Name:_____   Date:_____

1. Indicate which of the following equations are linear functions. If not, explain why.

a) $\dfrac{3y}{2} = 2x - 1$	b) $y = \dfrac{2x-1}{2x}$	c) $y = 2\sqrt{x} - 4x$	d) $y = 2x^3 - 3x + 1$
e) $2y = 2\sqrt{x^2} + 1$	f) $2y - 1 = 2^x + 1$	g) $y + 2 = \dfrac{-2x + 2x^2}{5x}$	h) $3xy + 1 = 5x$
i) $\dfrac{5y}{-2} + 2x = 1$	j) $\dfrac{-4}{3}y + 2x - 9$	k) $\dfrac{3y - 2x}{3} = 4$	l) $4xy = 3$

2. Find the midpoint of each line segment with given endpoint

a) A(3,-5) and B(-4,-9)	b) C(-4,3) and D(7,3)	c) E(12.5, 5) and F(-1.5,5)
d) G(3.5, 5) and H(7.5,8.5)	e) J(-3,0) and K(8,-9)	f) L(-3.83,-11.2) and M(-4.7,-9.4)

3. Given the following functions, fill in the table of values

a) $y = 3x - 4$

x	-2	0	2	4
y				

b) $-6y = 2x - 1$

x	-2		2	
y		3		6

c) $3y = \dfrac{5x - 1}{2}$

x	-2		10	4
y		-4		

d) $y = \sqrt{2x-1}$

x	-2		-8	4
y		-3		

e) $y = \dfrac{1}{2x} + 1$

x	-2	0		4
y			-4	

f) $y = 3x^2 - 4$

x	-2	0	2	4
y				

4. Given the following table of values, find a function that will satisfy it

a)

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

b)

x	-2	3	10.5	15.5
y	1	3	6	8

c)

x	1	3	9	11
y	2	3	6	7

d)

x	-2	1	3	4
y	0.5	-1.75	-3.25	-4

e)

x	0	1	3	4
y	.5	.25	-.25	-.5

f)

x	15	1	3	4
y	13	-1	1	2

5. Given that the point (3,5) satisfies the equation, what is the value of "k": $3y = 2kx - 10$
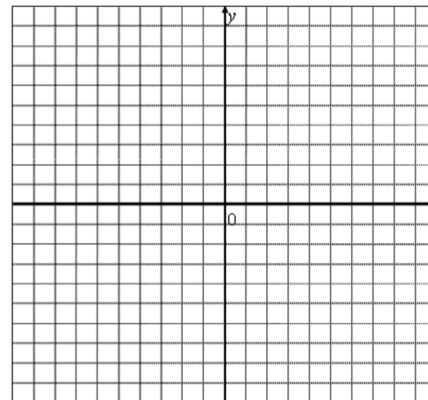
6. Graph the following functions on the grid provided

a) $3y = 2x - 4$

x				
y				

b) $3y + 4y = 12$
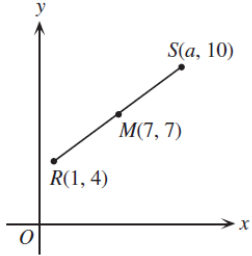
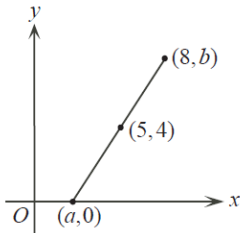| x				
y				
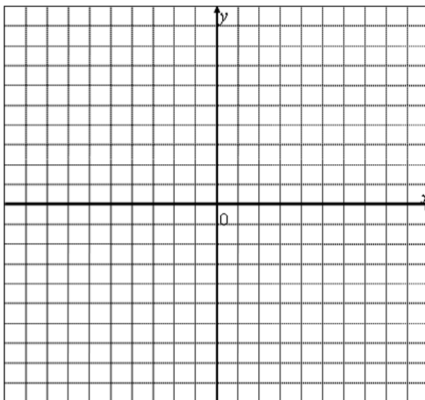
7. "A"(-2,4) is an endpoint and "M" (2,-3) is the midpoint of a line segment. Find the coordinate of the other endpoint.
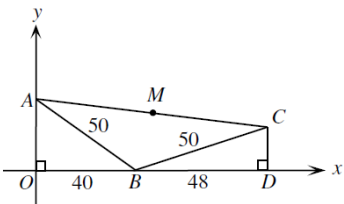
8. If M(7,7) is the midpoint on the line segment which joins R(1,4) and S(a,10), what is the value of "a"?
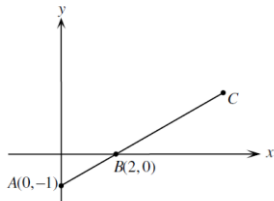

9. In the diagram, the line segment with endpoints (a,0) and (8,b) has midpoint (5,4). What are the values of "a" and "b"?

10. In the diagram, triangles AOB and CDB are right-angled and "M" is the midpoint of AC. What are the coordinates of M?

11. In the diagram, point A,B, and C lie on a line such that *BC=2AB*. What are the coordinates of C?

12. Find the coordinates of the three points that divide line AB into three equal parts, with coordinates A(8,-12) and B(-4,4)

13. If a line segment $A(x_1, y_1)$ and $B(x_2, y_2)$, find expressions for the coordinates of the points which divide segment AB into   i) 3 equal parts and ii) 4 equal parts.

14. The points (x,y) represented in this table lie on a straight line. When the equation of this line is written in the form y=Ax+B, what is the value of A+B?

x	y
2	7
$t-2$	v
t	$v+6$

15. Given that $0 < x < y < 20$, what is the number of integer solutions (x,y) to the equation: $2x+3y=50$?

(a) 25   (b) 16   (c) 8   (d) 5   (e) 3

16. What is the number of solutions (x,y) where both "x" and "y" are positive integers: $3x + y = 100$?

a) 33   b) 35   c) 100   d) 101   e) 97

17. Challenge: Triangle ABC has vertices $A(-6,2)$, $B(8,-2)$, and $C(4,6)$. Find the coordinates of its centroid.

Centroid