Summer Review Packet for Students Completing 7th grade Accelerated Math

It is important that students be able to work these problems independently. If outside help is received, it should be on similar problems covering these concepts. It would be beneficial for different problems to be used for examples and/or practice. This review packet is optional.

Equations

Solve each equation.

1) $6a + 5a = -11$

$$11a = -11$$
$$\boxed{a = -1}$$

2) $-6n - 2n = 16$

$$-8n = 16$$
$$\boxed{n = -2}$$

3) $4x + 6 + 3 = 17$

$$4x + 9 = 17$$
$$4x = 8$$
$$\boxed{x = 2}$$

4) $0 = -5n - 2n$

$$0 = -7n$$
$$\boxed{0 = n}$$

5) $6r - 1 + 6r = 11$

$$12r - 1 = 11$$
$$12r = 12$$
$$\boxed{r = 1}$$

6) $r + 11 + 8r = 29$

$$9r + 11 = 29$$
$$9r = 18$$
$$\boxed{r = 2}$$

7) $-10 = -14v + 14v$

$$\frac{-10}{0} = \frac{0v}{0}$$
$$\boxed{NO\ solution}$$

8) $-10p + 9p = 12$

$$-1p = 12$$
$$\boxed{p = -12}$$

9) $42 = 8m + 13m$

$42 = 21m$

$\boxed{2 = m}$

10) $a - 2 + 3 = -2$

$a + 1 = -2$

$\boxed{a = -3}$

11) $18 = 3(3x - 6)$

$18 = 9x - 18$

$36 = 9x \quad \boxed{x = 4}$

12) $30 = -5(6n + 6)$

$30 = -30n - 30$

$60 = -30n \quad \boxed{n = -2}$

13) $37 = -3 + 5(x + 6)$

$37 = -3 + 5x + 30$

$37 = 27 + 5x$

$10 = 5x$

$\boxed{2 = x}$

14) $-13 = 5(1 + 4m) - 2m$

$-13 = 5 + 20m - 2m$

$-13 = 5 + 18m$

$-18 = 18m$

$\boxed{-1 = m}$

15) $4(-x + 4) = 12$

$-4x + 16 = 12$

$-4x = -4$

$\boxed{x = 1}$

16) $-2 = -(n - 8)$

$-2 = -n + 8$

$-10 = -n$

$\boxed{10 = n}$

17) $-6(1 - 5v) = 54$

$-6 + 30v = 54$

$30v = 60$

$\boxed{v = 2}$

18) $8 = 8v - 4(v + 8)$

$8 = 8v - 4v - 32$

$8 = 4v - 32$

$40 = 4v$

$\boxed{10 = v}$

19) $10(1 + 3b) = -20$

$10 + 30b = -20$

$30b = -30$

$\boxed{b = -1}$

20) $-5n - 8(1 + 7n) = -8$

$-5n - 8 - 56n$

$-61n - 8 = -8$

$-61n = 0$

$\boxed{n = 0}$

21) $8(4k - 4) = -5k - 32$

$32k - 32 = -5k - 32$
$37k - 32 = -32$
$37k = 0$
$\boxed{k = 0}$

22) $-8(-8x - 6) = -6x - 22$

$64x + 48 = -6x - 22$
$70x + 48 = -22$
$70x = -70$
$\boxed{x = -1}$

23) $8(1 + 5x) + 5 = 13 + 5x$

$8 + 13x + 5 = 13 + 5x$
$13 + 13x = 13 + 5x$
$0 = 8x$
$\boxed{0 = x}$

24) $-11 - 5a = 6(5a + 4)$

$-11 - 5a = 30a + 24$
$\quad +5a \quad\quad +5a$
$-11 = 35a + 24$
$-24 \quad\quad\quad -24$
$-35 = 35a$
$\boxed{-1 = a}$

Applications with equations. Write an equation and solve.

1) Mickey's bowling score is 16 less than 3 times Minnie's score. The sum of their scores is 228. Find the score of each.

