M60 Chapter 8

8.1 Graphs of Equations

8.2 Relations

8.3 Introduction to Functions – 2 days

8.4 Functions and their graphs – 2 days

8.5 Linear functions and models – 2 days

8.6 Compound inequalities – 2 days

8.7 Absolute Value Equations + Inequalities – 2 days

**Math 60: 8.1 Graphs of Equations**

For Ms. Carey:
- Always draw axes
- Always extend graph neatly and accurately to edge of grid.
- Use arrowheads.

Objectives
1) Graph an Equation Using the Point-Plotting Method
2) Identify the Intercepts from the Graph of an Equation
3) Interpret Graphs

**Practice**

1) Evaluate for $x=-2$: $2x^2-3x+1$

$2(-2)^2-3(-2)+1$

$2(4)+6+1$

$8+6+1=\boxed{15}$

2) Determine if the values are solutions of the equation $3x-5(x+2)=4$

a. $x=-3$

$3(-3)-5(-3+2)=4$

$-9-5(-1)=4$

$-9+5=4$

$-4=4$ NO

b. $x=-7$

$3(-7)-5(-7+2)=4$

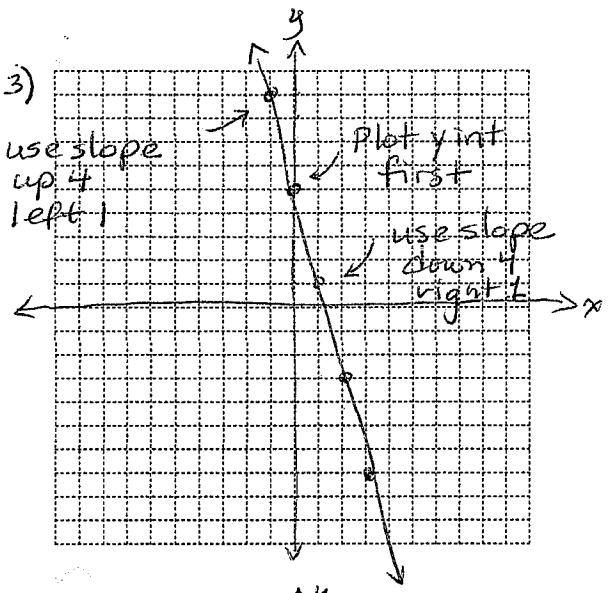
$-21-5(-5)=4$

$-21+25=4$ $4=4$ YES

3) Graph the equation $y=-4x+5$

slope $=-4$ $m=-4=\frac{-4}{1}$ or $\frac{4}{-1}$

y-int $=(0,5)$




4) Graph the line $3x-5y=15$ using intercepts

x int: $3x-5(0)=15$

$3x=15$

$x=5$

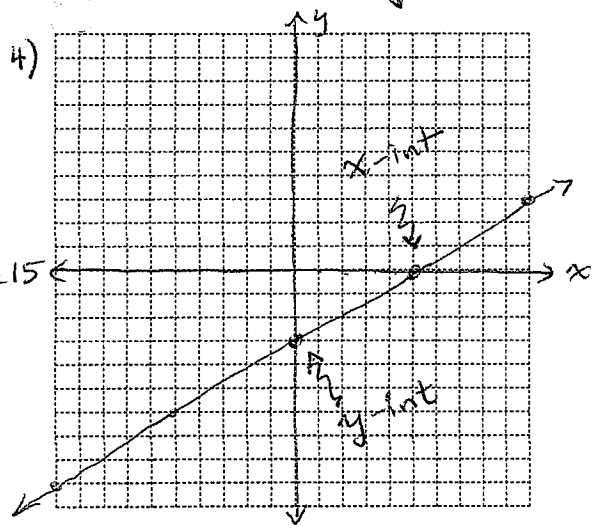
$(5,0)$

y int: $3(0)-5y=15$

$-5y=15$

$y=-3$

$(0,-3)$




5) Solve for y: $3x+2y=8$

$-3x \quad -3x$

$\frac{2y}{2}=\frac{-3x}{2}+\frac{8}{2}$ $\boxed{y=-\frac{3}{2}x+4}$

6) Plot the points, label each with its name or coordinates, and identify the quadrant or axis on which it lies.

