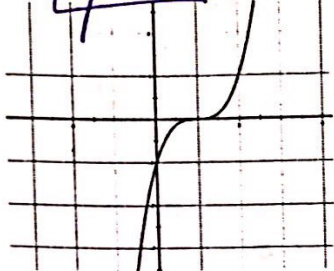
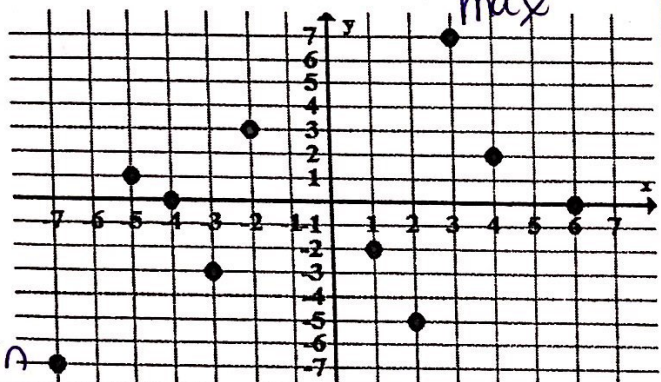
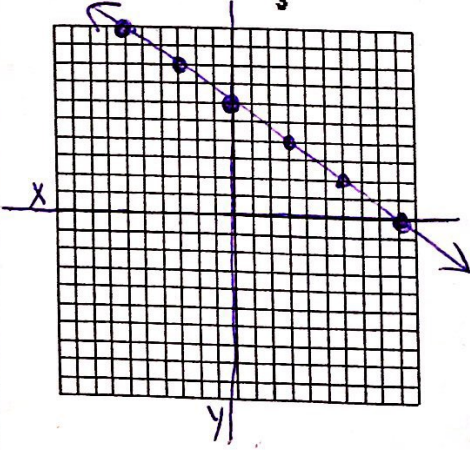
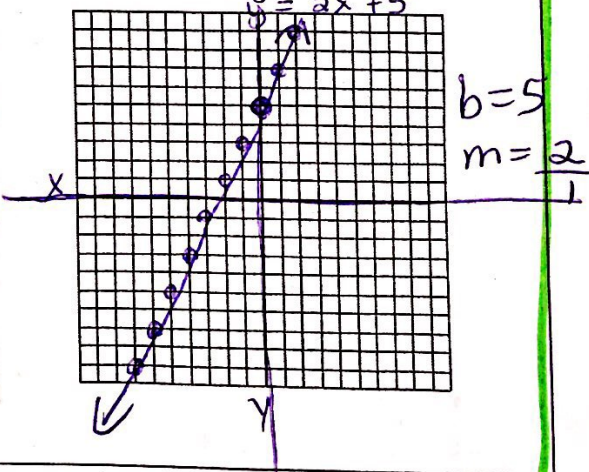
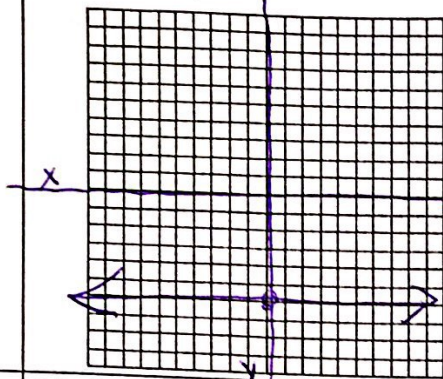


Topics	Things to remember	Examples											
Determine if a relation is a function.	Every input only has one output (each 'x' only has one 'y') Use the vertical line test on graphs.	1. Determine if the graph is a function. yes 	2. Determine if the table represents a function. no <table border="1" data-bbox="1101 436 1284 660"> <tr><td>x</td><td>y</td></tr> <tr><td>-1</td><td>4</td></tr> <tr><td>0</td><td>5</td></tr> <tr><td>2</td><td>6</td></tr> <tr><td>-1</td><td>7</td></tr> </table>	x	y	-1	4	0	5	2	6	-1	7
x	y												
-1	4												
0	5												
2	6												
-1	7												
Evaluate functions.	f(x) function notation f(2) means you must substitute a '2' for every 'x' in the function!	3. Evaluate $f(4) = 27$ $f(x) = x^2 + 3x - 1$ $f(4) = 4^2 + 3(4) - 1$ $16 + 12 - 1 = 27$	4. Find the value of $f(x) = 4x - 2$ when $x = -1$. $f(-1) = 4(-1) - 2$ $= -4 - 2$ $f(-1) = -6$										
5. Find the value of f(5). no solution 6. Find the value of x for f(x)=2. x=4 7. Identify the maximum and minimum in function notation.		$\max f(3) = 7$ $\min f(-7) = -7$ 											
Graph a linear function.	$y = mx + b$ *Always graph the y-intercept first! $b = 6$ $m = -\frac{2}{3}$	8. Graph: $f(x) = -\frac{2}{3}x + 6$ 	9. Graph: $-4x + 2y = 10$ $2y = 4x + 10$ $y = 2x + 5$ $b = 5$ $m = \frac{2}{1}$ 										

10. Graph: $y = -6$



horizontal
Line

Graph a linear inequality.

