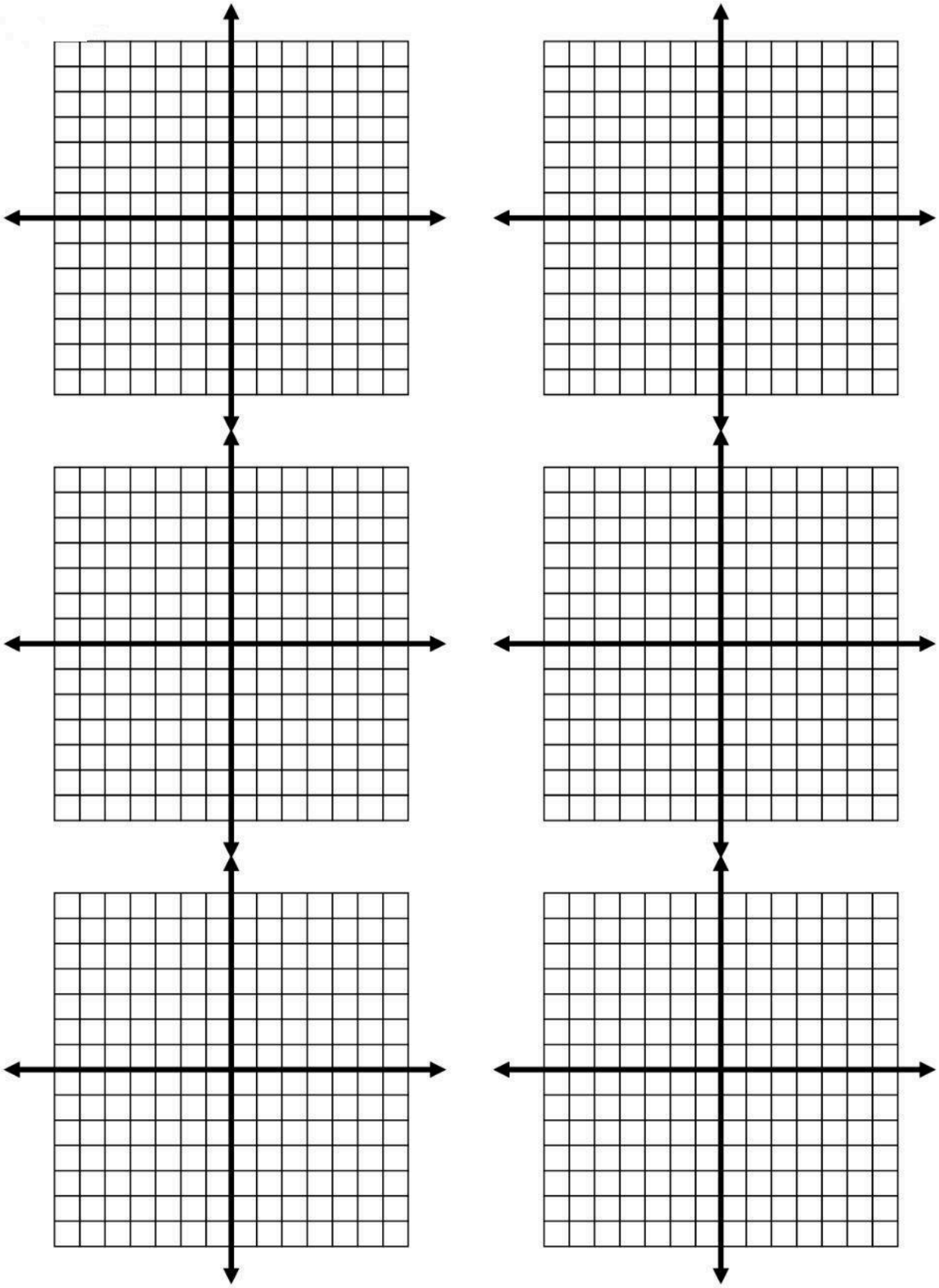
H. $4x + y = 12$
$y = 4x + 4$

I. $-x + y = -3$
$4x + y = 2$

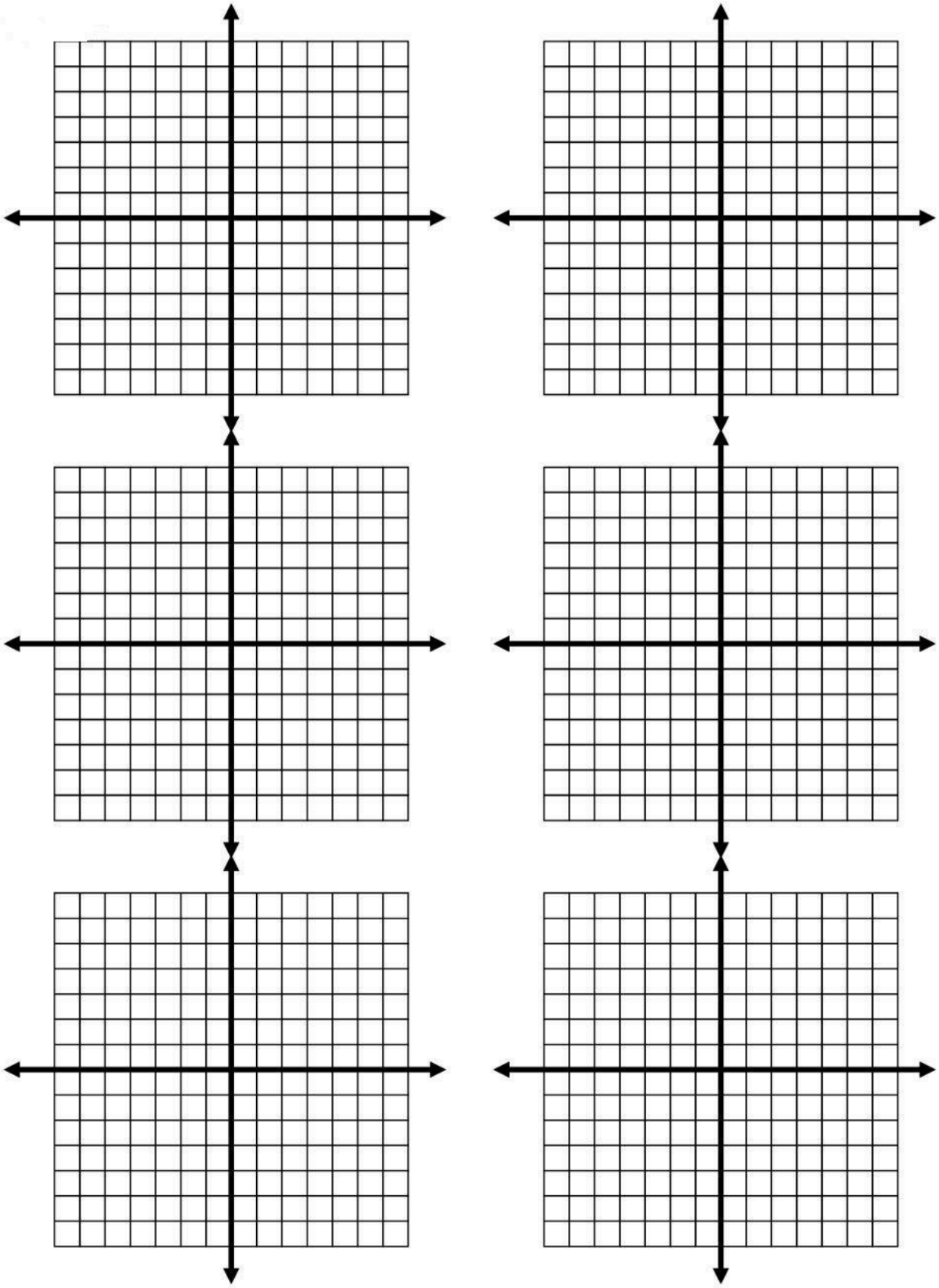
J. At a grocery store, Candy buys 2 cantaloupes at x dollars each and 1 watermelon at y dollars. Her total bill is \$9. Chip goes to the same grocery store and buys 1 cantaloupe at x dollars and 1 watermelon at y dollars. His total bill is \$6. Write and solve a system of linear equations by graphing to find the cost x of a cantaloupe and the cost y of a watermelon.

