The unit we are studying addresses graphing in the coordinate plane. Khan Academy is a great resource if you need extra help. You can watch videos on every topic, complete practice problems, and even take practice tests. You can find this by searching Khan Academy or use the links below:

https://www.khanacademy.org/math/basic-geo/basic-geo-coord-plane

https://www.khanacademy.org/math/algebra/x2f8bb11595b61c86:linear-equations-graphs

## Day 6

1. Study the notes for The Coordinate System.

2. Complete 4 practice worksheets for graphing in the coordinate plane.

3. Take the Graphing Points Quiz.

## Day 7

1. Study the notes for Graphing Linear Equations.

2. Complete the 3 practice worksheets labeled for Day 7. You must complete the tables and graph the equations to receive full credit. If your graphs are not straight lines, then you have some points wrong.

## Day 8

1. Complete the "From Tables to Graphs and Back! Match" Activity. Match each graph with the correct equation and table. Record your answers on the table provided.

## Day 9

1. Complete the "Equations, Tables, and Graphs Pizza Shop" lesson. Answer every question and use the graph paper to create your graphs.

## Day 10

1. Study the example linear equation story problem (Caricatures at the Fair).

2. Complete the 4 story problems for linear equations (T-Shirt Shop, Towing Service, Rental Car, and Plumber) labeled Day 10. Answer every question to receive full credit.

Name _____

# The Coordinate System

- A **coordinate system**, or <u>coordinate plane</u>, is used to locate points in a 2-dimensional plane.
- The horizontal number line is the ___**x-axis**___ .
- The vertical number line is the ___**y-axis**___ .
- Their intersection is the ___**origin**___ . (Label)
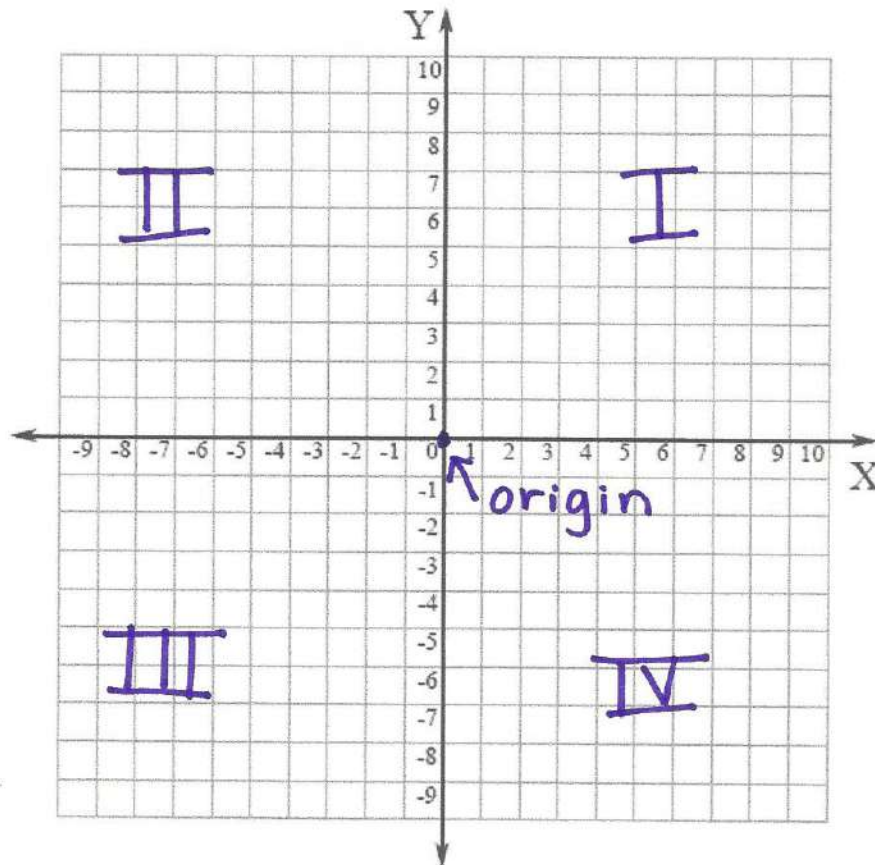


- The coordinate plane contains four quadrants (I, II, III, IV).  <u>Label the quadrants.</u>
- Any point can be located within one of the four quadrants in the coordinate plane using a specific ordered pair of numbers, called its ___**coordinates**___.

## (x , y)

- The first number in an ordered pair is the x-coordinate.
- The second number is the y-coordinate.

  Example:  **(3,2)**      **3** is the **x- coordinate**, **2** is the **y-coordinate**.

- A point is defined on the coordinate plane by one, AND ONLY ONE, ordered pair.

Day 6    name:

**Tell what point is located at each ordered pair.**

1. (3 , -2) __B__        2. (2 , 3) ____        3. (-5 , 5) ____

4. (-7 , -8) __H__       5. (-4 , 4) ____       6. (-5 , 0) ____

**Write the ordered pair for each given point.**

7. E __(-3, -2)__      8. M _____        9. P _____

10. G __(7, 8)__       11. Q _____        12. N _____

**Plot the following points on the coordinate grid.**

13. S (-6,-3)           14. T (2,-4)           15. U (5,8)

**Identify the quadrant containing each point.**
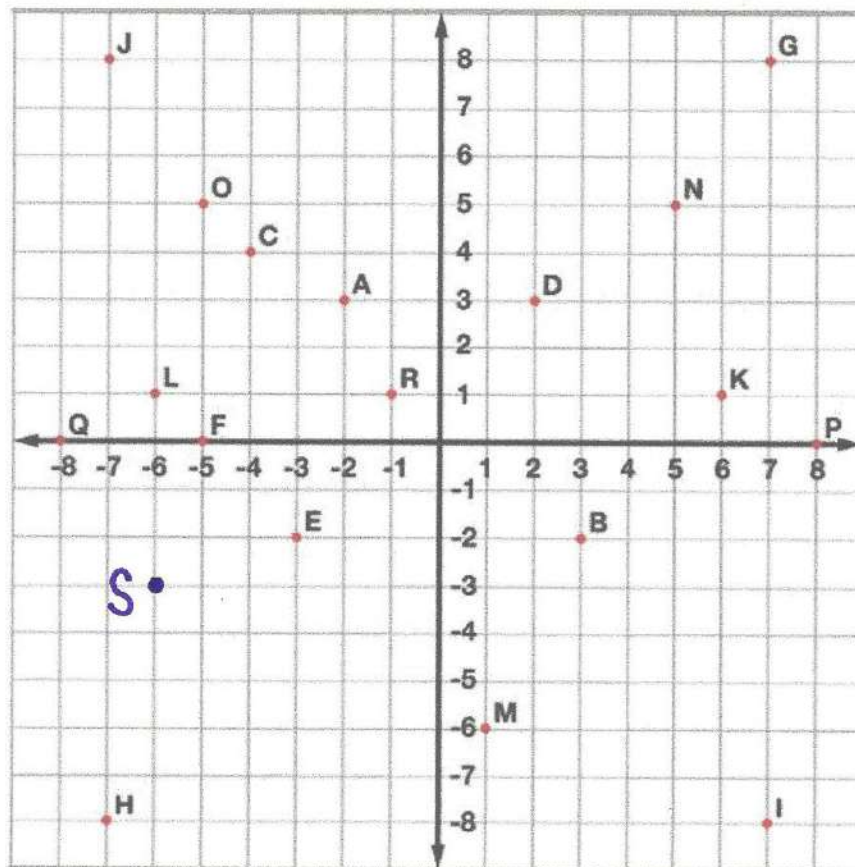
16. B __IV__      17. J          18. I           19. D           20. E

*Day 6*

## 3-3  Study Guide and Intervention

### *The Coordinate Plane*

> The **coordinate plane** is used to locate points. The horizontal number line is the **x-axis**. The vertical number line is the **y-axis**. Their intersection is the **origin**.
>
> Points are located using **ordered pairs**. The first number in an ordered pair is the **x-coordinate**; the second number is the **y-coordinate**.
>
> The coordinate plane is separated into four sections called **quadrants**.