Dashed line:
< or >

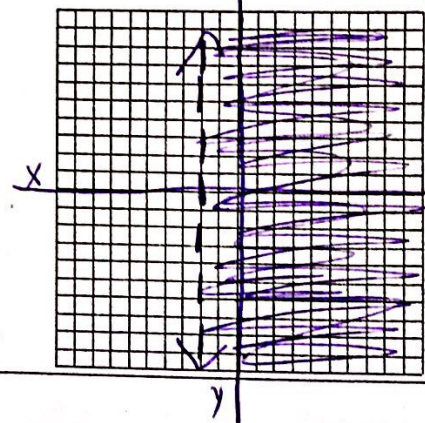
Solid line:
≤ or ≥

*Don't forget to shade!

11. $2x - 3y \geq 9$

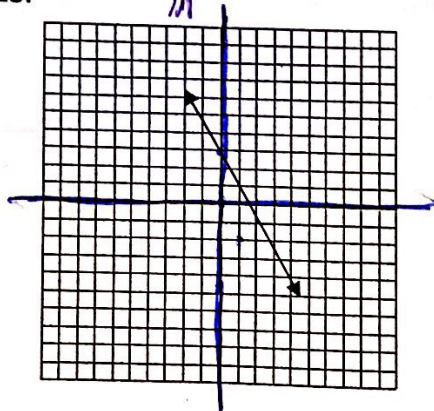


12. Graph: $x > -2$



vertical
Line
dotted
right

13.



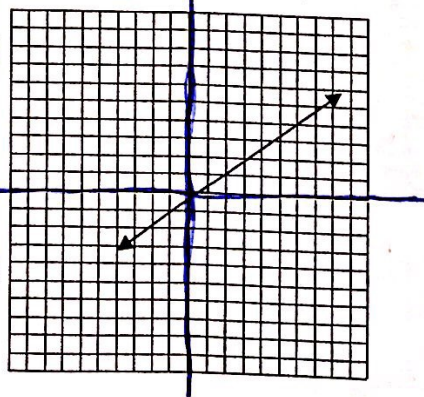
Domain: $(-\infty, \infty)$ Range: $(-\infty, \infty)$
 Interval of Increase: none
 Interval of Decrease: $(-\infty, \infty)$
 Maximum: none Minimum: none
 End Behavior: As $x \rightarrow \infty$, $f(x) \rightarrow -\infty$
 As $x \rightarrow -\infty$, $f(x) \rightarrow \infty$
 Zeros: 1.5, X-Intercept: (1.5, 0) Y-Intercept: (0, 3)

14. What is the average rate of change from $x=0$ to $x=4$?

$(0, 0)$ $(4, 2.5)$

$$\frac{2.5 - 0}{4 - 0} = \frac{2.5}{4}$$

$= 0.625$



15. Which function has the greater rate of change?

$m = 2$
 Function 1: $y = 2x + 3$
 Function 2: $(0, 4), (1, 8), (2, 12)$ $\frac{4}{1} = 4 = m$

Function 2

Calculate the average rate of change.

"slope"

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

16. The table to the right shows the distance (in meters) Runner A and Runner B ran at different time intervals. Which runner has a faster average speed from 20 to 31 seconds?

Time	Runner A	Runner B
0	0	0
9	120	120
20	168	213
31	287	287

Runner A

Runner A

$$\frac{287 - 168}{31 - 20} = \frac{119}{9} = 13.2 \text{ m/s}$$

Runner B

$$\frac{287 - 213}{31 - 20} = \frac{74}{9} = 8.2 \text{ m/s}$$

17. Write the equation of the line that has a slope of $-\frac{1}{2}$ and contains the point (4, 6).

$$y = mx + b$$

$$6 = -\frac{1}{2}(4) + b$$

$$6 = -2 + b$$

$$8 = b$$

$$y = -\frac{1}{2}x + 8$$

18. Write the equation of the line that contains the points (-2, 2) and (2, -2).

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-2 - 2}{2 - (-2)} = \frac{-4}{4} = -1$$

$$y = mx + b$$

$$2 = -1(-2) + b$$

$$2 = 2 + b$$

$$0 = b$$

$$y = -x$$

Write the equation of a line.

