

Algebra 1A  
Unit: Coordinate Plane

Name:  
Date:  
Period:

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### Assignment Sheet

- 1.) Page 206 #1 – 6
- 2.) Page 206 #10 – 26 all
- 3.) Worksheet (SIF/Standard)
- 4.) Worksheet (SIF/Standard)
- 5.) Worksheet (SIF/Standard)
- 6.) Worksheet (SIF/Standard)
- 7.) Page 214 #1 – 11 (need graph paper)
- 8.) Pages 214 – 215 #12, 15, 16, 21, 24, 27, 30, 33, 36, 40, 44, 48, 52 (need graph paper)
- 9.) Pages 214 – 215 #13, 17, 18, 22, 25, 28, 31, 34, 37, 41, 45, 49, 53 (need graph paper)
- 10.) Pages 214 – 215 #14, 19, 20, 23, 26, 29, 32, 35, 38, 42, 46, 50, 54 (need graph paper)
- 11.) Pages 230 – 231 #12, 16, 20 – 35 column, 38
- 12.) Pages 230 – 231 #13, 17, 21 – 36 column, 41
- 13.) Pages 230 – 231 #14, 18, 22 – 37 column, 44
- 14.) Page 230 #1 – 11
- 15.) Page 221 #1 – 12 (need graph paper)
- 16.) Pages 221 – 222 #14 – 53 column (need graph paper)
- 17.) Pages 221 - 222 #15 – 54 column (need graph paper)
- 18.) Pages 221 – 222 #16 – 55 column (need graph paper)
- 19.) Page 244 #1 – 12 (need graph paper)
- 20.) Pages 244 – 245 #13 – 19 column, 28 – 43 column, 46, 47, 52 (need graph paper)
- 21.) Pages 244 – 245 #14 – 20 column, 29 – 44 column, 48, 49, 53 (need graph paper)
- 22.) Pages 244 – 245 #15 – 21 column, 30 – 45 column, 50, 51, 54 (need graph paper)
- 23.) Page 276 #12 – 24 even
- 24.) Pages 282 – 283 #12 – 27 column, 30, 32 – 38 column
- 25.) Pages 288 – 289 #18 – 42 column, 45, 46
- 26.) Pages 282 – 283 #13 – 28 column, 33 and Pages 288 – 289 #19 – 43 column, 47
- 27.) Pages 259 – 260 #11 – 38 column (need graph paper)
- 28.) Pages 259 – 260 #12 – 39 column (need graph paper)
- 29.) Pages 259 – 260 #13 – 40 column (need graph paper)
- 30.) Pages 296 – 297 #10 – 22 even (need graph paper)
- 31.) Pages 296 – 297 #11 – 21 odd (need graph paper)
- 32.) Chapter Review

Actual testimonials from people that have used the survival guide:

“I used the guide when I was 14 years old and it saved me from being eaten by a grizzly bear.”

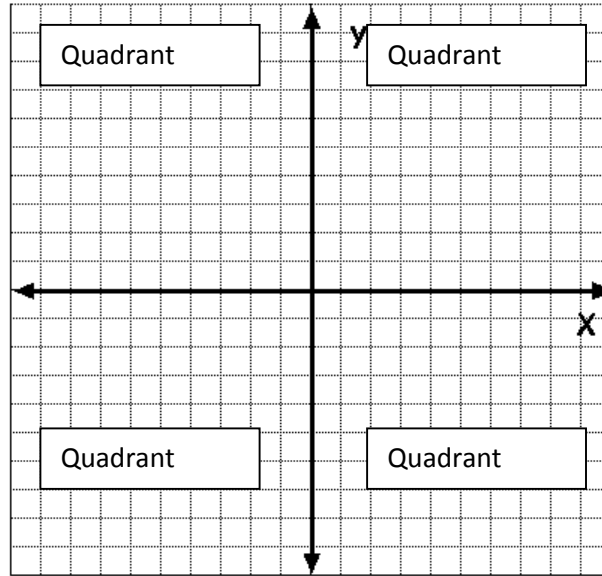
- Tatum Jergenson NY

“I use the survival guide every day since I got it in the 9<sup>th</sup> grade. I still use it every day.”