**EXAMPLE 1**  **Name the ordered pair for point P. Then identify the quadrant in which P lies.**

- Start at the origin.
- Move 4 units left along the $x$-axis.
- Move 3 units up on the $y$-axis.
  The ordered pair for point $P$ is $(-4, 3)$.
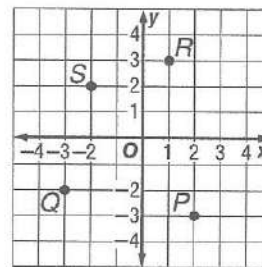  $P$ is in the upper left quadrant or quadrant II.
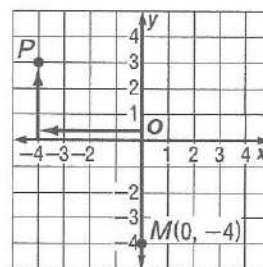
**EXAMPLE 2**  **Graph and label the point $M(0, -4)$.**

- Start at the origin.
- Move 0 units along the $x$-axis.
- Move 4 units down on the $y$-axis.
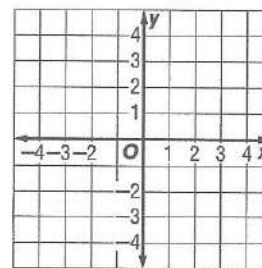- Draw a dot and label it $M(0, -4)$.

### EXERCISES

**Name the ordered pair for each point graphed at the right. Then identify the quadrant in which each point lies.**

1. $P$

2. $Q$

3. $R$

4. $S$

**Graph and label each point on the coordinate plane.**

5. $A(-1, 1)$

6. $B(0, -3)$

7. $C(3, 2)$

8. $D(-3, -1)$

9. $E(1, -2)$

10. $F(1, 3)$

Lesson 3-3

**Day 6**

**3-3** **Practice: Skills**

**The Coordinate Plane**

Name the ordered pair for each point graphed at the right. Then identify the quadrant in which each point lies.

1. $A$                                      2. $B$

3. $C$                                      4. $D$

5. $E$                                      6. $F$

7. $G$                                      8. $H$

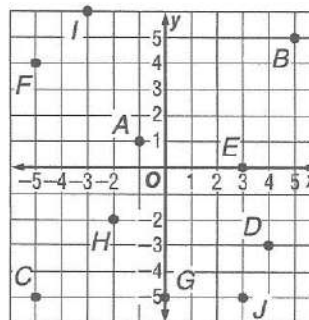9. $I$                                      10. $J$

Graph and label each point on the coordinate plane.

11. $N(-1, 3)$                          12. $V(2, -4)$

13. $C(4, 0)$                            14. $P(-6, 2)$
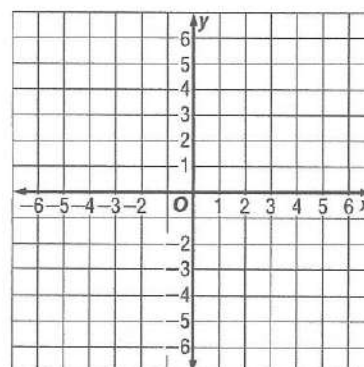
15. $M(-5, 0)$                          16. $K(-1, 5)$
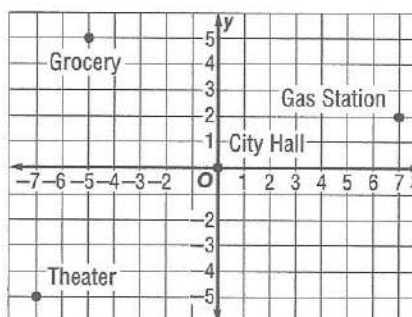
17. $I(-3, -3)$                          18. $A(5, -3)$

19. $D(0, -5)$

Name the ordered pair for each point on the city map at the right.
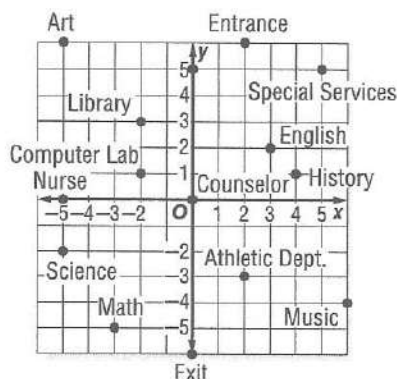
20. City Hall

21. Theater

22. Gas Station

23. Grocery

*Day 6*

**3-3** **Practice: Word Problems**

*The Coordinate Plane*

**SCHOOL** For Exercises 1–4, use the coordinate plane at the right. It shows a map of the rooms in a junior high school.



| | |
|---|---|
| **1.** Thalia is in the room located at $(-2, 1)$. What room is she in? Describe in words how to get from the origin to this point. | **2.** Thalia's next class is 8 units to the right and 5 units down on the map from where she is now. In what room is Thalia's next class? Find the ordered pair that represents the location of that room. |
| **3.** Tyrone is in the Art room, but his next class is in the History room. Give Tyrone directions on how to get to the History room. | **4.** On the map, which classrooms are located in the third quadrant? Describe the coordinates of all points in the third quadrant. |
| **5.** **NEIGHBORHOOD** Delsin made a map of his neighborhood in such a way that each intersection is a point on a coordinate plane. Right now, Delsin stands at point $(-4, -3)$. Give the ordered pair of where he will be if moves 5 units to the right and 7 units up on the map. | **6.** **NEIGHBORHOOD** Refer to Exercise 5. In which quadrant is Delsin when he is done walking? Describe this quadrant. |

Lesson 3-3

# Day 6
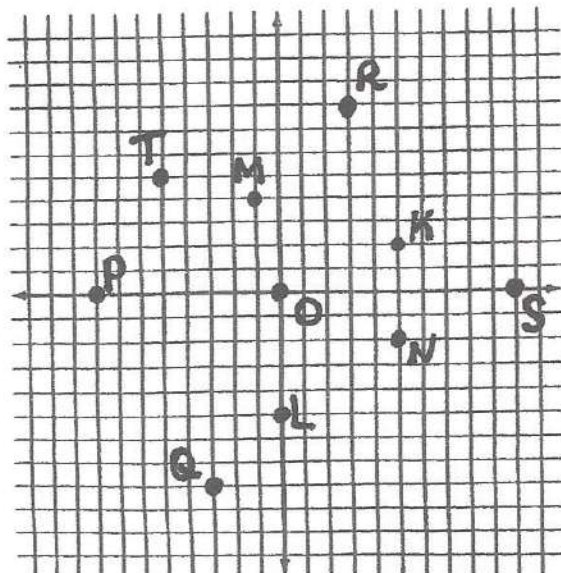
Graph the points on the coordinate plane, and name the quadrant for each point.