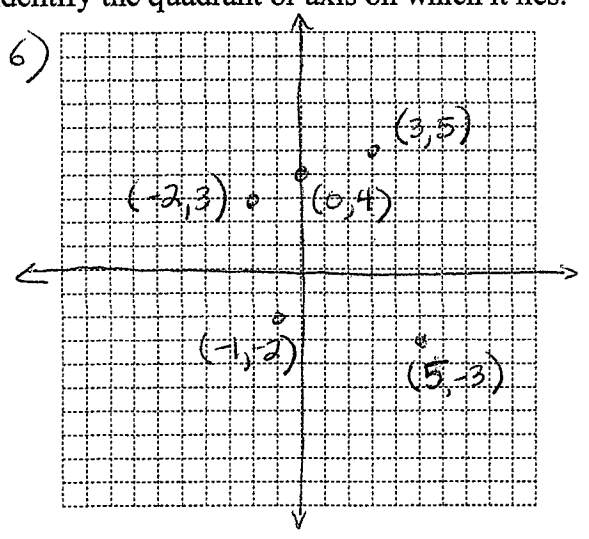
a. $(3,5)$ QI

b. $(-2,3)$ QII

c. $(-1,-2)$ QIII

d. $(5,-3)$ QIV

e. $(0,4)$ y-axis




* Always use Roman numerals when identifying quadrants

7) Determine if the coordinates represent points on the graph of $2x-4y=12$

a. $(2,-3)$ $\quad 2(2)-4(-3)=12$

$4+12=12$

$16=12$ NO

b. $\left(\frac{3}{2},-\frac{9}{4}\right)$ $\quad 2\left(\frac{3}{2}\right)-4\left(-\frac{9}{4}\right)=12$

$3+9=12$

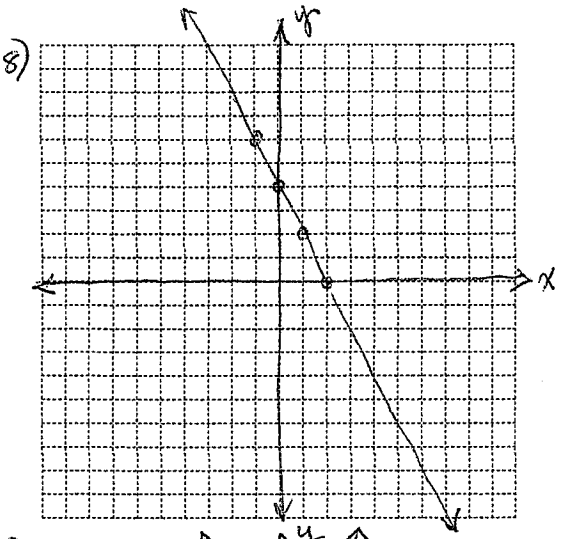
$12=12$ YES

8) Graph the equation $y=-2x+4$ by plotting points.

Your choices may be different. That's OK.

| x | y | |
|---|---|---|
| 0 | 4 | (0,4) |
| -1 | 6 | (-1,6) |
| 1 | 2 | (1,2) |
| 2 | 0 | (2,0) |

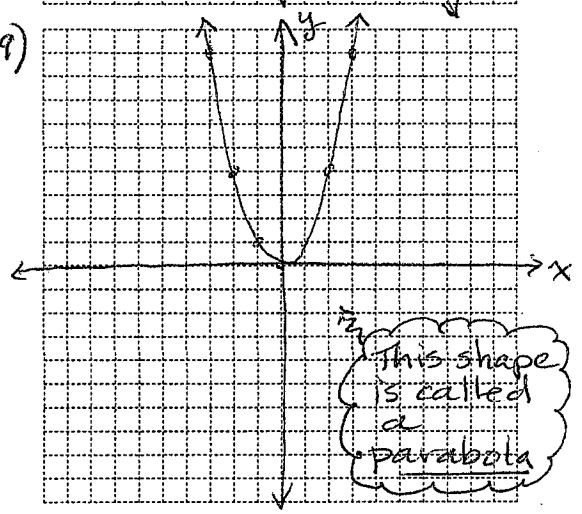
table required. MATHXL will request 4 points.