$\underset{\text{Minnie}}{\underline{x}} + \underset{\text{Mickey}}{\underline{3x - 16}} = 228$
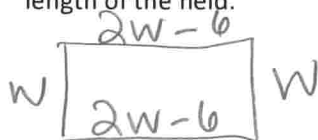
$4x - 16 = 228$
$x = 61 \text{ pts (Minnie)}$ 167 Mickey

2) Xavier is thinking of a number. Nine more than four times the number is the same as fifteen less than twice the number. What is Xavier's number?

$9 + 4n = 2n - 15$
$2n = -24$
$\boxed{n = -12}$

3) The length of a rectangular field is 6 meters less than twice the width. The perimeter is 312 meters. Find the length of the field.

W [2w - 6] W (with 2w - 6 on top and bottom)

$6w - 12 = 312$
$6w = 324$
$W = 54$

length $2(54) - 6$
$\boxed{102 \text{ meters}}$

4) Ms. Gadget's car broke down on the turnpike. Acme Towing Company charged $30 plus $3 per mile to tow the car. If Ms. Gadget paid $162, how far was the car towed?
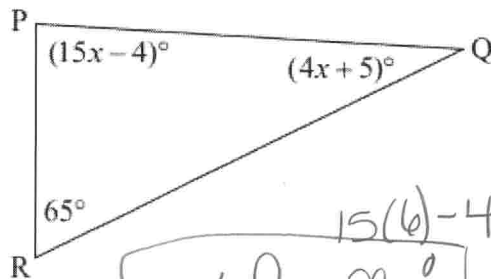
$30 + 3m = 162$
$3m = 132$
$\boxed{m = 44 \text{ miles}}$

Determine the measure of $\angle P$ in the triangle pictured below.

5)

Triangle with vertices P, Q, R. Angle at P = $(15x - 4)°$, angle at Q = $(4x + 5)°$, angle at R = $65°$.

$15x - 4 + 4x + 5 + 65 = 180°$
$19x + 66 = 180$
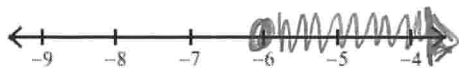$19x = 114$
$x = 6$

$15(6) - 4$
$\boxed{m\angle P = 86°}$

Inequalities

Solve each inequality and graph its solution.

1) $-3x + 2x \leq 6$

$-x \leq 6$

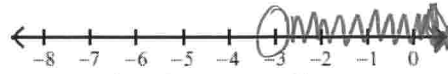$\boxed{x \geq -6}$

2) $3 - 6n - 4 < 17$

$-1 - 6n < 17$

$-6n < 18$

$n > -3$
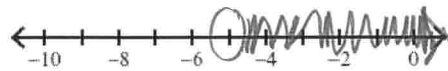
3) $n - 3 + 4 > 7$

$n + 1 > 7$

$n > 6$

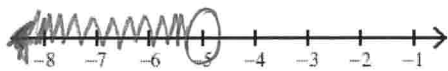4) $0 < n - 1 + 6$

$0 < n + 5$

$\boxed{-5 < n \text{ or } n > -5}$

5) $-3x - 2x < 5$

$-5x < 5$

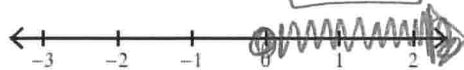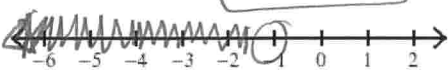$\boxed{x > -1}$

6) $-(2 + 2m) - 2 > 6$

$-2 - 2m - 2 > 6$

$-4 - 2m > 6$

$-2m > 10$

$\boxed{m < -5}$

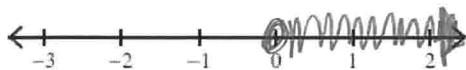7) $-9 \geq -8(1 + 6v) - 1$ $\boxed{v \geq 0}$