1. A ( 2, 3) _____

2. B ( -5, -2) _____

3. C ( -1, 0) _____

4. D ( -4, 3) _____

5. E ( 2, -1) _____

6. F ( 0, -5) _____

7. G (4, 1) _____

8. H ( -3, -3) _____

9. I (3, 0) _____

10. J ( -2, 3) _____
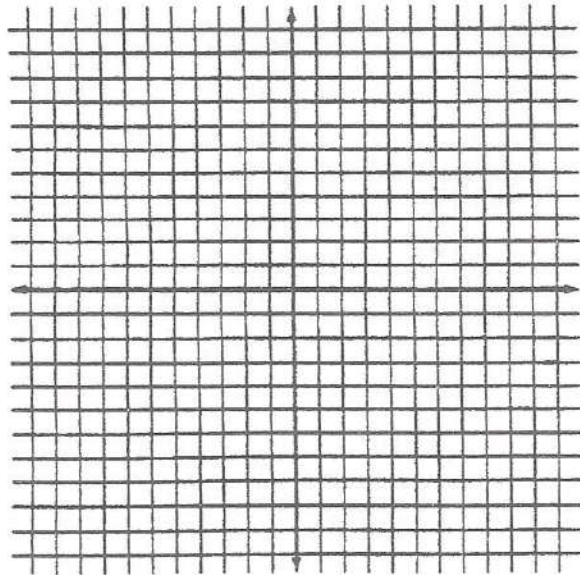
Name the coordinates for the points graphed on the coordinate plane to the left.

11. K _____

12. L _____

13. M _____

14. N _____

15. O _____

16. P _____

17. Q _____

18. R _____

19. S _____

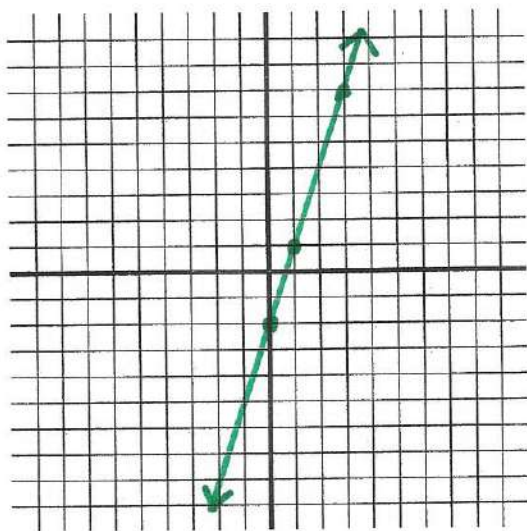20. T _____

# Day 7    notes

## Graphing Linear Equations

Method 1: Make a table

1. _set up a table_
2. _choose values for x_
3. _substitute values for x and solve for y_
4. _graph the points from the table_
5. _connect the points to make a line_

EXAMPLE:

$$y = 3x - 2$$

| x | 3(x) − 2 | y |
|---|---|---|
| 1 | 3(1) − 2 | 1 |
| 3 | 3(3) − 2 | 7 |
| −4 | 3(−4) − 2 | −14 |
| 0 | 3(0) − 2 | −2 |

* use as many
  points as needed

* pick any numbers
  you want for x

* sometimes the points will
  not fit on the graph
  like (−4, −14)

name: 

**Day 7**

# Why Did Zorna Pour Ketchup on Her Brother's Hand?

Complete the table for each equation. Find each answer in the code key and notice the letter next to it. Write this letter in the box at the bottom of the page that contains the circled number in that row of the table.

| CODE KEY | |
|---|---|
| 13 | L |
| 10 | R |
| 7 | A |
| 6 | T |
| 4 | P |
| 3 | M |
| 2 | W |
| 1 | I |
| 0 | N |
| -2 | H |
| -5 | D |
| -6 | B |
| -8 | E |
| -10 | O |
| -11 | S |

**1** $y = -2x$

| x | y | |
|---|---|---|
| 1 | | ① |
| 4 | | ② |
| -5 | | ③ |
| 3 | | ④ |

**2** $y = 4 + 2x$

| x | y | |
|---|---|---|
| 3 | | ⑤ |
| -7 | | ⑥ |
| 1 | | ⑦ |
| -3 | | ⑧ |

**3** $y = -3x + 1$

| x | y | |
|---|---|---|
| 3 | | ⑨ |
| -3 | | ⑩ |
| 4 | | ⑪ |
| -2 | | ⑫ |

**4** $y = \frac{1}{2}x - 4$

| x | y | |
|---|---|---|
| 10 | | ⑬ |
| -2 | | ⑭ |
| 4 | | ⑮ |
| -8 | | ⑯ |

**5** $y = -x + 6$

| x | y | |
|---|---|---|
| 4 | | ⑰ |
| -1 | | ⑱ |
| 6 | | ⑲ |
| 0 | | ⑳ |

**6** $y = -\frac{3}{2}x - 2$

| x | y | |
|---|---|---|
| 4 | | ㉑ |
| 2 | | ㉒ |
| 0 | | ㉓ |
| -2 | | ㉔ |

**7** $y = 7 - 3x$

| x | y | |
|---|---|---|
| 6 | | ㉕ |
| 1 | | ㉖ |
| 0 | | ㉗ |
| -2 | | ㉘ |

**8** $y = 1 - x$

| x | y | |
|---|---|---|
| -2 | | ㉙ |
| -9 | | ㉚ |
| 9 | | ㉛ |
| 6 | | ㉜ |

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

✱ Also graph these equations on ✱ the paper with 8 blank graphs.

ALGEBRA WITH PIZZAZZ!
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OBJECTIVE 5–c: To find ordered pairs that satisfy a linear equation and use them to graph the equation (equations are solved for *y*).

Day 7                    name:

Graph equations from "ketchup" here.

