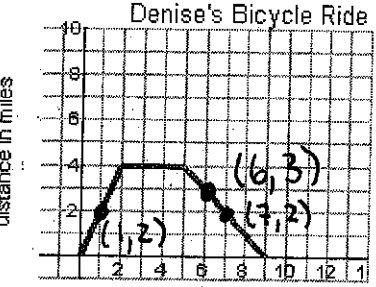
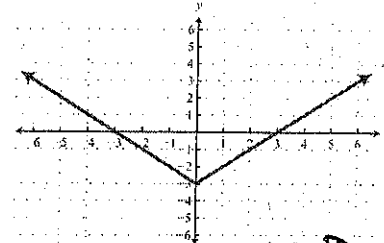
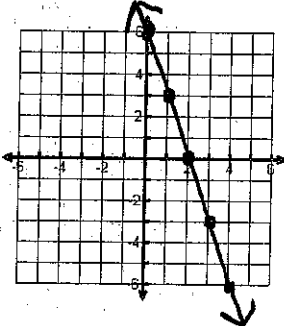


What you need to know & be able to do	Things to remember	Problem	Problem												
Recognize a Function	<ul style="list-style-type: none"> • Make sure the same x doesn't have different y's • In a graph, it should pass the vertical line test 	<p>Function or Not a Function? Why?</p> <p>1. (2, 3) (-2, 5) (3, 3) (-2, 5)</p> <p>Function, when x repeats, has same y</p>	<p>Function or Not a Function? Why?</p> <p>2.</p> <table border="1"> <tr> <td>3</td> <td>4</td> <td>3</td> <td>5</td> </tr> <tr> <td>7</td> <td>-2</td> <td>-7</td> <td>-2</td> </tr> </table> <p>Not a function, x repeats w/ diff. y</p>	3	4	3	5	7	-2	-7	-2				
3	4	3	5												
7	-2	-7	-2												
Evaluate Function Notation from an Equation	<ul style="list-style-type: none"> • Pick the correct function and plug in for all variables. 	<p>Evaluate questions 3-6 using the following functions:</p> <p>$f(x) = 4x - 3$ $g(x) = 3x^2 - x$ $h(x) = -3(2)^x + 2$</p> <p>3. $f(3) = 4(3) - 3 = 9$</p> <p>4. $g(3) = 3(3)^2 - (3) = 24$</p>	<p>5. $g(-2) = 3(-2)^2 - (-2) = 14$</p> <p>6. $h(-1) = -3(2)^{-1} + 2 = \frac{1}{2}$ or .5</p>												
Evaluate Function Notation from a Table	<ul style="list-style-type: none"> • Remember that a table is already a set of inputs and outputs 	<p>Use the following table to answer questions 7-9.</p> <table border="1"> <tr> <td>X</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>6</td> </tr> <tr> <td>G(x)</td> <td>-1</td> <td>-3</td> <td>-4</td> <td>-3</td> <td>-1</td> </tr> </table>	X	2	3	4	5	6	G(x)	-1	-3	-4	-3	-1	<p>7. $G(3) = -3$</p> <p>8. $G(6) = -1$</p> <p>9. $G(x) = -1, x = 2$ or 6</p>
X	2	3	4	5	6										
G(x)	-1	-3	-4	-3	-1										
Evaluate Function Notation from a Graph	<ul style="list-style-type: none"> • Find the correct coordinate pair from the graph. • If you know the y-value, there might be multiple x-values 	<p>Use the following graph to answer questions 10-12.</p> <p>Think of the graph below as function $M(h)$ where h is the time in hours and M is her miles from home.</p> <p>Denise's Bicycle Ride</p> 	<p>10. $M(6) = 3$</p> <p>11. $M(h) = 2, h = 1$ or 7</p> <p>12. Explain the meaning of #10 and #11.</p> <p>#10 After 6 hours, Denise is 3 miles from home</p> <p>#11 When Denise is 2 miles, she has been biking either 1 or 7 hours.</p>												
Find Average Rate of Change	<ul style="list-style-type: none"> • Find y's for each x. • Use formula $m = \frac{y_2 - y_1}{x_2 - x_1}$ 	<p>13. For $-2 < x < 3$</p> <p>$f(x) = 3x - 4$</p> <p>$f(-2) = 3(-2) - 4 = -10$</p> <p>$f(3) = 3(3) - 4 = 5$</p> <p>$(-2, -10)$ $(3, 5)$</p> <p>$ROC = \frac{5 - (-10)}{3 - (-2)} = 3$</p>	<p>14. For $-1 < x < 2$</p> <table border="1"> <tr> <td>x</td> <td>-1</td> <td>0</td> <td>1</td> <td>2</td> </tr> <tr> <td>H(x)</td> <td>5</td> <td>3.5</td> <td>2</td> <td>0.5</td> </tr> </table> <p>$(-1, 5)$ $(2, 0.5)$</p> <p>$ROC = \frac{0.5 - 5}{2 - (-1)} = -\frac{3}{2}$ or -1.5</p>	x	-1	0	1	2	H(x)	5	3.5	2	0.5		
x	-1	0	1	2											
H(x)	5	3.5	2	0.5											
Isolate a Variable in a Formula	<p>PEMDAS</p> <ul style="list-style-type: none"> • Backwards, from the ground up! 	<p>15. Solve for x: $y = -5x + 45$</p> <p>$45 - 45 = -5x - 45$</p> <p>$0 = -5x - 45$</p> <p>$45 = -5x$</p> <p>$-9 = x$</p>	<p>16. Solve for L: $\frac{P}{2} = \frac{2(L+W)}{2}$</p> <p>$\frac{P}{2} = L+W$</p> <p>$-\frac{P}{2} = -L - W$</p> <p>$0 = -L - W + \frac{P}{2}$</p> <p>$L = \frac{P}{2} - W$</p>												