8) $8(1 - 4x) > 40$ $\boxed{x < -1}$

9) $4(8 - 2b) - 2b \leq 32$

$32 - 8b - 2b \leq 32$

$32 - 10b \leq 32$

$-10b \leq 0$

$b \geq 0$
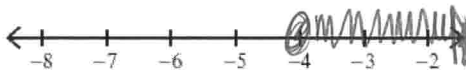
10) $5x - 7(x + 1) > -9$

$-2x - 7 > -9$

$-2x > -2$

$x < 1$

11) $-p + 6p \leq 4 + 6p$

$5p \leq 4 + 6p$

$0 \leq 4 + p$

$-4 \leq p$
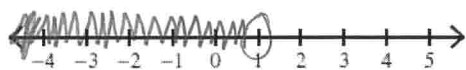
12) $5 + 4x \geq x + 8$

$5 + 3x \geq 8$
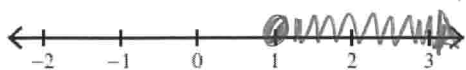
$3x \geq 3$

$x \geq 1$

13) $4k - 4 - 3k > 13 - 7k - 1 + 8$

$k - 4 > 20 - 7k$

$8k > 24$

$\boxed{K > 3}$ (circled)

14) $r - 7 > 9 - r$

$2r - 7 > 9$

$2r > 16$

$\boxed{r > 8}$ (circled)

15) $6 + 2x \leq 12 + 8x - 3x$

$6 \leq 12 + 3x$

$-6 \leq 3x$

$\boxed{-2 \leq x}$

16) $-30 + 5x > 4(6 + 8x)$

$-30 + 5x > 24 + 32x$

$-54 > 27x$

$\boxed{-2 > x}$ (circled)

17) $-7v - 8 \leq 6(1 - 2v) + 1$

$-8 \leq 7 - 5x$

$-15 \leq -5v$

$\boxed{3 \geq v}$ (circled)

18) $38 + 5x > 7(x + 4)$

$38 > 2x + 28$

$10 > 2x$

$\boxed{5 > x}$

19) $7 - 7(x - 7) > -4 + 5x$

$56 - 7x > -4 + 5x$

$56 - 12x > -4$

$-12x > -60$ $\boxed{x < 5}$ (circled)
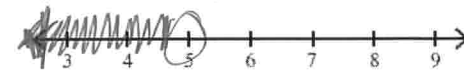
20) $-3(2v - 5) < -13 + v$

$-6v + 15 < -13 + v$

$-7v < -28$

$\boxed{v > 4}$ (circled)

21) $-24 \leq 6(5b - 2) - 8(8b - 7)$

$-24 \leq 30b - 12 - 64b + 56$

$-24 \leq -34b + 44$

-44

$-68 \leq -34b$

$2 \geq b$ or $\boxed{b \leq 2}$

22) $7(1 - 5n) - (n + 3) \geq 4$

$7 - 35n - n - 3 \geq 4$

$-36n \geq 0$

$\boxed{n \leq 0}$ (circled)

Laws of Exponents

Simplify:

1. $3 \cdot 4^3$ $3 \cdot 64 = \boxed{192}$

2. $4x^3 \cdot 2x^3$ $\boxed{8x^6}$

3. $x^5 \cdot x^3$ $\boxed{x^8}$

4. $2x^3 \cdot 2x^2$ $\boxed{4x^5}$

5. $\frac{6^5}{6^3}$ $6^2 = \boxed{36}$

6. $\frac{x^4}{x^7}$ $\boxed{\frac{1}{x^3}}$

7. 8^0 $= \boxed{1}$

8. $-(9x)^0$ $\boxed{-1}$

9. $(y^4)^3$ $\boxed{y^{12}}$

10. $(x^2 y)^4$ $\boxed{x^8 y^4}$

11. $\frac{6x^7}{2x^4}$ $\boxed{3x^3}$

12. $\frac{8x^5}{4x^2}$ $\boxed{2x^3}$

13. $(2cd^4)^2(cd)^5$ $\boxed{4c^7 d^{13}}$

14. $(2fg^4)^4(fg)^6$ $\boxed{16f^{10} g^{22}}$

15. $\frac{x^5 y^6}{xy^2}$ $\boxed{x^4 y^4}$

16. $\frac{x^2 y^5}{xy^4}$ $\boxed{xy}$

17. $\left(\frac{4x^5 y}{16xy^4}\right)^3$ $\boxed{\frac{x^{12}}{64 y^9}}$

18. $\left(\frac{5x^3 y}{20xy^5}\right)^4$ $\boxed{\frac{x^8}{256 y^{16}}}$

19. y^{-7} $\boxed{\frac{1}{y^7}}$

20. 7^{-2} $\boxed{\frac{1}{49}}$

21. $\frac{1}{x^{-5}}$ $\boxed{x^5}$

22. $\frac{1}{2^{-4}}$ $2^4 = \boxed{16}$

23. $x^5 \cdot x^{-1}$ $\boxed{x^4}$

24. x^{-6} $\boxed{\frac{1}{x^6}}$

25. $x^9 \cdot x^{-7}$ $\boxed{x^2}$

26. $(j^{-13})(j^4)(j^6)$

j^{-3} $\boxed{\frac{1}{j^3}}$

27. $\frac{x^{-1}}{x^{-8}}$ x^8 $\boxed{x^7}$

28. $\frac{52x^6}{13x^{-7}}$ $\boxed{4x^{13}}$

29. $f^{-3}(f^2)(f^{-3})$ $\boxed{\frac{1}{f^4}}$

30. $\frac{x^{-4}}{x^{-9}}$ $\boxed{x^5}$

31. $\frac{24x^6}{12x^{-8}}$ $\boxed{2x^{14}}$

32. $\frac{3x^2 y^{-3}}{12x^6 y^3}$ $\boxed{\frac{1}{4x^4 y^6}}$

33. $(2x^3 y^{-3})^{-2}$ $\boxed{\frac{y^6}{4x^6}}$

34. $\frac{2x^4 y^{-4}}{8x^7 y^8}$ $\boxed{\frac{1}{4x^3 y^{12}}}$

35. $(4x^4 y^{-4})^3$ $\boxed{\frac{64x^{12}}{y^{12}}}$

36. $5x^2 y(2x^4 y^{-3})$ $\boxed{\frac{10x^6}{y^2}}$

37. $\left(\frac{-7a^2 b^3 c^0}{3a^3 b^4 c^3}\right)^{-4}$

38. $\left(\frac{-2a^3 b^2 c^0}{3a^2 b^3 c^7}\right)^{-2}$

37. $\boxed{\dfrac{81a^4 b^4 c^{12}}{2401}}$

38. $\boxed{\dfrac{9b^2 c^{14}}{4a^2}}$

Practice: Determining if a Relation is a Function

1) {(−1, 8), (0, 15), (1, −4), (2, 0)}	2) {(−5, 2), (5, 2), (0, −3), (3, −8)}	3) {(−2, 7), (6, 2), (−2, −3), (0, 9)}
yes	yes	no

4) {(7, 2), (4, −6), (2, −2), (4, −9)}	5) {(2, 3), (2, 4), (2, 5), (2, 6)}	6) {(1, −4), (2, −4), (3, −4), (4 −4)}
no	no	yes

7)

x	y
−2	1
−1	−1
0	1
−1	−1
−2	1

no

8)

x	y
5	0
2	−3
−6	1
3	−3
0	4

yes

9)

x	y
6	2
1	−1
0	3
−1	6
−6	−2

yes

10)

yes

11)

no

12)

yes

13)

yes

14)

no

15)