# Day 7

name:
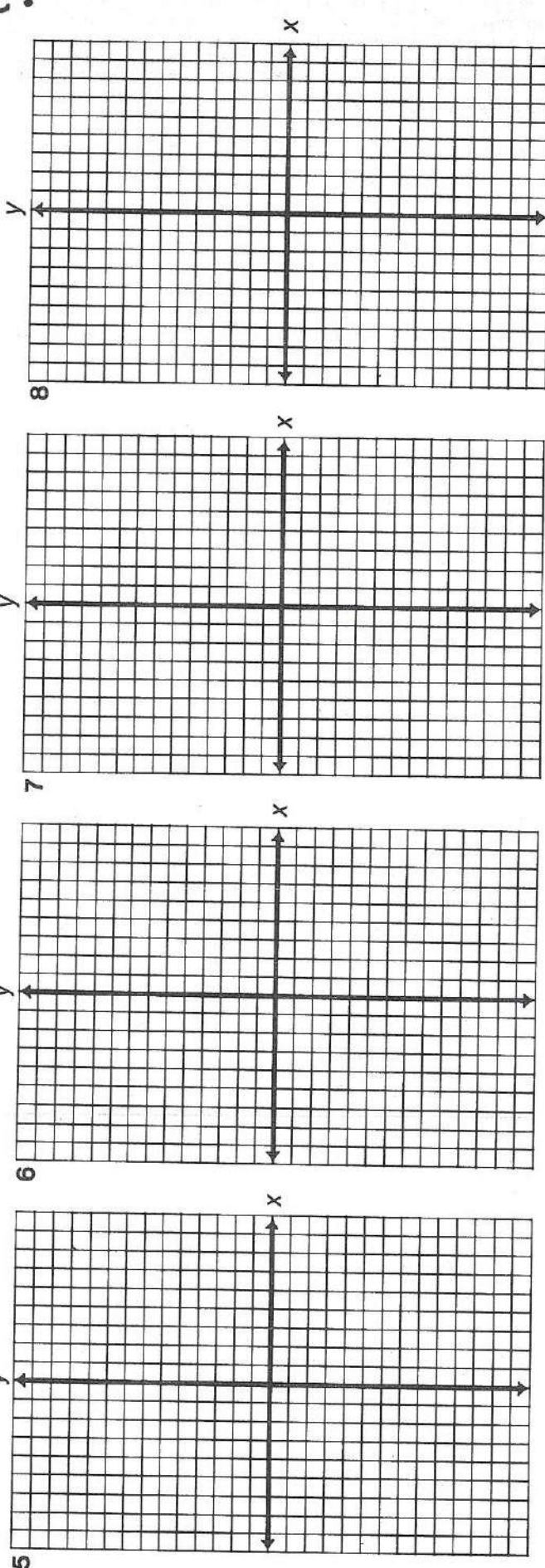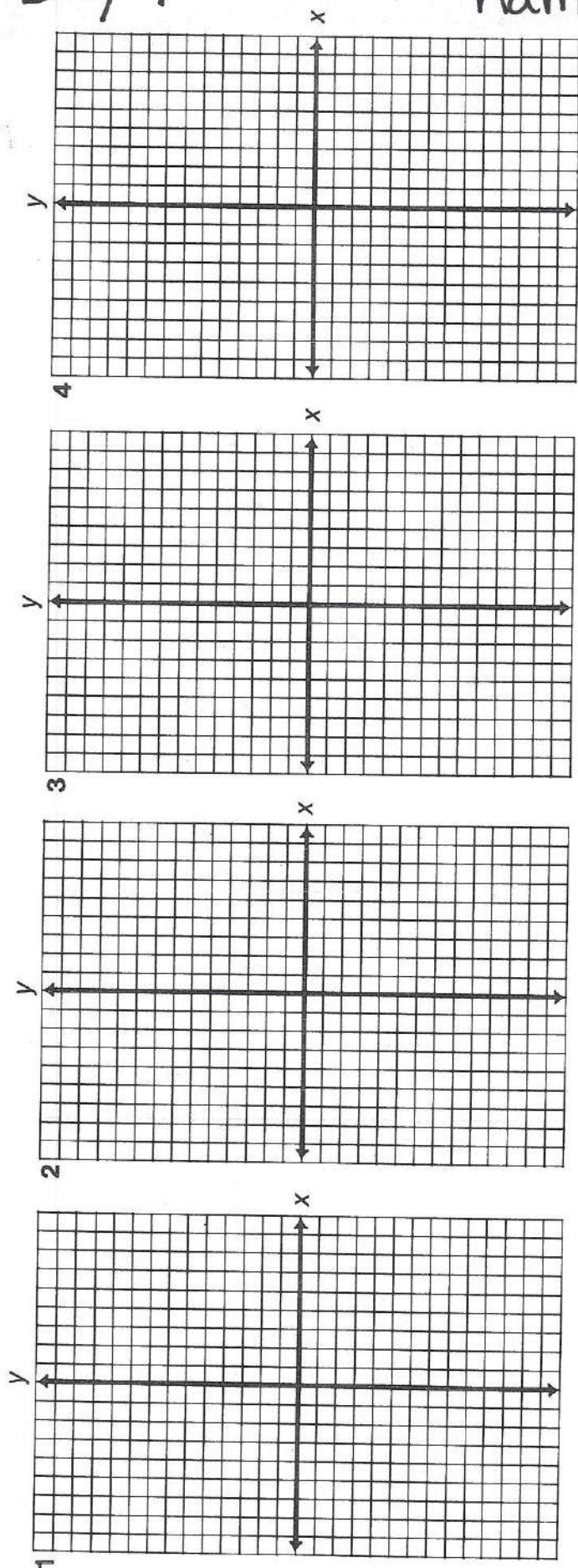
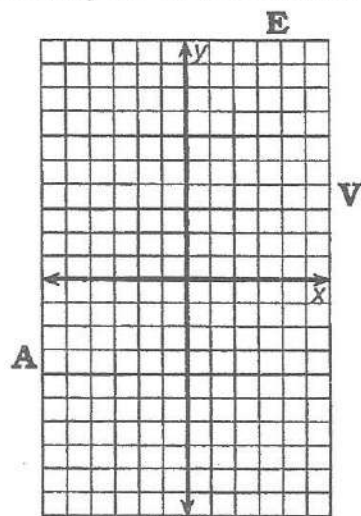## What Helps Chicks Get Out of Their Shells?

Complete the table of solutions for each equation. Then graph the solutions and draw a line through them. The line, if extended, will cross a letter outside the grid. Write this letter in each box containing the exercise number.

| 4 | 3 | 1 | 1 | 6 | 6 | 5 | 2 | 4 |
|---|---|---|---|---|---|---|---|---|
|   |   |   |   |   |   |   |   |   |

**1**  $y = 3x - 1$

| x | y |
|----|---|
| 3 |   |
| 2 |   |
| -2 |   |
| 0 |   |

E, V, A

**2**  $y = -2x + 3$

| x | y |
|----|---|
| 5 |   |
| -3 |   |
| 2 |   |
| 0 |   |

I, U, C

**3**  $y = -x - 2$

| x | y |
|----|---|
| 6 |   |
| -5 |   |
| -2 |   |
| 0 |   |

R, H, D

**4**  $y = \frac{1}{2}x + 4$

| x | y |
|----|---|
| 4 |   |
| 6 |   |
| -2 |   |
| 0 |   |

S, T, O

**5**  $y = 7 - 2x$

| x | y |
|----|---|
| 2 |   |
| -1 |   |
| 5 |   |
| 0 |   |

F, B, S

**6**  $y = -\frac{2}{3}x + 1$

| x | y |
|----|---|
| 6 |   |
| -6 |   |
| 3 |   |
| 0 |   |

N, G, L
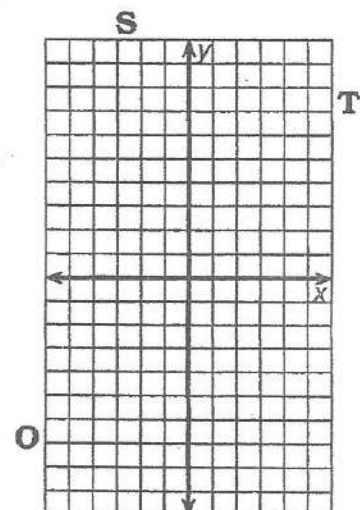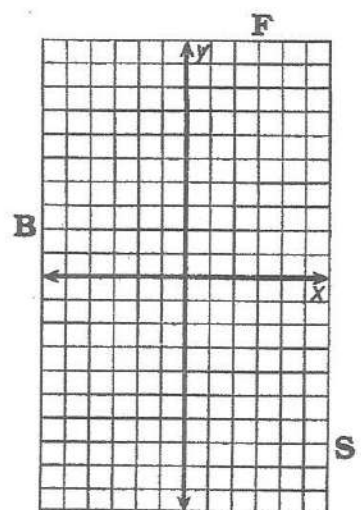
# How Does the Average Man Feel Today?