Study Guide

<p>Describe the Domain and Range of a Function</p>	<ul style="list-style-type: none"> Continuous functions are CONNECTED and use interval notation $__ < x < __$ Discrete functions are NOT CONNECTED and use set notation $\{ __ \}$ 	<p>Describe the domain and range of the following.</p>											
		<p>17. (2, 4) (3, -3) (1, 5) (-2, 4) $D: \{-2, 1, 2, 3\}$ $R: \{-3, 4, 5\}$</p> <p>18.</p> <table border="1"> <tr> <td>x</td> <td>3</td> <td>4</td> <td>3</td> <td>5</td> </tr> <tr> <td>f(x)</td> <td>7</td> <td>-2</td> <td>-7</td> <td>-2</td> </tr> </table> <p>$D: \{3, 4, 5\}$ $R: \{-7, -2, 7\}$</p>	x	3	4	3	5	f(x)	7	-2	-7	-2	<p>19.</p>  <p>$D: -\infty < x < \infty$ or \mathbb{R} $R: -3 \leq y < \infty$</p>
x	3	4	3	5									
f(x)	7	-2	-7	-2									
<p>Write a Linear Equation from a Scenario</p>	<p>$y = mx + b$</p> <ul style="list-style-type: none"> m - increase or decrease b - starting point 	<p>20. Crystal gets paid \$250 a week and \$50 for every computer she sells. Write an equation in function notation that represents her weekly income. $I(c) = 50c + 250$</p>	<p>21. Andy wants to mail a package. It costs \$7 plus \$0.25 for every ounce the package weighs. Write an equation in function notation that represents the total cost of shipping the package. $C(o) = 0.25o + 7$</p>										
<p>Compare Linear Equations</p>	<ul style="list-style-type: none"> Write 2 linear equations Graph the equations to find where they are the same $y = mx + b$ 	<p>Two companies are offering deals on leasing a new car. Toyota says that they will charge you \$2000 to begin with and then you will pay \$200 each month. Honda says that they will charge you \$1000 to begin with but you will pay \$400 each month.</p> <p>22. Write an equation for each company. Toyota: $T(x) = 200x + 2000$ Honda: $H(x) = 400x + 1000$</p> <p>23. Which company has the greater rate of change? Toyota: \$200/month Honda has a greater rate of change Honda: \$400/month</p> <p>24. Which company had the lesser y-intercept? Toyota (0, 2000) Honda has the lesser y-intercept Honda (0, 1000)</p> <p>25. Which company is better for 5 months? $T(5) = 200(5) + 2000 = 3000$ They are the same for 5 months $H(5) = 400(5) + 1000 = 3000$</p> <p>26. When will it be cheaper to buy a car from Toyota? After 5 months $x > 5$</p>											
<p>Solve Consecutive Integer Problems</p>	<p>Start with x. $x + (x+1) + (x+2) + \dots =$</p>	<p>27. 3 consecutive integers add up to 123. Find the three integers. $x + x + 1 + x + 2 = 123$ $3x + 3 = 123$ $3x = 120$ $x = 40$ <u>40, 41, 42</u></p>	<p>28. Three EVEN integers add up to 336. Find the integers. $x + x + 2 + x + 4 = 336$ $3x + 6 = 336$ $3x = 330$ $x = 110$ <u>110, 112, 114</u></p>										