9) Graph the equation $y=x^2$ by plotting points.

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

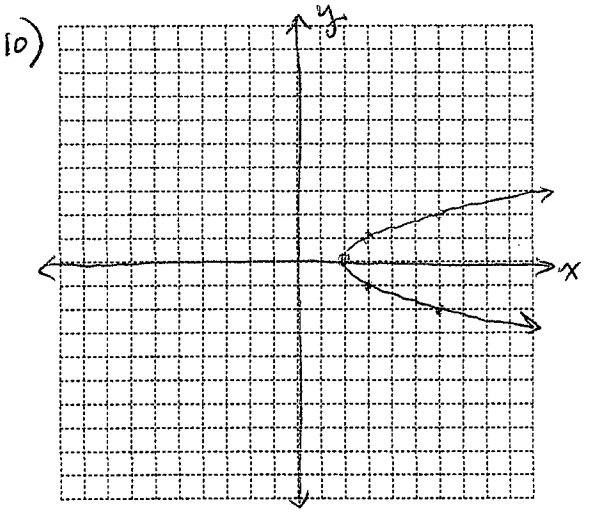
x is the independent variable. Choose values for x; the y-values depend on your choice. y is the dependent variable.




10) Graph the equation $x=y^2+2$ by plotting points.

| x | y |
|---|---|
| 6 | -2 |
| 3 | -1 |
| 2 | 0 |
| 3 | 1 |
| 6 | 2 |

y is the independent variable. Choose values of y

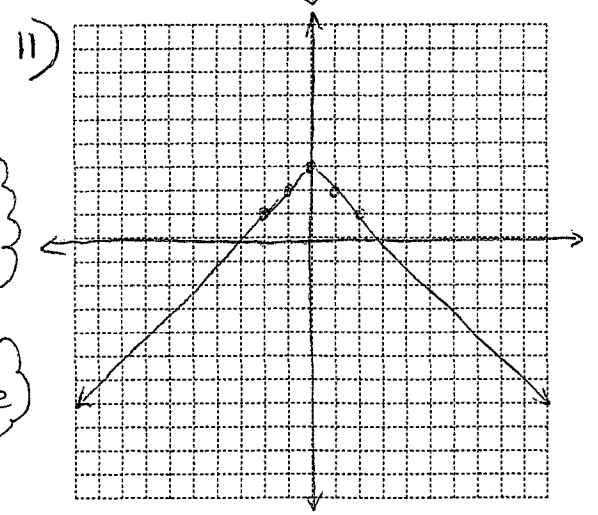



11) Graph the equation $y=3-|x|$ by plotting points.

| x | y |
|---|---|
| -2 | 1 |
| -1 | 2 |
| 0 | 3 |
| 1 | 2 |
| 2 | 1 |

absolute values change negative numbers to positive, but do nothing to 0 or positive numbers

absolute value graphs in Math 60 and 70 are V-shaped.

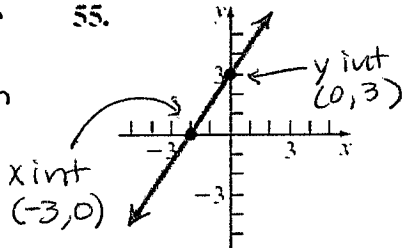


For each of the graphs numbered 55-58, identify the intercepts. Give ordered pairs.

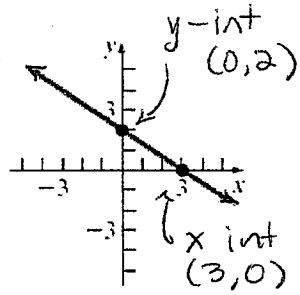
x-intercept: point where graph crosses x-axis.

y-intercept: point where graph crosses y-axis.

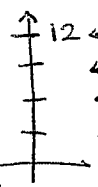
55.




56.