Complete the table of solutions for each equation. Graph the solutions and draw a line through them. If extended, the line will cross a letter. Write this letter in each box containing the exercise number.

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 2 | 1 | 8 | 8 | 2 | 4 | 8 | 7 | 5 | 4 |

**1.** $y = 3x - 2$

| x | y |
|---|---|
| 3 | |
| 2 | |
| -2 | |
| 0 | |

**2.** $y = -2x + 5$

| x | y |
|---|---|
| 5 | |
| -1 | |
| 2 | |
| 0 | |

**3.** $y = -x - 3$

| x | y |
|---|---|
| 4 | |
| -1 | |
| -6 | |
| 0 | |

**4.** $y = \frac{1}{2}x + 1$

| x | y |
|---|---|
| 4 | |
| -6 | |
| -2 | |
| 0 | |

**5.** $y = 7 - 2x$

| x | y |
|---|---|
| 2 | |
| -1 | |
| 5 | |
| 0 | |

**6.** $y = -\frac{2}{3}x + 4$

| x | y |
|---|---|
| 3 | |
| -3 | |
| 6 | |
| 0 | |

**7.** $x + y = 6$

| x | y |
|---|---|
| 1 | |
| 4 | |
| -2 | |
| 0 | |

**8.** $x + 2y = 0$

| x | y |
|---|---|
| 6 | |
| -2 | |
| -6 | |
| 0 | |

Linear Equations and Their Graphs:
Tables and Graphs for Linear Equations

Lesson Objective: Working in pairs, match the graph cards to the corresponding equation card, table card and description card. Use the table to record your matches in addition to lining the cards up on your workspace for quick observation and feedback.
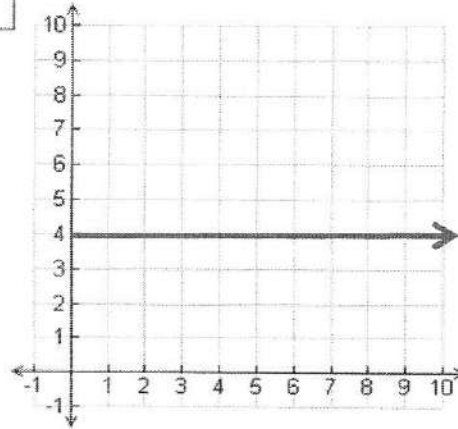
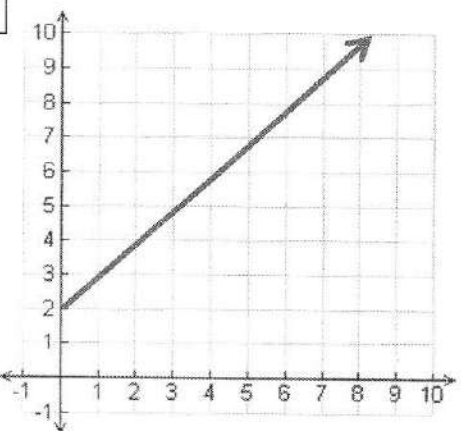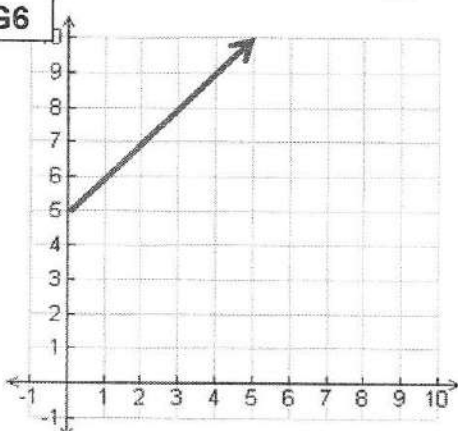| From Tables to Graphs and Back! Match Activity | | |
|---|---|---|
| Graph | Equation | Table |
| G1 | | |
| G2 | | |
| G3 | | |
| G4 | | |
| G5 | | |
| G6 | | |
| G7 | | |
| G8 | | |
| G9 | | |
| G10 | | |
| G11 | | |
| G12 | | |
| G13 | | |
| G14 | | |
| G15 | | |

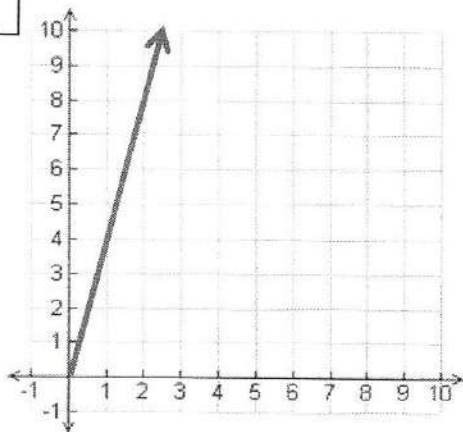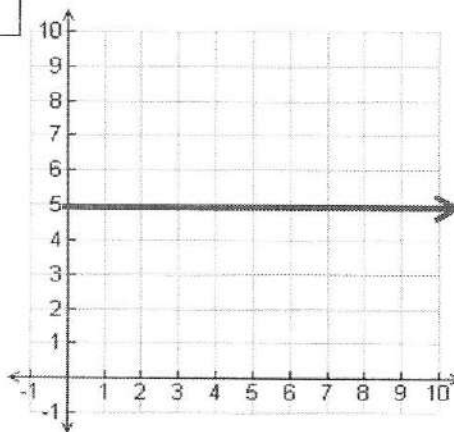# From Tables to Graphs and Back! Match