Study Guide

<p>Solve Perimeter Problems</p>	<ul style="list-style-type: none"> • Draw a picture • Define your length and width • Add all 4 sides • Solve for both variables 	<p>29. The width of a rectangle is 5 feet longer than the length. The perimeter of the rectangle is 110 feet. Find the length and the width.</p> $2L + 2(L + 5) = 110$ $2L + 2L + 10 = 110$ $4L + 10 = 110$ <p><i>Handwritten:</i> $4L = 100$ $L = 25$ $L = 25$ $W = 25 + 5$ $W = 30$</p>	<p>30. The length of a rectangle is nine inches more than the width. The perimeter is 34 inches. Find the length and width.</p> $2W + 2(W + 9) = 34$ $2W + 2W + 18 = 34$ $4W + 18 = 34$ $4W = 16$ <p><i>Handwritten:</i> $W = 4$ $L = 4 + 9$ $L = 13$</p>
<p>Solve Average Problems</p>	<ul style="list-style-type: none"> • Add the values and x • Divide by the number of numbers • Set equal to the average • Solve for x 	<p>31. You are trying to save \$25 a week to buy a new CD player. During the last 4 weeks you have saved \$35, \$25, \$16, and \$32. How much do you need to save this week to average \$25 for the 5 weeks?</p> $X = \$17$	<p>32. Currently, you have made a 75, 83, and a 78 on your tests in math. What do you need to make on the next test in order to get an average of an 80?</p> $\frac{75 + 83 + 78 + x}{4} = 80$ $236 + x = 320$ $x = 84$
<p>Describe Characteristics of Linear Functions</p>	<ul style="list-style-type: none"> • Domain • Range • Y-int • X-int • Inc/Dec • Asymptote • Rate of Change 	<p>33. Graph the function $f(x) = -3x + 6$</p> 	<p>Domain: $-\infty < x < \infty$</p> <p>Range: $-\infty < y < \infty$</p> <p>X-Int: $(2, 0)$ Y-Int: $(0, 6)$</p> <p>Inc or <u>Dec</u> $-\infty < x < \infty$</p> <p>RoC from $x = 0$ to 2: $\frac{0 - 6}{2 - 0} = -3$</p>
<p>Solve for 2-variable Equations</p>	<p>$ax + by = c$</p> <ul style="list-style-type: none"> • Never move the variable you're solving for. 	<p>34. Gordon is going to buy fruit for a smoothie. He wants raspberries, R, that are \$4 a carton and strawberries, S, that are \$2 a carton. Write an equation to represent all the combinations of fruit if Tony has \$24 to spend.</p> $4R + 2S = 24$	<p>35. Using your equation from #32, solve for R, the number of raspberries.</p> $4R + 2S = 24$ $4R = 24 - 2S$ $R = 6 - \frac{1}{2}S$
<p>Write and solve a system of equations</p>	<ul style="list-style-type: none"> • Define x and y. • Set up two equations. • Decide the best method. • Solve. 	<p>37. Amy's school is selling tickets to a choral performance. A senior citizen's ticket is \$3 and a child's ticket is \$5. If they made \$1450 dollars and sold a total of 350 child and senior citizen tickets, how many of each ticket did they sell?</p>	<p>36. If he buys 2 cartons of raspberries, how many strawberries can he buy?</p> $4(2) + 2S = 24$ $8 + 2S = 24$ $2S = 16$ $S = 8$ <p>8 cartons of</p>
<p>Use the Recursive Form of an Arithmetic Sequence</p>	<ul style="list-style-type: none"> • Requires TWO parts. • $a_1 =$ first term • $a_n = a_{n-1} \pm$ common difference 	<p>39. Write the recursive rule for the sequence 9, 5, 1, -3, -7...</p> $a_1 = 9$ $a_n = a_{n-1} - 4$	<p>38. The band is selling wrapping paper for a fundraiser. Customers can buy plain and shiny wrapping paper. Suzy bought 2 plain and 2 shiny rolls for \$28. Oscar bought 4 plain and 1 shiny roll for \$29. How much does each type of wrapping paper cost?</p> <p><i>Handwritten:</i> See attach. paper.</p>
<p>Use the Recursive Form of an Arithmetic Sequence</p>	<ul style="list-style-type: none"> • Requires TWO parts. • $a_1 =$ first term • $a_n = a_{n-1} \pm$ common difference 	<p>39. Write the recursive rule for the sequence 9, 5, 1, -3, -7...</p> $a_1 = 9$ $a_n = a_{n-1} - 4$	<p>40. Write the first 4 terms of the sequence $a_1 = 5, a_n = a_{n-1} + 2$</p> <p>5, 7, 9, 11, 13</p>

