Intermediate Algebra – Chapter 1
Lesson 1

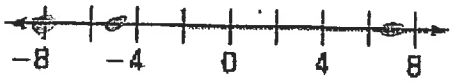
Name: _____

Graph the numbers on a number line. Then order the numbers from least to greatest.

1. 2, -3, and 0

-3, 0, 2

2. -5, 7 and -8



-8, -5, 7

Tell whether each number in the list is a whole number, an integer, and/or a rational number.

3. $-1.9, \frac{3}{4}, 0.8, -3$

-1.9 - R,
$\frac{3}{4}$ - R
0.8 - R
-3 - I, R

4. $2.5, -\frac{7}{8}, -0.5, \frac{1}{3}$

2.5 - R
$-\frac{7}{8}$ - R
-0.5 - R
$\frac{1}{3}$ - R

For the given value of a, find -a and |a|.

5. A = 10.2

-a = -10.2
|a| = 10.2

6. A = -14

-a = -(-14) = 14
|a| = |-14| = 14

7. A = $\frac{1}{2}$

$-a = -\frac{1}{2}$
$|a| = \frac{1}{2}$

Identify the hypothesis and conclusion of the conditional statement. Tell whether the statement is true or false. If it is false, give a counterexample.

8. If a number is negative, then its opposite is positive.

H C

True

9. If a number is even, then its opposite is a whole number.

H C

4 is even, opposite is -4, which isn't a whole number

Evaluate the expression when x = -2.5.

10. -x

2.5

11. |x| + 3

2.5 + 3
5.5

12. |x| - 4

2.5 - 4
-1.5

Intermediate Algebra – Chapter 1
Lesson 2

Name: _____

Find the sum.

1. -8 + 9

1

2. 13 + (-4)

9

3. -5 + (-11)

-16

4. -6 + (-7)

-13

5. -15 + 6

-9

6. -21 + 10

-11

7. $2\frac{2}{3} + \left(-1\frac{1}{3}\right)$

$1\frac{1}{3}$

8. $-7\frac{1}{2} + 10\frac{3}{4} \rightarrow -\frac{15}{2} + \frac{43}{4}$

$-\frac{30}{4} + \frac{43}{4} = \frac{13}{4}$

Evaluate the expression for the given value of x.

9. 6 + x + (-11); x = 8

$6+8-11 \Rightarrow 14-11$

$\boxed{3}$

10. -14 + x + 14; x = 9

$-14+9+14 \Rightarrow -5+14$

$= \boxed{9}$

11. 2.2 + x + (-3.4); x = -2.5

$2.2-2.5-3.4$

$-0.3-3.4$

$\boxed{-3.7}$

Solve the equation.

12. X + 15 + (-15) = 6

$X+0=6$

$\boxed{X=6}$

13. 6 + x + (-3) = 0

$3+x=0$

$-3 \quad -3$

$\boxed{X=-3}$

Intermediate Algebra – Chapter 1
Lesson 3

Name: _____

Find the product.

1. 10(-9)
$\boxed{-90}$

2. -12(-3)
$\boxed{36}$

3. -11(7)
$\boxed{-77}$

4. 2.6(-8)
$\boxed{-20.8}$

5. -3.2(15)
$\boxed{-48}$

6. -9.5(5)
$\boxed{-47.5}$

7. $-\frac{1}{2}(28)$
$\boxed{-14}$

8. -2/3(-21)
$\boxed{14}$

9. 4/5(-20)
$\boxed{-16}$

Identify the property illustrated.

10. 5.6(-32) = -32(5.6)
Commutative

11. 0(2.1) = 0
Zero product

12. -1(-1.5) = 1.5
Identity

Evaluate the expression when x = -3 and y = 4.1.