(−4, 4) STUDENT	(−1, −2) TOLD
(0, 0) THE	(1, −2) OF
(1, 8) PIECE	(5, 0) HERSELF
(−2, 1) DOG	(2, 0) WAS
(3, 0) IT	(8, 1) ATE
(5, −3) HER	(2, 1) A
(3, 3) CAKE	(0, −6) HOMEWORK
(−3, 5) ICING	(−2, −1) TEACHER
(0, 2) HIM	(7, 7) SAID

Coordinate Grids for Puzzle Time Activity



Coordinate Grids for Puzzle Time Activity



Math 8 Choice Board Rubrics

Rubric for *Create a Quiz with ProProfs*

4	3	2	1	Score
Quiz contains 5 problems and all are equations that have variables on both sides. Link is shared with teacher or quiz is printed out.	Quiz contains 4 problems that are equations that have variables on both sides. Link is shared with teacher or quiz is printed out.	Quiz contains 3 problems that are equations that have variables on both sides. Link is shared with teacher or quiz is printed out.	Quiz contains 2 or fewer problems that are equations with variables on both sides.	

Rubric for *All About Coding*

	4	3	2	1	Score
Completion of Coding Activities and Picture Taken	Photo/selfie taken includes screen showing that Level 11 was completed.	Photo/selfie taken includes screen showing that Level 9 was completed.	Photo/selfie taken includes screen showing that Level 7 was completed.	Photo/selfie taken includes screen showing that Level 5 was completed.	
Summary Sentences	Three complete summary sentences are written from the videos.	Two complete summary sentences written from the videos.	One complete summary sentence written from the videos.	No summary sentences written or submitted.	
				Total	

Rubric for *It's Real*, *Puzzle Time*, and *Solve Them*

4	3	2	1	Score
● The activity is complete. ● Each of the solutions is correct. ● All solution paths are shown. ● Explanations are given (if necessary).	● The activity is complete. ● Only one solution has an error ● All solution paths are shown. ● Explanations are given (if necessary).	● The activity is complete. ● Solutions have one or more errors; all solution paths may not be shown or needed explanations are incomplete.	The activity is incomplete or there are many errors or incomplete solution paths or explanations.	

Rubric for *Power Up/Key It*

	4	3	2	1	Score
Effort	The project demonstrates significant effort and time.	The project demonstrates adequate effort and time.	The project demonstrates sub-standard effort and/or time.	The project demonstrates minimal effort.	
Definitions/ Terms	Student provided all terms, definitions and examples, and/or pictures.	Student provided at least 5 terms, definitions and examples/pictures.	Student provided at least three terms, definitions and examples/pictures.	Student provided 3 or fewer terms, definitions and examples/pictures.	
Creativity	Project is creative, neat, and well-designed.	Project is missing one of the following: creativity, neatness, or cohesive design.	Project is lacking two of the following: creativity, neatness, or cohesive design.	Project is lacking all of the following: creativity, neatness, cohesive design.	
				Total	

Rubric for *Explain It*

4	3	2	1	Score
Each of the explanations and examples for why a relation IS or IS NOT a function is clear, complete and correct.	One of the explanations and examples for why a relation IS or IS NOT a function is clear, complete and correct.	2-3 of the explanations and examples for why a relation IS or IS NOT a function is clear, complete and correct.		

Rubric for *What's Your Solution*

4	3	2	1	Score
Each of the explanations and examples for why a relation IS or IS NOT a function is clear, complete and correct.	One of the explanations and examples for why a relation IS or IS NOT a function is clear, complete and correct.	2-3 of the explanations and examples for why a relation IS or IS NOT a function is clear, complete and correct.	At least 4 of the explanations and examples for why a relation IS or IS NOT a function is clear, complete and correct.	

Rubric for *Map It Out*

	4	3	2	1	Score
Summary Sentences	The layout of Washington D.C.'s streets is described in at least 5 sentences.	The layout of Washington D.C.'s streets is described in 4 sentences.	The layout of Washington D.C.'s streets is described in 3 sentences.	The layout of Washington D.C.'s streets is described in 2 or fewer sentences.	
Identification of angle pairs	All angle pairs formed by the cross streets are identified correctly.	Angle pairs formed by the cross streets are identified correctly, but with 1-2 errors or omissions.	Angle pairs formed by the cross streets are identified correctly, but with 3-4 errors or omissions.	Angle pairs formed by the cross streets are identified correctly, but with 5 or more errors or omissions.	
				Total	