Study Guide

Use the Closed/Explicit Form of an Arithmetic Sequence

- Use the formula $a_n = a_1 + d(n - 1)$
- Takes the form $y = mx + b$ after being simplified

41. Write the explicit equation for the sequence

9, 5, 1, -3, -7...
 $a_n = 9 + 4(n-1)$
 $a_n = 9 - 4n + 4$
 $a_n = -4n + 13$

42. What is the domain and range of the sequence in #44?

D: {1, 2, 3, 4, 5, ...} R: {9, 5, 1, -3, -7, ...}

43. Write the first 5 terms of the sequence $a_n = 3n - 4$

$a_1 = 3(1) - 4$
 $a_2 = 3(2) - 4$
 $a_3 = 3(3) - 4$
 $a_4 = 3(4) - 4$
 $a_5 = 3(5) - 4$
 -1, 2, 5, 8, 11

44. What is the 200th term?

$a_{200} = 3(200) - 4$
 $= 596$

Write and Solve an Inequality

- Pay attention to the direction of the inequality sign. When multiplying or dividing by a negative, switch the direction.
- Shade on the graph to represent ALL of the possible solutions
- Maximums and Minimums will be found at the intercepts

Yuri needs at least \$1200 to pay for his car. He currently has \$150. He makes \$10 an hour at Subway and \$15 an hour mowing lawns.

45. Write an inequality that represents Yuri's money needs. Use x for hours worked at Subway and y for hours mowing lawns.

$10x + 15y + 150 \geq 1200$
 $10x + 15y \geq 1050$

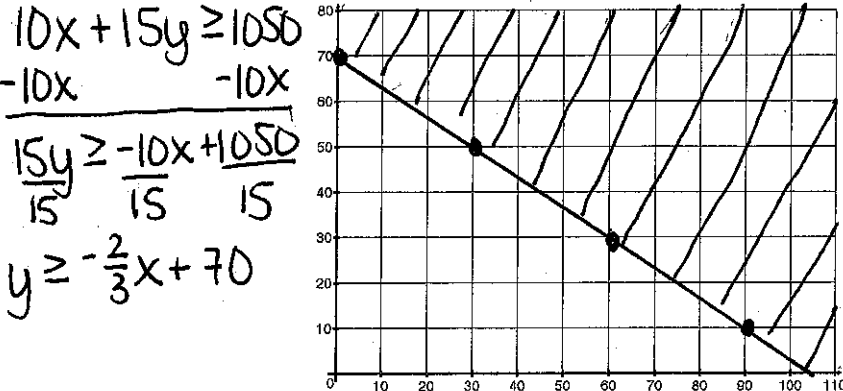
46. If Yuri works 15 hours at Subway, how many hours does he need to work mowing lawns?

$10(15) + 15y \geq 1050$
 $150 + 15y \geq 1050$
 $15y \geq 900$
 $y \geq 60$ hours

47. If Yuri works 30 hours mowing lawns, how many hours does he need to work at Subway?

$10x + 15(30) \geq 1050$
 $10x + 450 \geq 1050$
 $10x \geq 600$
 $x \geq 60$ hours

48. Graph the inequality.



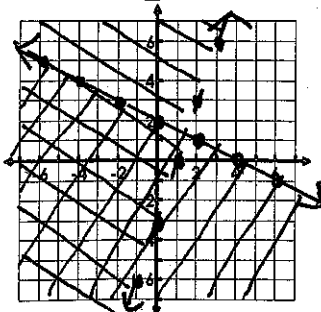
49. What is the minimum number of hours that Yuri could work and still have enough money?