13. X + 2y
$-3+2(4.1)$
$-3+8.2$
$\boxed{5.2}$

14. Y - 4x
$4.1-4(-3)$
$4.1+12$
$\boxed{16.1}$

15. 5.2x - y
$5.2(-3)-4.1$
$-15.6-4.1$
$\boxed{-19.7}$

16. xy - 10.1
$-3(4.1)-10.1$
$-12.3-10.1$
$\boxed{-22.4}$

17. 14.3 - xy
$14.3-(-3)(4.1)$
$14.3+12.3$
$\boxed{26.6}$

18. 3x - |y|
$3(-3)-|4.1|$
$-9-4.1$
$\boxed{-13.1}$

Intermediate Algebra – Chapter 1
Lesson 4

Name: _____

Evaluate the expression

1. $16 \div 8 \cdot 5$

$2 \cdot 5$

$\boxed{10}$

2. $7^2 - 24 \div 3$

$49 - 8$

$\boxed{41}$

3. $5 + 1.2 \div 0.3$

$5 + 4$

$\boxed{9}$

4. $18 \div 6 + 4 \cdot 3$

$3 + 12$

$\boxed{15}$

5. $13 - 15 \div 5 + 9$

$13 - 3 + 9$

$10 + 9$

$\boxed{19}$

6. $\frac{2}{3} \cdot 3^2 - 5$

$\frac{2}{\cancel{3}} \cdot \overset{3}{\cancel{9}} - 5$

$6 - 5$

$\boxed{1}$

7. $8(6 - 2) + 4$

$8(4) + 4$

$32 + 4$

$\boxed{36}$

8. $28 - 3(4 + 5)$

$28 - 3(9)$

$28 - 27$

$\boxed{1}$

9. $1.2 \cdot 5 - 6 \div 3$

$6 - 3$

$\boxed{3}$

10. $(11 + 15) \div 13$

$26 \div 13$

$\boxed{2}$

Evaluate the expression.

11. $3x^4 - 5$, when $x = 5$

$3(5)^4 - 5$

$3(625) - 5$

$1875 - 5$

$\boxed{1870}$

12. $8m^3 \div 6$, when $m = 3$

$8(3)^3 \div 6$

$8(27) \div 6$

$216 \div 6$

$\boxed{36}$

13. $200 - 3y^2$, when $y = 8$

$200 - 3(8)^2$
$200 - 3(64)$
$200 - 192$
$\boxed{8}$

14. $5c^2 - 2$, when $c = 9$

$5(9)^2 - 2$
$5(81) - 2$
$405 - 2$
$\boxed{403}$

15. $3 \cdot 18t^2$, when $t = 1/3$

$3 \cdot 18(\frac{1}{3})^2$
$3 \cdot 18(\frac{1}{9})$
$3 \cdot 2$
$\boxed{6}$

16. $\frac{42}{x} + x$, when $x = 6$

$\frac{42}{6} + 6$
$7 + 6$
$\boxed{13}$

17. $7(x + 5)$, when $x = 10$

$7(10+5)$
$7(15)$
$\boxed{105}$

18. $\frac{5a}{a-6}$, when $a = 8$

$\frac{5(8)}{8-6} \Rightarrow \frac{40}{2} \Rightarrow \boxed{20}$

19. Was the expression evaluated correctly using the order of operations? If not, find an correct the error.

$80 - 1/3(15)^2 = 80 - 5^2 = 80 - 25 = 55$

No

$80 - \frac{1}{3}(15)^2 \Rightarrow 80 - \frac{1}{3}(225) \Rightarrow 80 - 75 \Rightarrow \boxed{5}$

Intermediate Algebra – Chapter 1
Lesson 5
Name: _____

Use the distributive property to write an equivalent expression.

1. $5(x + 11)$
$5x+55$

2. $3(x - 12)$
$3x-36$

3. $-4(x + 8)$
$-4x-32$

4. $9(2x + 1)$
$18x+9$

5. $(x - 7)(-10)$
$-10x+70$

6. $(4x + 3)5$
$20x+15$

7. $x(4x - 1)$
$4x^2-x$

8. $2x(x - 1)$
$2x^2-2x$

9. $-x(5x + 2)$
$-5x^2-2x$

Identify the like terms, coefficients and constant terms of the expression.

10. $-8 + 2x + 5 + 11x$
LT - $-8+5$; $2x+11x$
Coe - $2+11$
Con - $-8+5$

11. $4x^2 + 1 - 3x^2 + 5$
LT – $1+5$; $4x^2+-3x^2$
Coe - $4+-3$
Con - $1+5$

12. $7y^2 - 6 + 3y^2 - 15$
LT – $7y^2+3y^2$; $-6+-15$
Coe – $7+3$
Con - $-6+-15$

13. $3xy + 5 - 2xy + 10$
LT – $3xy+-2xy$; $5+10$
Coe – $3+-2$
Con - $5+10$

Intermediate Algebra – Chapter 1
Lesson 5

Simplify the expression.