**G1**
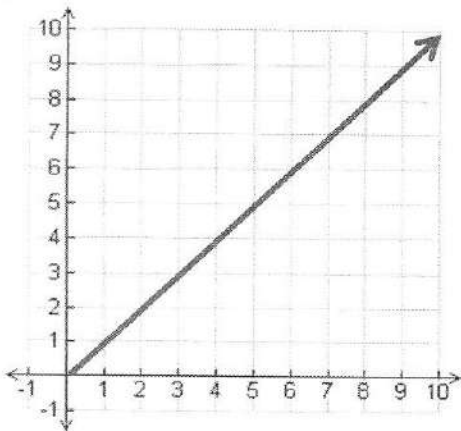


**G2**



**G3**
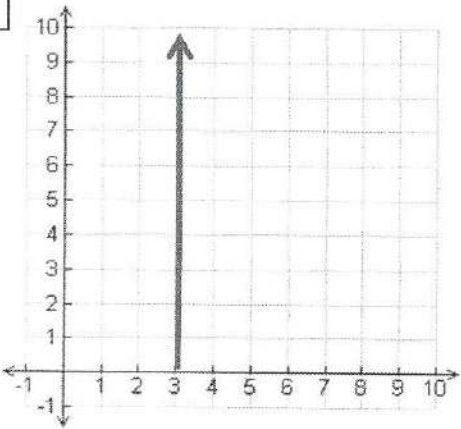


**G4**
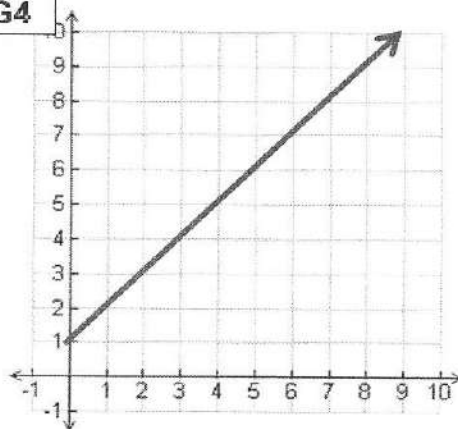


**G5**



**G6**

# From Tables to Graphs and Back! Match
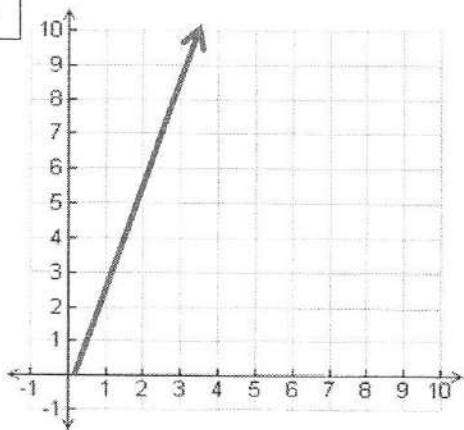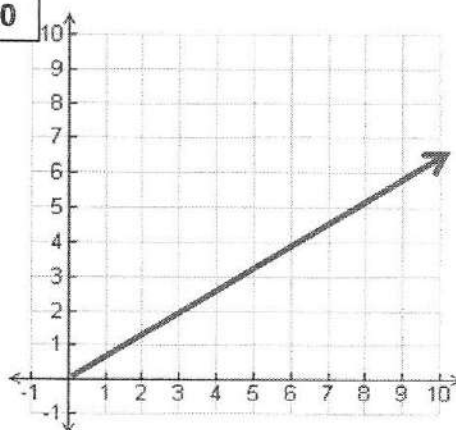
| | |
|---|---|
| **G7**  | **G8**  |
| **G9**  | **G10**  |
| **G11**  | **G12**  |
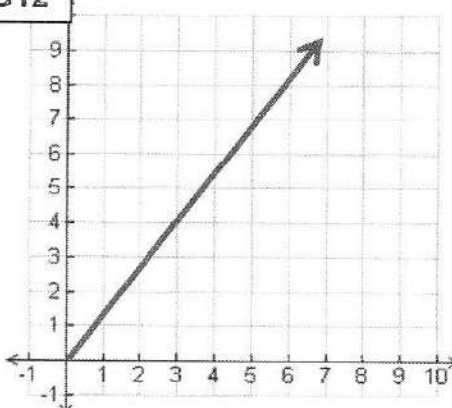
# From Tables to Graphs and Back! Match

| G13 | G14 |
|-----|-----|
|  |  |
| **G15** | |
|  | |
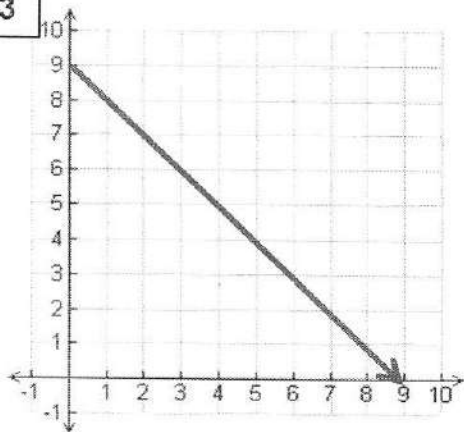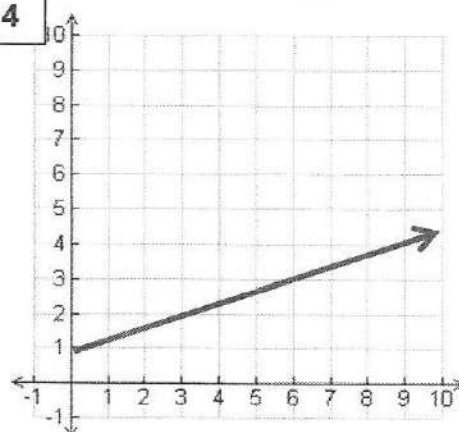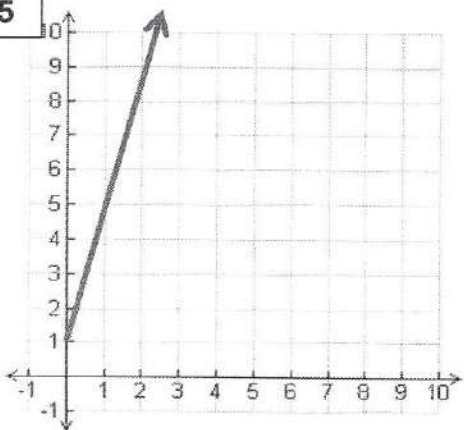
# From Tables to Graphs and Back! Match

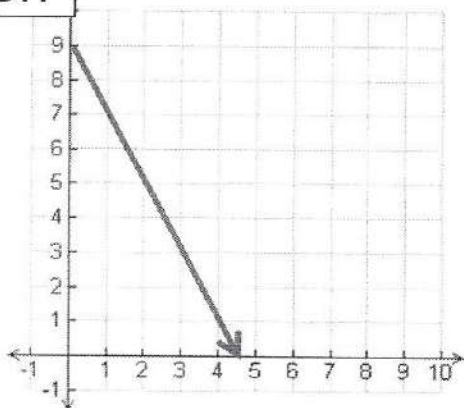| | |
|---|---|
| **E1** $$y = x + 5$$ | **E2** $$y = 4x$$ |
| **E3** $$x - 3 = 0$$ | **E4** $$y - 5 = 0$$ |
| **E5** $$y - 1 = x$$ | **E6** $$y = 3x$$ |
| **E7** $$y = 4$$ | **E8** $$y = x$$ |
| **E9** $$y = \frac{2}{3}x$$ | **E10** $$y = x + 2$$ |
| **E11** $$y = -x + 9$$ | **E12** $$y = -2x + 9$$ |
| **E13** $$y = 4x + 1$$ | **E14** $$y = \frac{1}{3}x + 1$$ |
| **E15** $$y = \frac{4}{3}x$$ | |