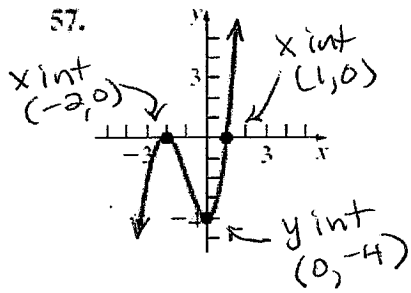



CAUTION:
#58 y-int:
Notice the scale

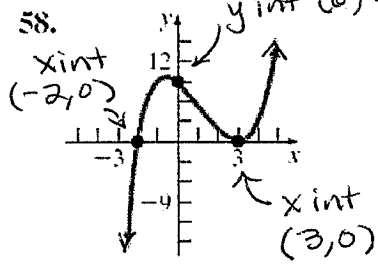



12 ÷ 4 = 3
Each tick worth 3.

57.




58.

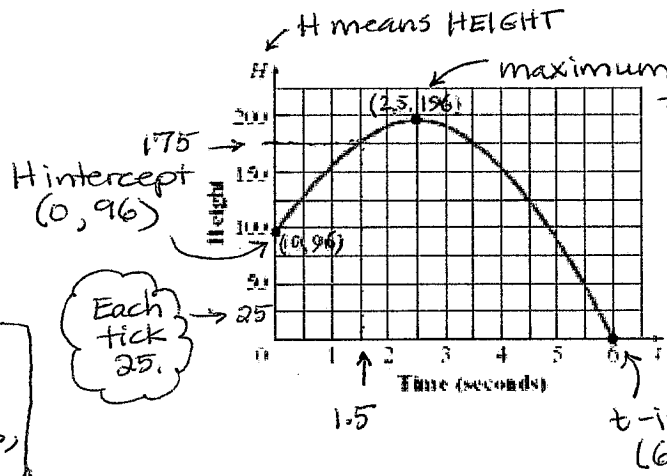



**Projectile Motion** The graph to the right shows the height, in feet, of a ball thrown straight up with an initial speed of 80 feet per second from an initial height of 96 feet after $t$ seconds.

(a) What is the height of the object after 1.5 seconds? a) 175 feet

(b) At what time is the height a maximum? What is the maximum height? b) 2.5 seconds; 196 feet

(c) Identify and interpret the intercepts.




c) t-intercept (6,0) At 6 seconds, height is 0 feet
H-intercept (0,96) At 0 seconds, height is 96 feet.

**Cell Phones** We all struggle with selecting a cellular phone provider. The graph below shows the relation between the monthly cost of a cellular phone and the number of minutes used, $m$.

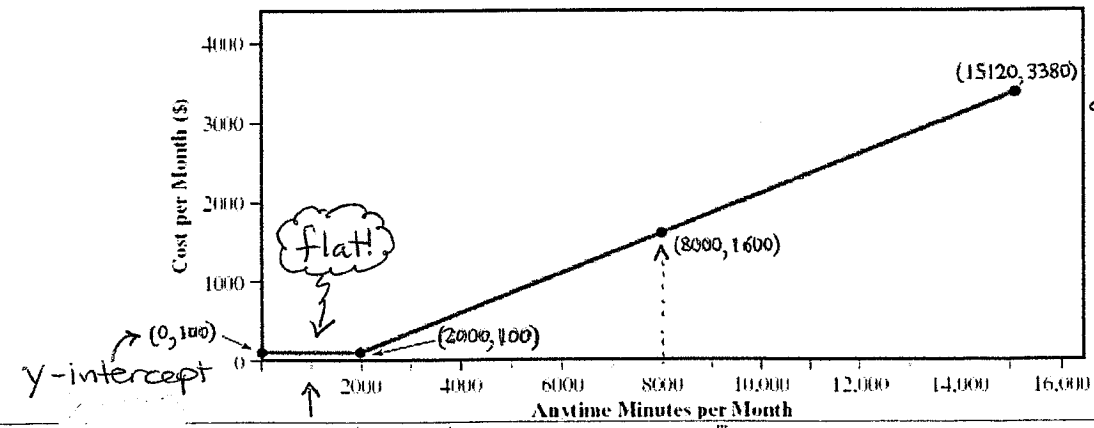
SOURCE: *Sprint.com*

(a) What is the cost of talking for 200 minutes in a month? 500 minutes? both less than 1000, in flat region

(b) What is the cost of talking 8000 minutes in a month? b) $1600

(c) Identify and interpret the intercept.

a) $100, $100




c) y intercept (0,100)
Talking 0 min costs $100

This is a very expensive cellplan!