70 hours mowing lawns (0, 70)

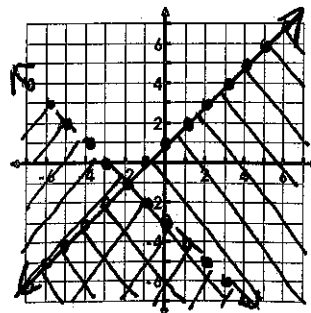
Graphing a system of linear inequalities.

- Make sure both equations are in slope-intercept form.
- Decide if the lines will be solid or dashed.
- Graph the lines.
- Test a point- typically (0,0).
- Shade appropriately.

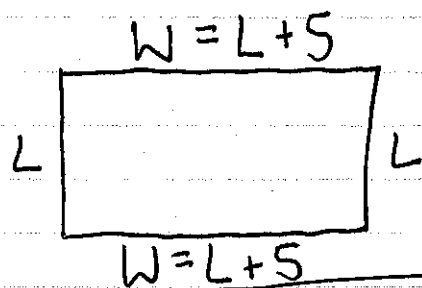
50. $y > 3x - 3$
 $y \leq -\frac{1}{2}x + 2$



51. $y \leq x + 1$
 $y < -x - 3$



29.



$$(L) + (L + 5) + (L) + (L + 5) = 110$$

$$4L + 10 = 110$$

$$\begin{array}{r} -10 \quad -10 \\ \hline \end{array}$$

$$\frac{4L}{4} = \frac{100}{4}$$

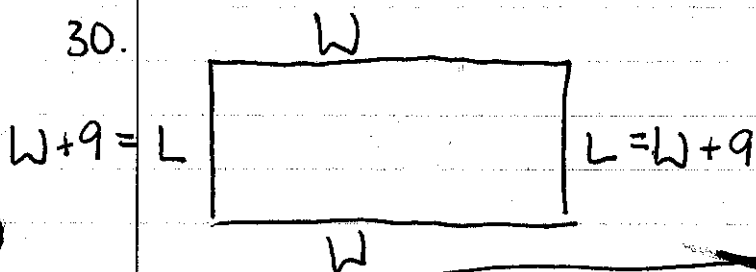
$$L = 25 \text{ ft}$$

$$W = 25 + 5$$

$$W = 30 \text{ ft}$$

The length is 25 ft and the width is 30 ft.

30.



$$(W) + (W + 9) + (W) + (W + 9) = 34$$

$$4W + 18 = 34$$

$$\begin{array}{r} -18 \quad -18 \\ \hline \end{array}$$

$$\frac{4W}{4} = \frac{16}{4}$$

$$W = 4$$

$$L = 4 + 9$$

$$L = 13$$

The width is 4 ft and the length is 13 ft.

$$31. \frac{35 + 25 + 16 + 32 + x}{5} = 25$$

$$5 \cdot \frac{108 + x}{5} = 25 \cdot 5$$

$$108 + x = 125$$

$$\begin{array}{r} -108 \quad -108 \\ \hline \end{array}$$

$$x = \$17$$

37. $C = \#$ Children's Tickets
 $S = \#$ Senior Citizen's Tickets

$$\begin{aligned} 5C + 3S &= 1450 \\ C + S &= 350 \end{aligned}$$

$$\begin{aligned} C + S &= 350 \\ -S &-S \end{aligned}$$

$$C = 350 - S$$

$$5C + 3S = 1450$$

$$5(350 - S) + 3S = 1450$$

$$1750 - 5S + 3S = 1450$$

$$1750 - 2S = 1450$$

$$-2S = -300$$

$$S = 150$$

$$C = 350 - 150$$

$$C = 200$$

They sold 200 children's and 150 senior citizen tickets.

38. $P = \$$ of plain wrapping paper
 $S = \$$ of shiny wrapping paper

$$2P + 2S = 28$$

$$(4P + S = 29) \cdot -2$$

$$-8P - 2S = -58$$

$$2P + 2S = 28$$

$$\begin{aligned} -6P &= -30 \\ -6 &-6 \end{aligned}$$

$$P = 5$$

$$4P + S = 29$$

$$4(5) + S = 29$$

$$20 + S = 29$$

$$\begin{aligned} -20 &-20 \\ S &= 9 \end{aligned}$$

$$S = 9$$

The plain paper cost \$5 per roll and the shiny paper cost \$9 per roll.