# From Tables to Graphs and Back! Match

**T1**

| x | y |
|---|---|
| 1 | 5 |
| 3 | 5 |
| 5 | 5 |

**T2**

| x | y |
|---|---|
| 0 | 2 |
| 3 | 5 |
| 5 | 7 |

**T3**

| x | y |
|---|---|
| 0 | 0 |
| 2 | 6 |
| 3 | 9 |

**T4**

| x | y |
|---|---|
| 3 | 2 |
| 6 | 4 |
| 9 | 6 |

**T5**

| x | y |
|---|---|
| 1 | 4 |
| 3 | 4 |
| 7 | 4 |

**T6**

| x | y |
|---|---|
| 3 | 0 |
| 3 | 3 |
| 3 | 9 |

**T7**

| x | y |
|---|---|
| 0 | 0 |
| 2 | 2 |
| 5 | 5 |

**T8**

| x | y |
|---|---|
| 0 | 0 |
| 1 | 4 |
| 2 | 8 |

**T9**

| x | y |
|---|---|
| 0 | 5 |
| 2 | 7 |
| 4 | 9 |

**T10**

| x | y |
|---|---|
| 1 | 2 |
| 3 | 4 |
| 7 | 8 |

**T11**

| x | y |
|---|---|
| 0 | 9 |
| 1 | 8 |
| 3 | 6 |

**T12**

| x | y |
|---|---|
| 3 | 2 |
| 6 | 3 |
| 9 | 4 |

**T13**

| x | y |
|---|---|
| 0 | 9 |
| 2 | 5 |
| 4 | 1 |

**T14**

| x | y |
|---|---|
| 0 | 1 |
| 1 | 5 |
| 2 | 9 |

**T15**

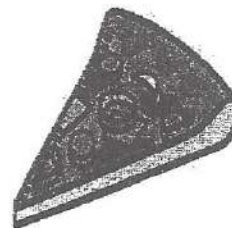| x | y |
|---|---|
| 0 | 0 |
| 3 | 4 |
| 6 | 8 |

# Day 9

name:
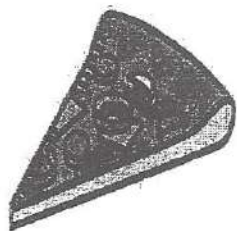
## EQUATIONS, TABLES, AND GRAPHS

Jack, Tyler and Kylie work at a pizza shop. The table below gives the amount of money each earns for the first 4 hours worked.

| Time Worked (in hours) | Money Earned (in dollars) | | |
|---|---|---|---|
| | Jack | Tyler | Kylie |
| 0 | 0 | 0 | 0 |
| 1 | 6 | 9 | 7 |
| 2 | 12 | 18 | 14 |
| 3 | 18 | 27 | 21 |
| 4 | 24 | 36 | 28 |

1. Assuming that each person continues to earn money at this rate, find the amount of money that each will earn after working 7 hours.

2. Graph time worked and earnings for all three employees in the same coordinate plane.

   ## *on graph paper*.

3. Use the graphs to determine the earnings of each employee after $6\frac{1}{2}$ hours.

4. Use the graphs to determine the amount of time each employee will need to work to earn $90.

5. What is the hourly rate of each employee?

6. How does the hourly rate affect the graphs?

7. For each employee, write an equation that can be used to determine the earnings after a given number of hours.

8. Use the equations from #7 to calculate the earnings of each employee after $6\frac{1}{2}$ hours.

9. How does each employee's hourly rate show up in his or her equation?

Mariah was recently hired at the pizza shop. She has created a table of her earnings.

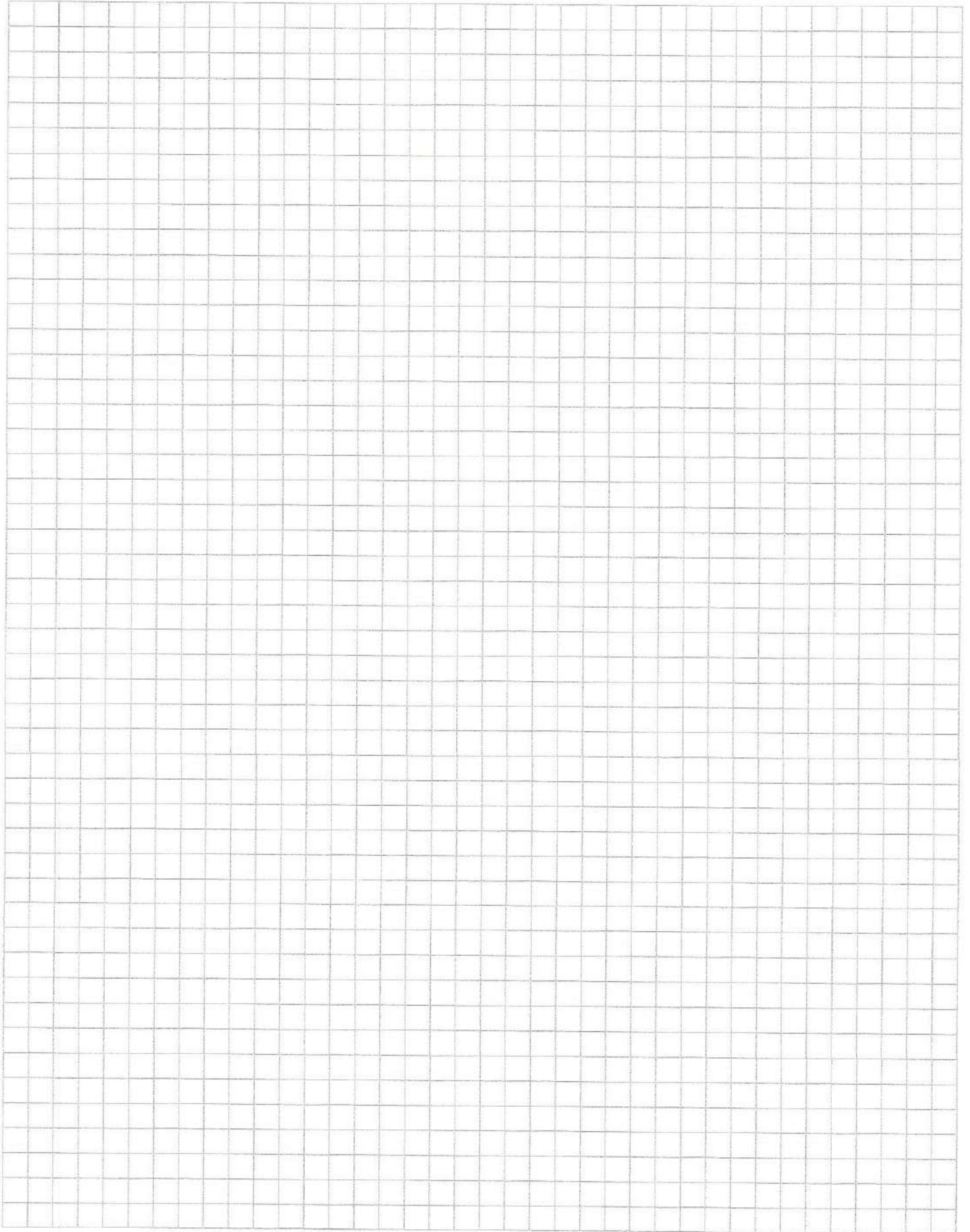| Time (in hours) | Earnings (in dollars) |
|---|---|
| 0 | 0 |
| 1 | 5.50 |
| 2 | 11 |
| 3 | 16.50 |
| 4 | 22 |
| 5 | 27.50 |
| 6 | 33 |
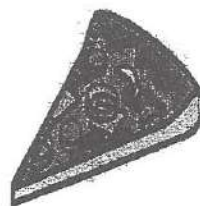
10. Write an equation for Mariah's earnings after $t$ hours.