14. $6 + 10x + 3$

$10x+9$

15. $2(3x + 1) + 4x$

$6x+2+4x$

$10x+2$

16. $6(5 - x) + 12x$

$30-6x+12x$

$6x+30$

17. $7(x - 1) - 5$

$7x-7-5$

$7x-12$

18. $8x + 3(2x - 1)$

$8x+6x-3$

$14x-3$

19. $-2(x + 4) - 3$

$-2x-8-3$

$-2x-11$

20. $11x - (x + 7)$

$11x-x-7$

$10x-7$

21. $9 - 2(x - 4)$

$9-2x+8$

$-2x+17$

22. $7x - 3(4 - 2x)$

$7x-12+6x$

$13x-12$

Intermediate Algebra – Chapter 1
Lesson 6

Name: _____

Find the multiplicative inverse of the number.

1. -7

$-\frac{1}{7}$

2. -1/5

-5

3. -7/8

$-\frac{8}{7}$

Find the quotient.

4. $-32 \div (-2)$

16

5. $-1 \div \left(-\frac{6}{5}\right)$

$-1 \cdot -\frac{5}{6}$

$\frac{5}{6}$

6. $14 \div \left(-\frac{2}{7}\right)$

$\cancel{14}^{7} \cdot -\frac{7}{\cancel{2}}$

-49

7. $17 \div \left(-2\frac{1}{8}\right)$

$17 \div -\frac{17}{8}$

$\cancel{17}^{1} \cdot -\frac{8}{\cancel{17}_{1}}$

$\boxed{-8}$

8. $-\frac{3}{4} \div 4$

$-\frac{3}{4} \cdot \frac{1}{4}$

$\boxed{-\frac{3}{16}}$

9. $-\frac{1}{3} \div \frac{1}{5}$

$-\frac{1}{3} \cdot \frac{5}{1}$

$\boxed{-\frac{5}{3}}$

10. $-\frac{1}{9} \div (-8)$

$-\frac{1}{9} \cdot -\frac{1}{8}$

$\boxed{\frac{1}{72}}$

11. $-\frac{6}{11} \div (-3)$

$-\frac{\cancel{6}^{2}}{11} \cdot -\frac{1}{\cancel{3}_{1}}$

$\boxed{\frac{2}{11}}$

12. $\frac{5}{8} \div \left(-2\frac{1}{2}\right)$

$\frac{5}{8} \div -\frac{5}{2}$

$\frac{\cancel{5}^{1}}{\cancel{8}_{4}} \cdot -\frac{\cancel{2}^{1}}{\cancel{5}_{1}}$

$\boxed{-\frac{1}{4}}$

Find the mean of the numbers.

13. 1, -3, -10

$\frac{1-3-10}{3} \Rightarrow \frac{-12}{3} = \boxed{-4}$

14. -15, 4, -22

$\frac{-15+4-22}{3} \Rightarrow \frac{-33}{3}$

$\boxed{\cancel{-3}}$ $\boxed{-11}$

15. -7.5, 3, -6.5

$\frac{-7.5+3-6.5}{3}$

$\boxed{-\frac{11}{3}}$

Simplify the expression.

16. $\frac{-8x+27}{9}$

$-\frac{8}{9}x+3$

17. $\frac{15x-5}{-5}$

$-3x+1$

18. $\frac{12x-20}{-4}$

$-3x+5$

Intermediate Algebra – Chapter 1
Lesson 7

Name: _____

Evaluate the expression.

1. $\pm\sqrt{81}$

± 9

2. $\pm\sqrt{25}$

± 5

3. $-\sqrt{400}$

-20

4. $\sqrt{625}$

25

5. $\sqrt{4900}$

70

6. $\pm\sqrt{169}$

± 13

Tell whether each number in the list is a real number, a rational number, an irrational number, an integer, or a whole number. Then order the numbers from least to greatest.

