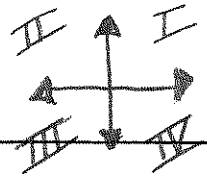
Algebra Notes
Sections 4.1 and 4.2

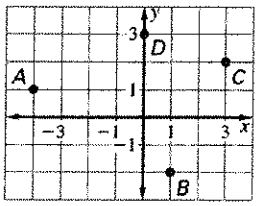


x-axis
y-axis
origin
(know!)

4.1 Practice B Worksheet Examples

Give the coordinates of the points labeled *A*, *B*, *C*, and *D*.

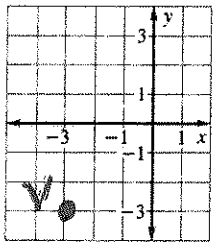
2.



A (−4, 1)
B (1, −2)
C (3, 2)
D (0, 3)

Plot the point in a coordinate plane. Describe the location of the point.

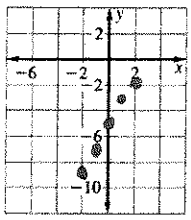
9. $V(-3, -3)$



Quadrant III

Graph the function with the given domain. Then identify the range of the function.

11. $y = 2x - 5$; domain: $-2, -1, 0, 1, 2$

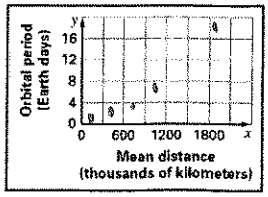


x	y = 2x − 5	y	
−2	y = 2(−2) − 5	−9	(−2, −9)
−1	y = 2(−1) − 5	−7	(−1, −7)
0	2(0) − 5	−5	(0, −5)
1	2(1) − 5	−3	(1, −3)
2	2(2) − 5	−1	(2, −1)

• Range (y values)
−9, −7, −5, −3, −1

19. Jupiter's Moons The table shows some of the moons of Jupiter, their mean distances from Jupiter (in thousand kilometers), and their orbital periods (in Earth days). Graph the data from the table. Does the graph represent a function? Why or why not?

Moon	Io	Thebe	Ganymede	Callisto	Europa
Mean distance (thousand kilometers)	422	222	1070	1883	671
Orbital period (Earth days)	1.8	0.7	7.2	16.7	3.6



Trend?
As the mean dist. ↑ the orbital period increases.

• Function?
yes! Each input has exactly one output!

4.2 Practice B Worksheet Examples

Decide which of the two points lies on the graph of the line.

1. $2x + y = 10$

a. (4, 3) **b.** (−4, 18)

NO yes

2(4) + 3 = 10
2(−4) + 18 = 10

Solve the equation for y.

8. $10x - 5y = 25$

$-10x = -10x$

$\frac{-5y}{-5} = \frac{-10x + 25}{-5}$

$y = -2x - 5$

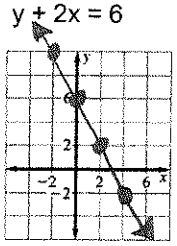
Linear Equations → an equation whose graph is a line

Graph the equation.

1. Solve for y.
2. Set up a table of values for x to solve for y.
3. Use the numbers -2, 0, 2 and 4 for the domain.
4. Plot the points and connect the dots to create a straight line with arrows on the ends.

$y = -2x + 6$

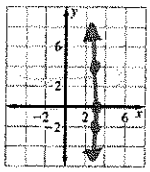
Ex. $y + 2x = 6$



x	$y = -2x + 6$	y
-2	$y = -2(-2) + 6$	10
0	$-2(0) + 6$	6
2	$-2(2) + 6$	2
4	$-2(4) + 6$	-2

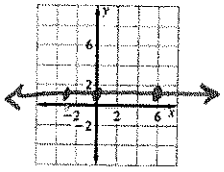
Graphing Special Functions.
Use 3 points to graph each function.

Vertical
a) $x = 3$



$(3, -2)$
$(3, 0)$
$(3, 4)$

Horizontal
b) $y = 1$

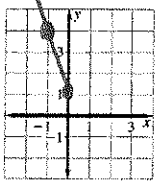


$(-3, 1)$
$(0, 1)$
$(6, 1)$

Graph the function with the given domain. Then identify the range of the function.

17. $y = -3x + 1$; domain: $x \leq 0$

x has to be less than or = to 0.



1. Solve for y.
2. Set up a table of values for x to solve for y.
3. Use the numbers -2, -1 and 0 for the domain since $x \leq 0$.
4. Plot the points and connect the dots to create a ray with an endpoint where x=0.

x	$y = -3x + 1$	y
-2	$-3(-2) + 1$	7
-1	$-3(-1) + 1$	4
0	$-3(0) + 1$	1

(range) $y \geq 1$

23. Plant Nursery A gardener at a nursery is filling pots with soil to prepare to transplant seedlings into these larger pots. Each new pot needs about 27 cubic inches of soil. The amount of soil s (in cubic inches) it takes to fill p pots is given by the function $s = 27p$.

a. The gardener is filling the pots from a bag of soil that contains 3456 cubic inches of soil. Graph the function and identify its domain and range. How many pots can be filled from the bag?

b. Suppose the gardener needs to fill 100 pots. Graph the function on the same coordinate plane in part (a) and identify its domain and range. How much soil (in cubic inches) will the gardener need?

a. $S = 27p$

$\frac{3456}{27} = \frac{27p}{27}$

$128 = p$

128 pots

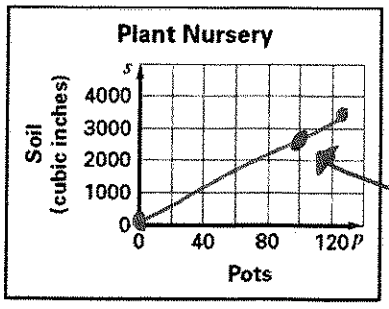
b. $S = 27p$

$S = 27(100)$

$S = 2700$

(100, 2700)

2700 in^3



(128, 3456)

part b

4.1 and 4.2 Homework:

Complete the "circled" problems on these worksheets!

- Domain (x) (what could x be?)

$0 \leq p \leq 128$

- Range (y) (what could y be?)

$0 \leq S \leq 3456$