- Gertrude Wilkowski, CA

Coordinate Plane:

- The coordinate plane (aka The Cartesian Plane) is used as a way to visually represent Advanced Algebra I concepts.



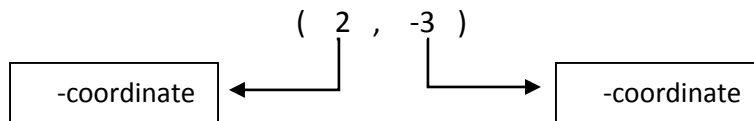
x - axis : The horizontal axis

y - axis: The vertical axis

Origin: The ordered pair (      ,      )

Ordered Pair:

- An ordered pair represents a point on the coordinate plane

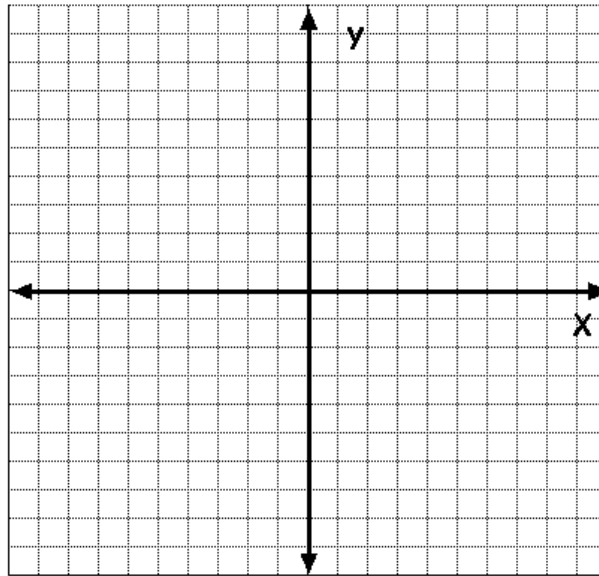


x-coordinate: indicates the number of units to move \_\_\_ or \_\_\_ from the origin

y-coordinate: indicates the number of units to move \_\_\_ or \_\_\_ from the origin

Section: Talk the Talk

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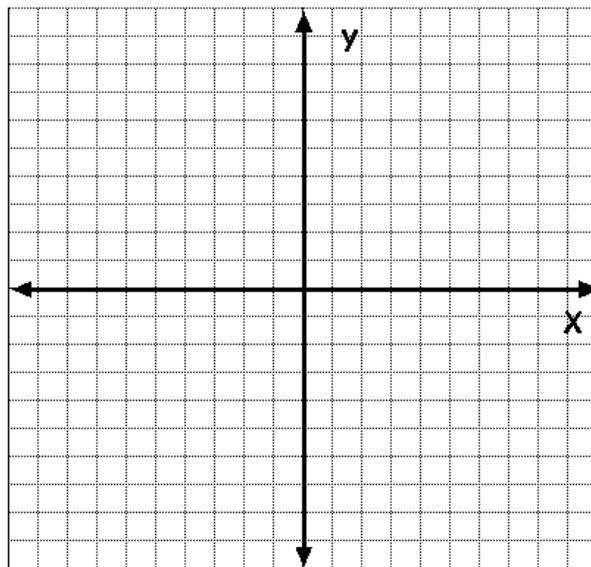
Write the ordered pair for each point shown above.

E1. M

E2. A

E3. T

E4. H



Graph each point on the coordinate plane above.

E5.  $R(-3, 2)$

E6.  $U(0, -5)$

E7.  $L(4, 0)$

E8.  $S(-5, -2)$

Linear Equations:

- Equations that represent \_\_\_\_\_ on a coordinate plane.

How many ordered pairs make up a line?