11. Graph this equation.

## * on graph paper *

12. How can you use the *table* to determine Mariah's earnings for 7 hours and for 9 hours?

name:

name:

# CARICATURES AT THE FAIR

### Verbal Description

At a fair, Bob draws caricatures. He pays the fair $30 for space to set up a table and $2 for each drawing he sells.

Write and graph an equation to represent the total amount of money Bob pays the fair in order to sell his caricatures. Let $x$ = the number of caricatures he sells.

### Equation

Define your variables:

$y$ = total money paid

$x$ = number of caricatures

Write your equation:

$y = 2x + 30$

### Table of Values

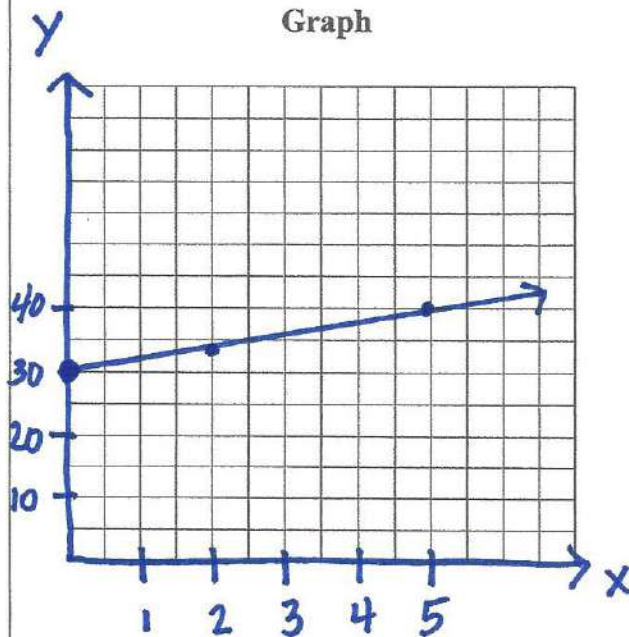| X | Y |
|---|---|
| 0 | 30 |
| 2 | 34 |
| 5 | 40 |

Points to Graph:

$(0, 30)$

$(2, 34)$

$(5, 40)$

### Graph

# T-SHIRT SHOP

### Verbal Description

Your new job is at the Custom T Shop, where T-shirts are printed to order. For each order, Custom T Shop charges $8.00 per shirt plus a one time set up fee of $15.00.

Write and graph a linear equation to show how the total cost of the T-shirts depends on how many T-shirts are ordered

### Equation

Define your variables:

$y =$

$x =$

### Write your equation:

$y =$

### Table of Values

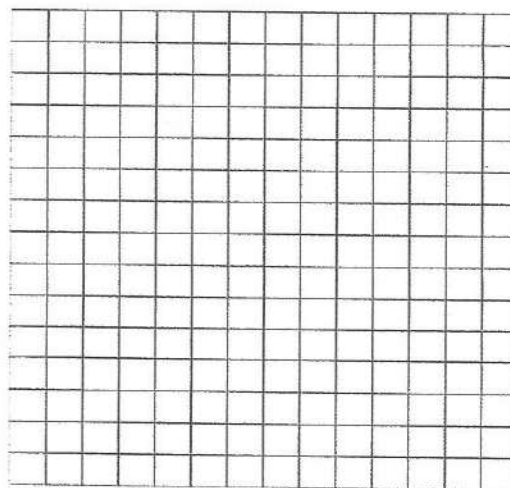| X | Y |
|---|---|
|   |   |
|   |   |
|   |   |

Points to Graph:

(   ,   )

(   ,   )

(   ,   )

### Graph

# TOWING SERVICE

### Verbal Description

When a tow truck is called, the cost of the service is $10 plus $1 per mile that the car must be towed.

Write and graph a linear equation to represent the total cost of the towing service, which is dependent on the number of miles the car is towed.

Find and interpret the slope and y-intercept of the linear equation

### Equation

Define your variables:

y =

x =

**Write your equation:**

y =

### Table of Values

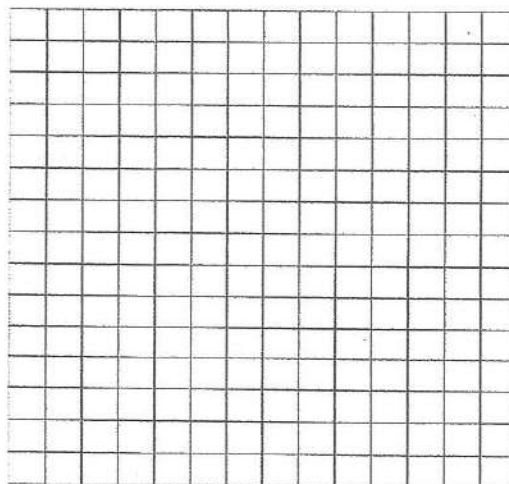| X | Y |
|---|---|
|   |   |
|   |   |
|   |   |

Points to Graph:

(   ,   )

(   ,   )

(   ,   )

### Graph

## RENTAL CAR

### Verbal Description

The rental rate at Rent a Wreck is $30 per day plus $0.25 per mile driven.

Write and graph a linear equation to represent the total cost to rent a car for $x$ number of miles.

### Equation

Define your variables:

$y =$

$x =$

**Write your equation:**
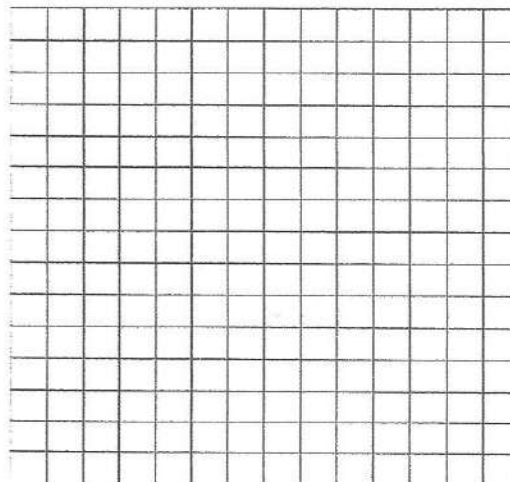
$y =$

### Table of Values

| X | Y |
|---|---|
|   |   |
|   |   |
|   |   |

Points to Graph:

(    ,    )

(    ,    )

(    ,    )

### Graph

Name _____   Date  **Day 10**

# PLUMBER

### Verbal Description

When a plumber is called, the cost of the service call is $50 for him to show up at your house, plus an additional $25 per hour.

Write and graph an equation to represent this relationship where $y$ is the total cost of the service call and $x$ is the number of hours the plumber is at your home.

Find and interpret the slope and y-intercept of the linear equation

### Equation

Define your variables:

$y =$

$x =$

**Write your equation:**

$y =$

### Table of Values

| X | Y |
|---|---|
|   |   |
|   |   |
|   |   |

Points to Graph:

(    ,    )

(    ,    )

(    ,    )

### Graph