$$y - y_1 = m(x - x_1)$$

19. Write the equation of the line that is parallel to the line $y = -4x - 1$ and contains the point (1, 5).

parallel slope = -4

$$y = mx + b$$

$$5 = -4(1) + b$$

$$5 = -4 + b$$

$$9 = b$$

$$y = -4x + 9$$

20. Write the equation of the line that is perpendicular to the line $y = 3x + 2$ and contains the point (0, 11).

Perpendicular slope = $-\frac{1}{3}$

$$y = mx + b$$

$$11 = -\frac{1}{3}(0) + b$$

$$11 = 0 + b$$

$$11 = b$$

$$y = -\frac{1}{3}x + 11$$

Arithmetic Sequences

Explicit form:

$$a_n = a_1 + (n - 1)d$$

 Recursive form:

$$a_1 =$$

$$a_n = a_{n-1} + d$$

21. Determine the first four terms of the sequence:

$$a_1 = 7$$

$$a_n = a_{n-1} - 3$$

$$7, 4, 1, -2$$

22. Write the EXPLICIT and RECURSIVE formula for the following sequence: 5, 9, 13, 17...

Explicit:
$$a_n = 5 + (n - 1)4$$

$$5 + 4n - 4$$

$$a_n = 4n + 1$$

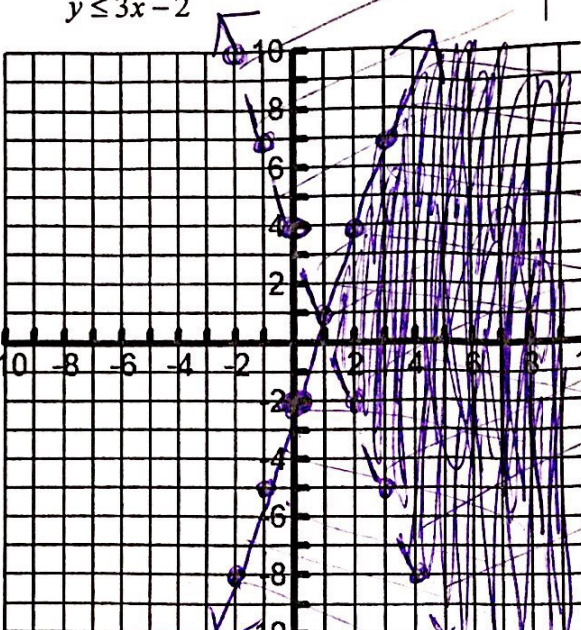
 Recursive:
$$a_1 = 5$$

$$a_n = a_{n-1} + 4$$

23. Given the sequence -3, 0, 3, 6... find the following term values: $a_n = 3n - 6$

$$a_{19} = 51$$

$$a_{32} = 90$$

Systems	Word problems inequalities	<p>24. A large pizza at Palanzio's Pizzeria costs \$6.80 plus \$0.90 for each topping. The cost of a large cheese pizza at Guido's Pizza is \$7.30 plus \$0.65 for each topping. How many toppings need to be added to a large cheese pizza from Palanzio's Pizzeria and Guido's Pizza in order for the pizzas to cost the same, not including tax?</p>	<p>25. $y > -3x + 4$ $y \leq 3x - 2$</p> 
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Systems:	Graphing Substitution Elimination Word Problems	<p>26. Solve using Substitution</p> $3x + y = 4 \quad 3x + (3x - 2) = 4$ $y = 3x - 2$ $y = 3(1) - 2$ $y = 1$ $6x - 2 = 4$ $6x = 6$ $x = 1$ <p>$(1, 1)$</p>	<p>27. Solve Using Elimination</p> $4x + 2y = 10 \quad 4x + 2y = 10$ $(x - y = 13) \cdot 2 \quad 2x - 2y = 26$ $6x = 36$ $x = 6$ $6 - y = 13$ $-y = 7$ $y = -7$ <p>$(6, -7)$</p>
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Formulas	Solve for given variables:	<p>28. $U = 2x - 2$, for x</p> $\frac{U+2}{2} = \frac{2x}{2}$ $x = \frac{U+2}{2}$ <p>or</p> $x = \frac{1}{2}U + 1$	<p>29. $-3x + 2y = -3$, for y</p> $2y = 3x - 3$ $y = \frac{3}{2}x - \frac{3}{2}$
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Properties for equality	Apply the properties of equality	<p>30. Given: $3x + 12 = 8x - 18$ Prove: $x = 6$</p> <table border="1" data-bbox="462 1276 1500 1568"> <thead> <tr> <th>Statements</th> <th>Reasons</th> </tr> </thead> <tbody> <tr> <td>1. $3x + 12 = 8x - 18$</td> <td>1. Given</td> </tr> <tr> <td>2. $12 = 5x - 18$</td> <td>2. Subtraction Property</td> </tr> <tr> <td>3. $30 = 5x$</td> <td>3. Addition Property</td> </tr> <tr> <td>4. $6 = x$</td> <td>4. Division Property</td> </tr> <tr> <td>5. $x = 6$</td> <td>5. Symmetric Property</td> </tr> </tbody> </table>	Statements	Reasons	1. $3x + 12 = 8x - 18$	1. Given	2. $12 = 5x - 18$	2. Subtraction Property	3. $30 = 5x$	3. Addition Property	4. $6 = x$	4. Division Property	5. $x = 6$	5. Symmetric Property
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