**2 Useful Forms of Linear Equations**

1. Slope-Intercept Form (aka y-form)

$$y = mx + b$$

i.e.  $y = \frac{1}{2}x + 3$

2. Standard Form

$$Ax + By = C$$

*- A must be positive**- No fractions*

i.e.  $2x + 5y = 7$

Can you spot the linear equations?

$$5x - y = -1$$

$$x^2 + 3x = 3y$$

$$y = \frac{1}{3}x + 5$$

$$x^3 - x = \frac{2}{3}y$$

$$y = x^2 + 5$$

$$\frac{1}{2}x - \frac{3}{7} = \frac{1}{4}y$$

$$y = 4$$

$$2x^2 = 14$$

$$2x = 14$$

$$y = x^5 - 3x^4 + 2x - 1$$

## Section 2: Standard Form vs. Slope-Intercept Form

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I.

- Find all linear equations in slope-intercept form

- Find all linear equations in standard form

- Find all linear equations in no special form

$$y = \frac{1}{2}x$$

$$x + y = 6$$

$$y = x - 8$$

$$2x^2 - 5x = y$$

$$-3x + 7y = 18$$

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

$$2x + \frac{3}{2}y = 5$$

$$2y = 4x + 8$$

$$3x^2 + 2y = 8$$

$$5x - y = 15$$

$$3y - 4x = 12$$

$$y = 7x + 5$$

$$-\frac{3}{2}x + \frac{5}{2}y = \frac{5}{2}$$

$$-y = 2x + 9$$

$$x + y = 6$$

$$2x - 3y = 23$$

$$x = 11$$

II. Write the linear equations in Slope-Intercept Form a.k.a. y-form.

( $y=mx+b$ )

E1.  $x + y = 6$

E2.  $-3x + 3y = 18$

E3.  $2y=5x-7$

E4.  $-\frac{3}{2}x + \frac{5}{2}y = \frac{5}{2}$

III. Write the linear equations in Standard Form.

( $Ax+By=C$ )

E5.  $y=x-8$

E6.  $-y = 2x+9$

E7.  $-3x+7y=18$

E8.  $y = \frac{1}{2}x - 3$

Section 3: Graphing with a T-table

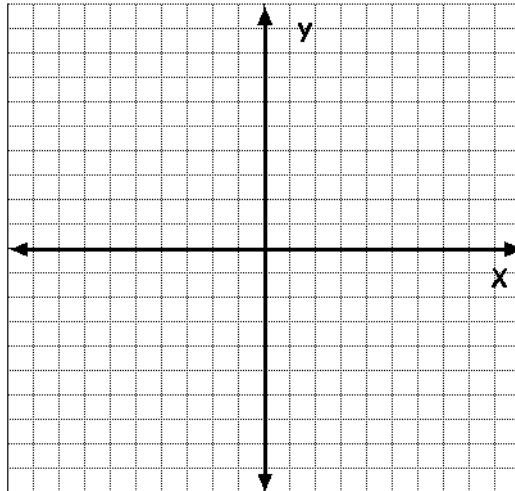
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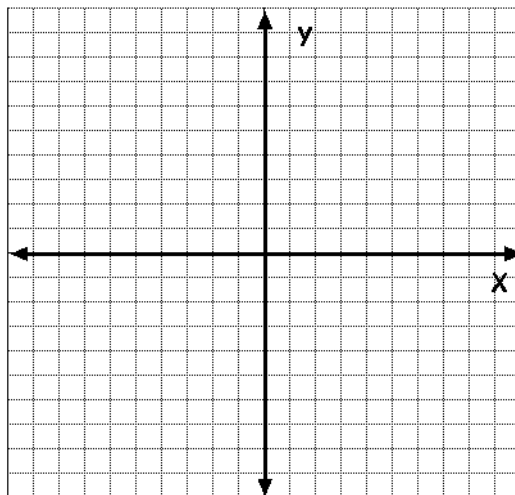
Steps:

1. Write the equation in y-form (aka \_\_\_\_\_-intercept form)
2. Create a T-chart
3. Plot \_\_\_\_\_ pairs
4. Make a \_\_\_\_\_ graph

E1.  $4x - 2y = -8$



E2.  $-3x + 2y = -6$



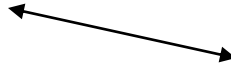
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Ski Slopes

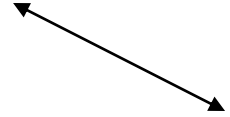
1.