no
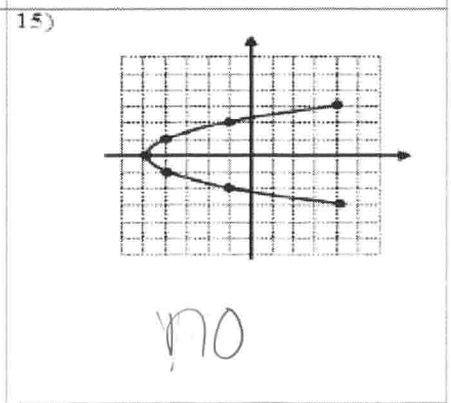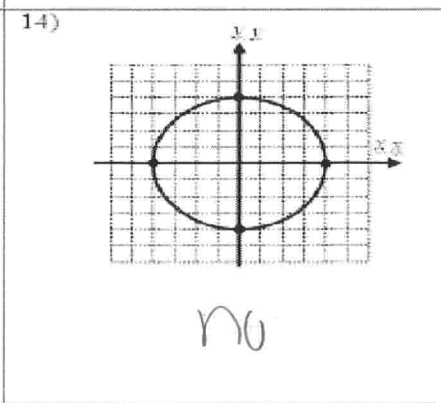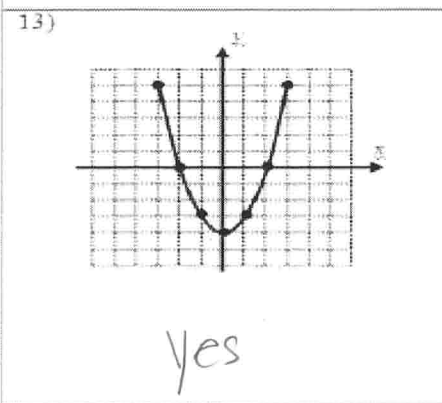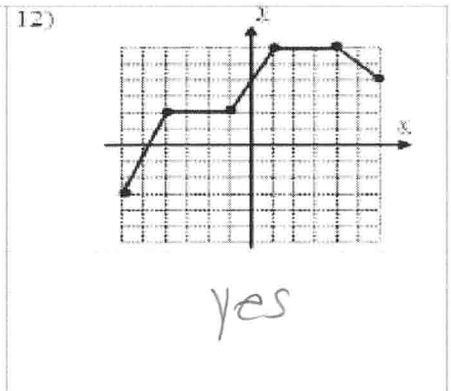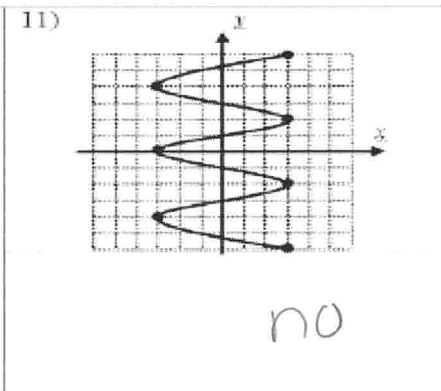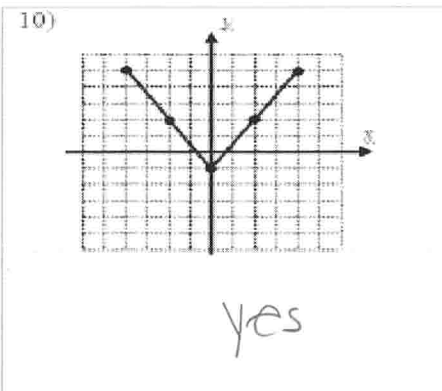
Find the slope of the line through the two points given.