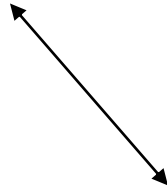
2.



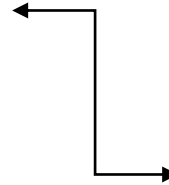
3.



4.



5.



Slope:

- The \_\_\_\_\_ of a line

Two Ways to determine slope of a line

1. Given a graph of a line (linear equation) – pick 2 points on the graph

Slope = -----

2. Given 2 points of the line (linear equation)  $(x_1, y_1)$  and  $(x_2, y_2)$

$$\text{Slope} = \frac{y_2 - y_1}{x_2 - x_1}$$

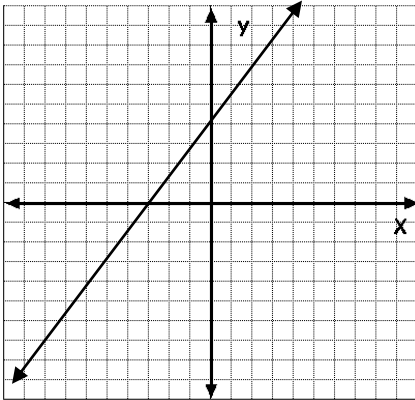
Section 4: Slopes

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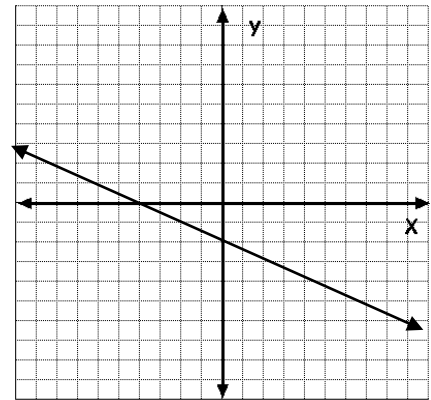
Find the slope of the line.

Slope =

E1.



E2.



Find the slope of the line passing through these points.

Slope =

E3.  $(2, 1)$  and  $(8, 9)$

E4.  $(-10, 7)$  and  $(-20, 8)$



NFL Players – Intercept a pass

CIA – Intercept a message

NASA/Air Force – Intercept a missile

Intercept:

-

x – intercept:

- The ordered pair where the graph of the line crosses through the \_\_\_\_\_
- The x-intercept is always some ordered pair  $(x, 0)$

y – intercept:

- The ordered pair where the graph of the line crosses through the \_\_\_\_\_
- The y-intercept is always some ordered pair  $(0, y)$

### 2 Ways to Find x and y intercepts

1. Given a graph of a line (linear equation)
  - a. Look at where the graph crosses the x-axis for your x-intercept
  - b. Look at where the graph crosses the y-axis for your y-intercept
2. Given a linear equation
  - a. Plug in 0 for y and solve for the x-coordinate to find the x-intercept
    - i. Solve for x means finding the x-intercept
  - b. Plug in 0 for x and solve for the y-coordinate to find the y-intercept
    - i. Solve for y means finding the y-intercept

Section 5: Intercepts

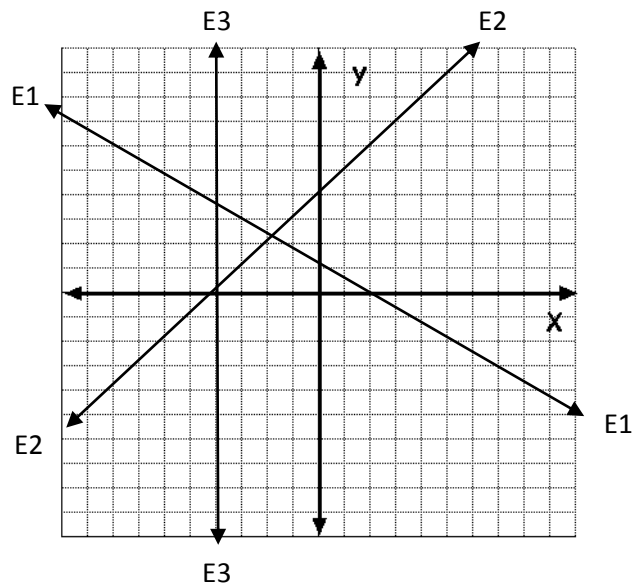
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Find the x-intercept and y-intercept for each graph.

E1. x-int ( , ) and y-int ( , )

E2. x-int ( , ) and y-int ( , )

E3. x-int ( , ) and y-int ( , )



Find the x-intercept and y-intercept of the following lines (linear equations)

E4.  $y = x + 1$                       x-int ( , )                      y-int ( , )

E4.  $3x - y = 17$                       x-int ( , )                      y-int ( , )

E4.  $-6 + 6x - 3y = 0$                       x-int ( , )                      y-int ( , )

Section 6: Graphing using the Slope – Intercept Method

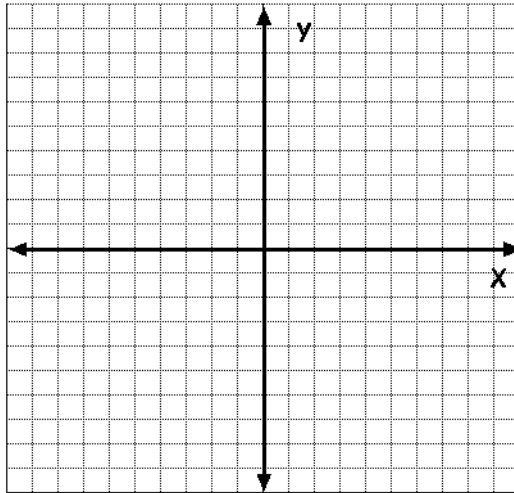
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Period:

Steps:

1. Write the equation in y-form (aka \_\_\_\_\_-intercept form)
2. Plot the \_\_\_\_\_
3. Follow the \_\_\_\_\_
4. Connect the \_\_\_\_\_

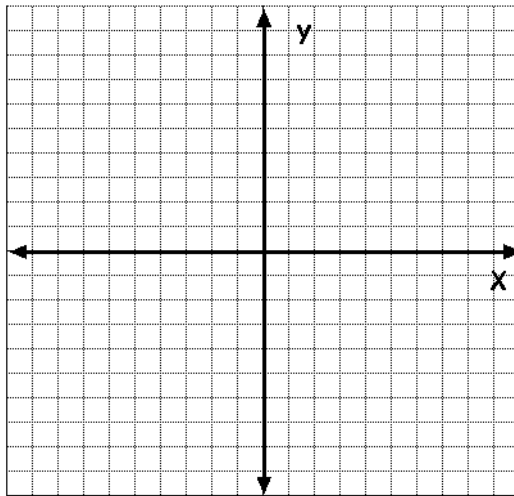
E1.  $4x - 2y = -8$

y-form:  
slope =  
y-intercept (      ,      )



E2.  $-3x + 2y = -6$

y-form:  
slope =  
y-intercept (      ,      )



Section 7: Writing Linear Equations

Name:

Date:

Period:

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Steps to Writing Linear Equations

S 1. Find the \_\_\_\_\_ (m= )

I 2. Find the y-\_\_\_\_\_ (b= )

- use  $y = mx + b$  to solve for b if necessary

F 3. Form an equation ( $y = mx + b$ )

- plug in m and b

E1. Write an equation of a line with a slope of  $\frac{2}{3}$  and passing through the origin.