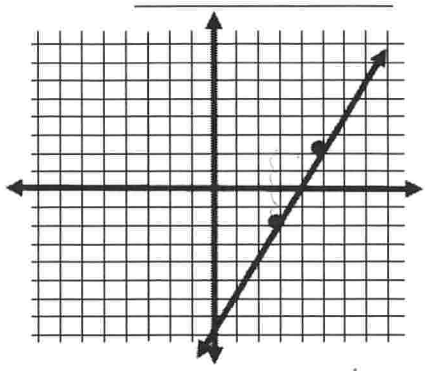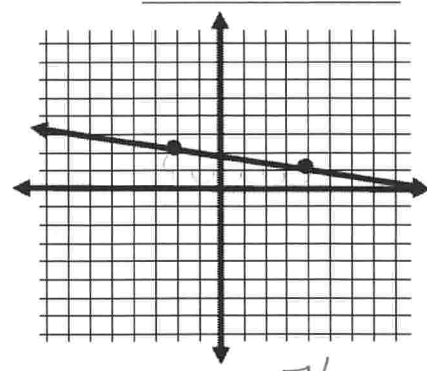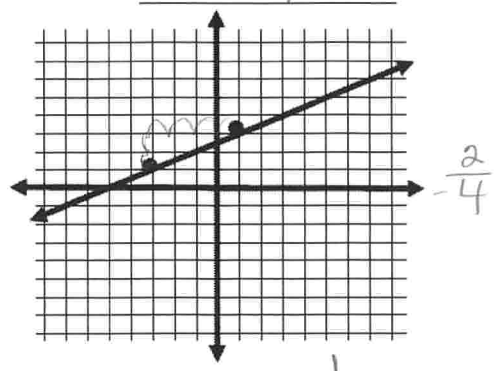|	
1. (2, 3) (9, 7) $\dfrac{7-3}{9-2}$ $\dfrac{4}{7}$ m = $\dfrac{4}{7}$	2. (3, 4) (4, 6) $\dfrac{6-4}{4-3}$ $\dfrac{2}{1}$ m = 2
3. (2, 6) (-1, 3) $\dfrac{3-6}{-1-2}$ $\dfrac{-3}{-3}$ m = 1	4. (-3, -4) (5, 1) $\dfrac{-4-1}{-3-5}$ $\dfrac{-5}{-8}$ m = $\dfrac{5}{8}$
5. (5, 7) (-2, -3) $\dfrac{7--3}{5--2}$ $\dfrac{10}{7}$ m = $\dfrac{10}{7}$	6. (-2, 3) (8,3) $\dfrac{3-3}{8--2}$ m = 0

Find the slope from the graph of the line.

1. 2
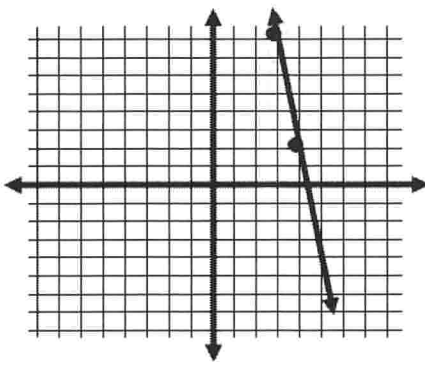

2. $-\frac{1}{6}$

3. $\frac{1}{2}$
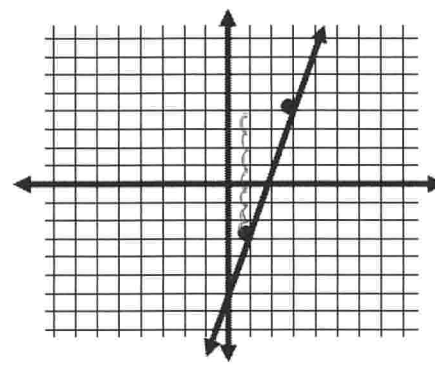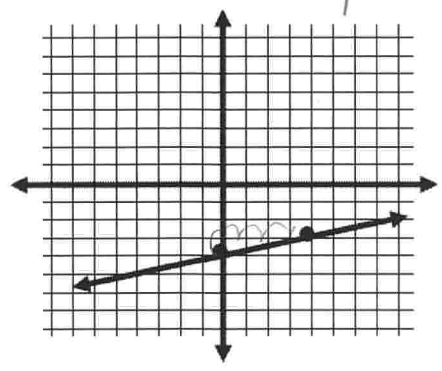

$-\frac{2}{4}$

4. -6

5. $7/2$

6. $\frac{1}{4}$

Find the slope from a table. (the constant rate of change) $\dfrac{\text{change in } y}{\text{change in } x} = \dfrac{\text{rise}}{\text{run}}$

2. The table shows the distance a person walks for exercise. Find the rate of change in distance with respect to time.

X—

Time(minutes)	30	60	90
Distance (miles)	1.5	3	4.5

y—

independent variable
dependent
$\dfrac{1.5}{30} = \left(\dfrac{.05 \text{ miles}}{\text{minute}} \right)$

3. The table shows the cost to paint a house for a given number of hours. Find the rate of change in cost with respect to time .