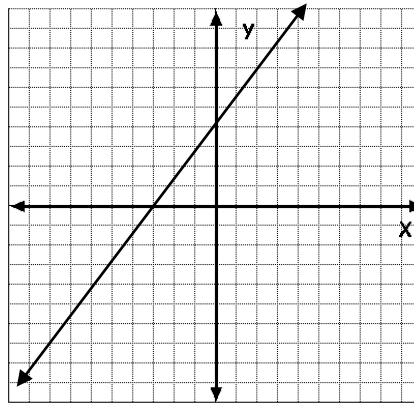
E2. Write an equation of a line with a slope of  $-\frac{1}{2}$  and passing through  $(-1, 5)$ .

Section 7: Writing Linear Equations

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E3. Write an equation of a line passing through (3, 2) and (7, 5).

E4. Write an equation of the line



E5. Write an equation of the line passing through (2, 7) and is parallel to  $-1/2x + y = 5$

E6. Write an equation of the line passing through (2, 7) and is perpendicular to  $-1/2x + y = 5$ .

## Relations:

- Any set of ordered pairs is considered to be a relation
- Relations can look very different from one another
  - o Set of \_\_\_\_\_
  - o \_\_\_\_\_ on a coordinate plane
  - o \_\_\_\_\_
- Every relation has a \_\_\_\_\_
  - o The domain is the set { } of all x - coordinates
- Every relation has a \_\_\_\_\_
  - o The range is the set { } of all y – coordinates

## Functions:

- A function is a special relation in which the domain does not repeat itself more than once.

**“Repeat means just a relation, so think Repeat...Relation”**

- We determine if a relation is a function in 1 of 2 ways
  - o Given a set of ordered pairs, we must examine the \_\_\_\_\_
    - If the \_\_\_\_\_ appears more than once (repeats) then this is not a function, simply a relation. (domain repeats, then relation only)
  - o Given a graph, we must use the Vertical Line Test
    - If a vertical line can be drawn anywhere on a graph where it intersects the graph more than once then the graph is not a \_\_\_\_\_, simply a \_\_\_\_\_. (intersection repeats, then relation only)

## Function Notation:

- A notation that mathematicians use to evaluate problem.
  - o  $f(x)$  is read “f of x” and it means that we have a function whose name is f and uses the variable x.

Section 8: Functions and Relations

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E1. State the domain and range and tell whether the set of ordered pairs is a function.

$$\{(2, 7), (3, 9), (4, 6), (5, 2)\}$$

D=

R=

Function: yes or no

E2. State the domain and range and tell whether the set of ordered pairs is a function.

$$\{(1, 7), (-3, 2), (1, 9)\}$$

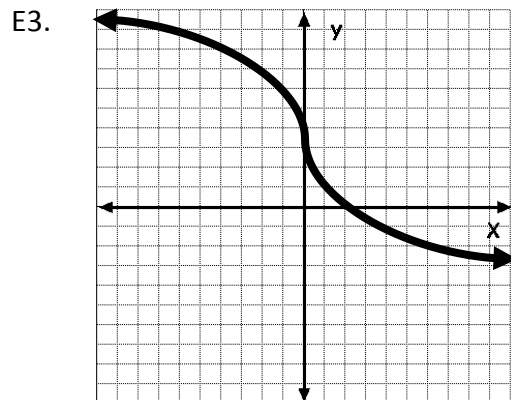
D=

R=

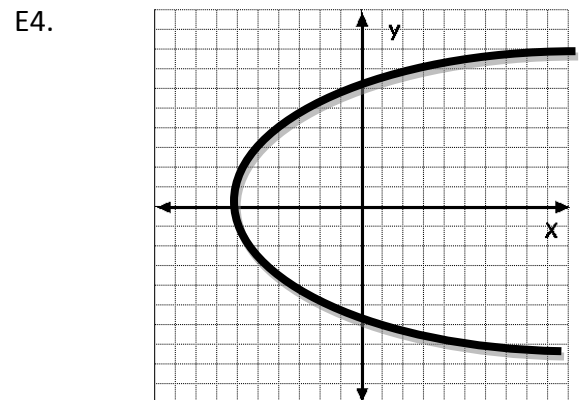
Function: yes or no

Tell whether the graph is a function using the Vertical Line Test.