Time(hours)	4	6	8
Cost(dollars)	90	135	180

$\dfrac{45}{2} = \$22.50/\text{hour}$

4. The table shows the number of days you keep a rented movie before returning it and the total cost of renting the movie. Find the rate of change in cost with respect to time and interpret its meaning.

Time(days)	4	5	6	7
Total Cost(dollars)	6.00	8.25	10.50	12.75

This does not have a constant rate of change. It is not linear.

5. The table shows the amount of time spent at an amusement park and the admission fee the park charges. Find the rate of change in the fee with respect to time spent at the park and interpret its meaning.

Time(hours)	4	5	6
Admission Fee(dollars)	34.99	34.99	34.99

$\$0/\text{hour}$

This graph will make a horizontal line with a 0 slope.

6. You're learning yoga in a fitness center which charges a $200 registration fee plus $12 per lesson. If an equation is made to calculate the total charge you need to pay,
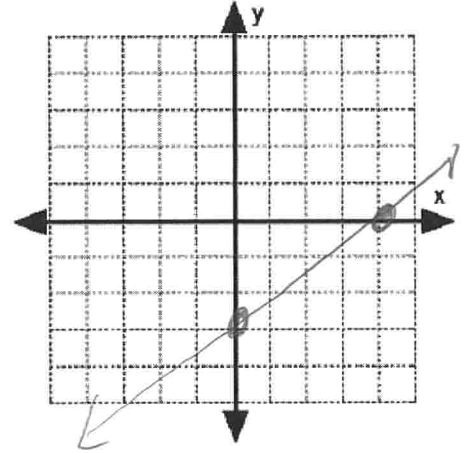
What would be the value of the slope? $\$12$ — constant rate of change

What would be the value of the y – intercept? (0, 200)
(where the line crosses the y axis)

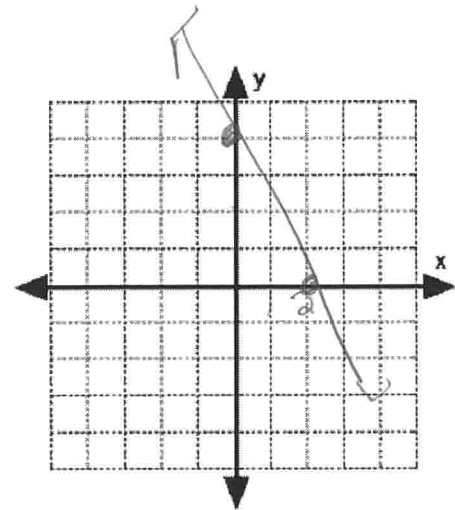**Graph the linear equation using the x and y intercepts. #1-3 They are written in standard form Ax + By = C.**

1) $6x - 8y = 24$

x- int (4,0)

y- int (0,-3)