- If it passes the vertical line test, we state yes it is a function
- If it fails the vertical line test, we state no it is not a function



Function: yes or no



Function: yes or no

Find the value of each function.

E5.  $f(8)$  if  $f(x) = 4(x - 2)$

E6.  $h(-3)$  if  $h(y) = y^2 - 2$

Section 9: Line of Best Fit

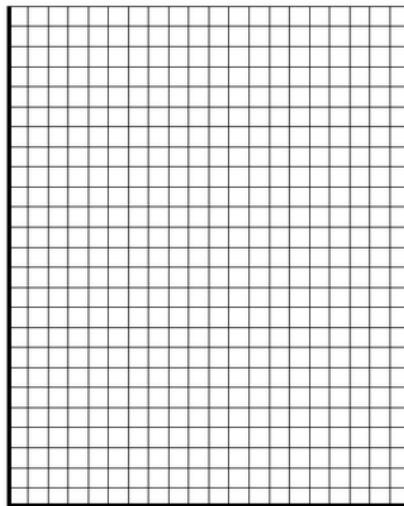
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Example 1:

The amount (in millions of dollars) spent on advertising in broadcast television from 1995 through 2001 is given in the table.

<b>YEARS (SINCE 1995)</b>	0	1	2	3
<b>AMOUNT (IN MILLIONS)</b>	32,720	36,893	41,230	46,140

Make a scatter plot of the given data points



Write a linear model for the amounts spent on television advertising.

Use the linear model to estimate the amount spent on advertising in broadcast television in the given year.

a. 1996

b. 2015

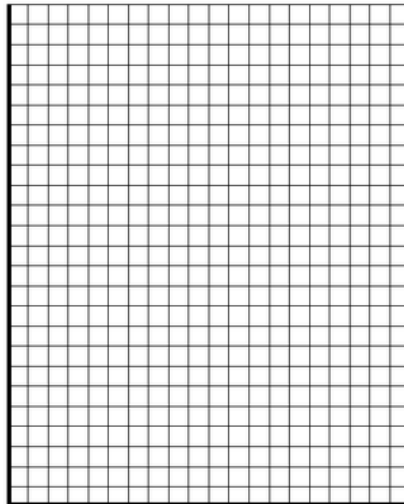


Practice 1:

A restaurant manager made a table of the average price per pound of meat per year from 1991 through 1999

Year (since 1991)	Average price per pound (\$)
0	2.50
2	2.70
4	3.00
6	3.30
8	3.50

Make a scatter plot of the given data points



Write a linear model for the amounts spent on television advertising.

Use the linear model to estimate the amount spent on advertising in broadcast television in the given year.

a. 2002

b. 1998



## Warm-ups

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Use the provided spaces to complete any warm-up problem or activity

Date:	Date:
Date:	Date:
Date:	Date:
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Date:	Date:

## Warm-ups

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Use the provided spaces to complete any warm-up problem or activity

Date:	Date:
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Date:	Date:
Date:	Date:
Date:	Date:

Quality Graphs:

1. arrows on axes
2. axes labeled
3. units labeled
4. STRAIGHT lines

must be

STRAIGHT

5. Extend lines to the edge of the graph
6. Place arrows on the end of your lines

Graphing Methods

1. Table of values
  - plot points
  - connect the line
2. Slope-Intercept
  - plot intercept
  - follow slope
  - connect line
3. Intercepts
  - plot x-intercept
  - plot y-intercept

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