2) $14x + 7y = 28$
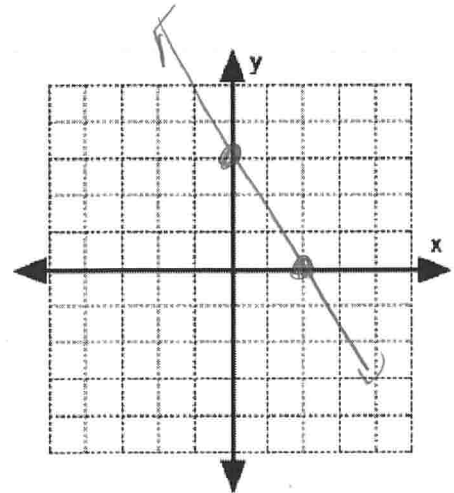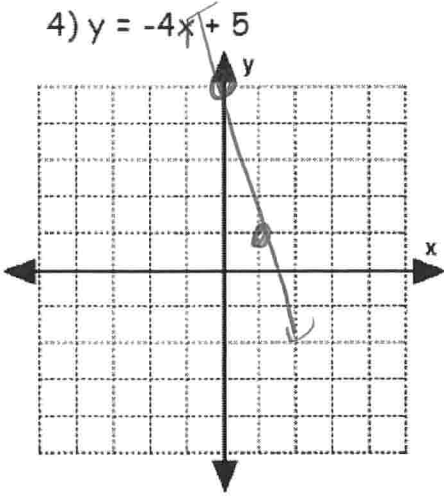
x- int (2,0)

y- int (0,4)

3) $3x + 2y = 6$

x- int (2,0)

y- int (0,3)

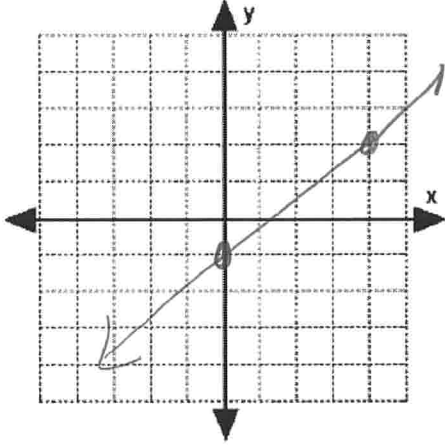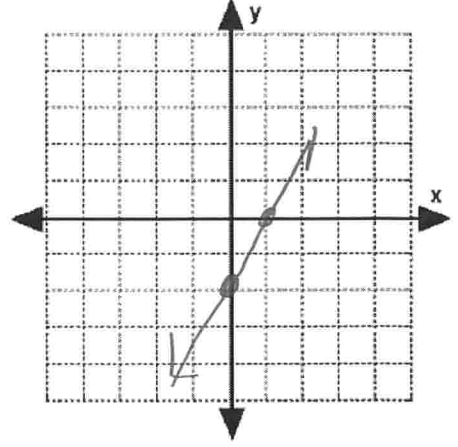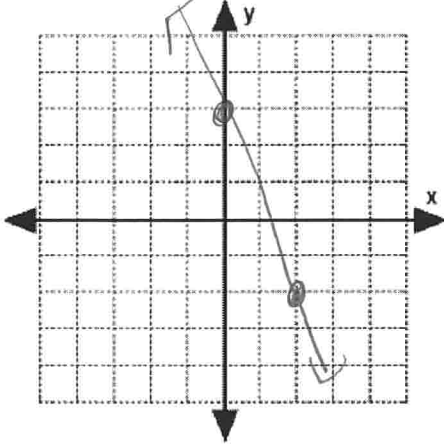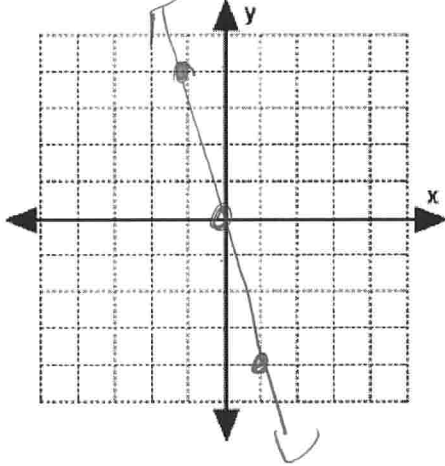**Graph the following linear equations using the intercept and the slope. Y = mx + b**

4) y = -4x + 5

5) y = 3/4x - 1

6) y = 2x - 2

7) y = - 5/2x + 3

8) y = -4x

9) y = 3x - 3

11