7. $-\sqrt{16}, 3.2, -\frac{3}{2}, \sqrt{9}$

R – $-\sqrt{16}, 3.2, -\frac{3}{2}, \sqrt{9}$
Ra – $-\sqrt{16}, 3.2, -\frac{3}{2}, \sqrt{9}$
Ir –
IN – $-\sqrt{16}, -\frac{3}{2}$
W – $\sqrt{9}$

8. $\sqrt{5}, -6, 2.5, -\frac{24}{5}$

R – $\sqrt{5}, -6, 2.5, -\frac{24}{5}$
Ra – $-6, 2.5$
Ir – $\sqrt{5}$
In – $-6, 2.5, -\frac{24}{5}$
W –

Evaluate the expression for the given value of x.

9. $14 + \sqrt{x}$ when $x = 16$

$14 + \sqrt{16}$
$14 + 4$
$\boxed{18}$

10. $\sqrt{x} - 5.5$ when $x = 4$

$\sqrt{4} - 5.5$
$2 - 5.5$
$\boxed{-3.5}$

11. $-9 \cdot \sqrt{x}$ when $x = 25$

$-9 \cdot \sqrt{25}$
$-9 \cdot 5$
$\boxed{-45}$

12. $2\sqrt{x} - 1$ when $x = 100$

$2\sqrt{100} - 1$
$2(10) - 1$
$20 - 1$
$\boxed{19}$

13. A local park is in the shape of a square and covers an area of 3600 square feet. Find the side length of the park.

60
$\boxed{3600}$ 60

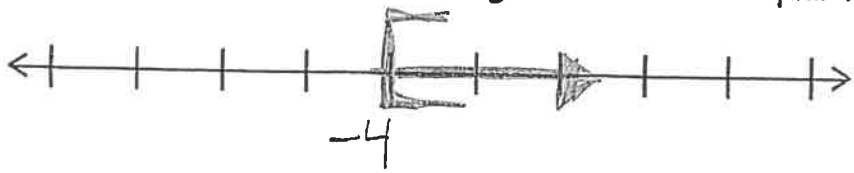
60 ft

Intermediate Algebra – Chapter 1
Lesson 8

Name: _____

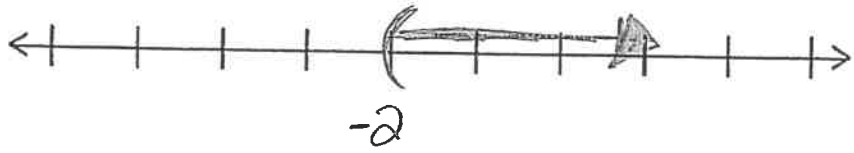
Graph on the number line, and express in interval notation.

1. The set of all real numbers greater than or equal to -4.



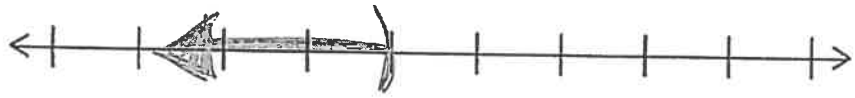
$[-4, \infty)$

2. The set of all real numbers greater than -2.



$(-2, \infty)$

3. The set of all real numbers less than 3.

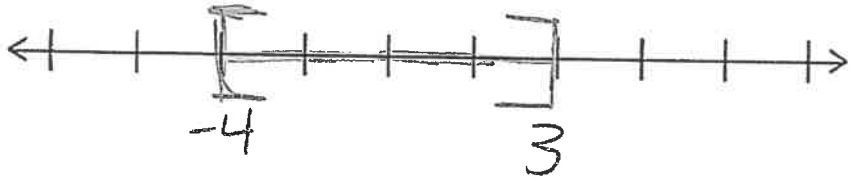


$(-\infty, 3)$

4. The set of all real numbers less than or equal to 4.

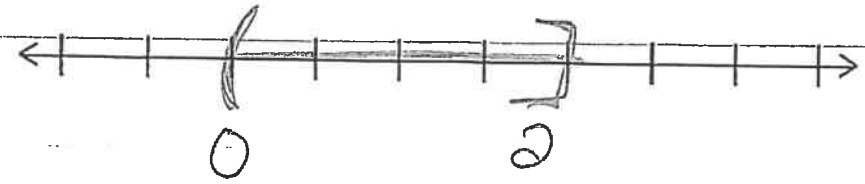
$(-\infty, 4]$

5. The set of all real numbers between -4 and 3 including both -4 and 3.



$[-4, 3]$

6. The set of all real numbers between 0 and 2 excluding 0 and including 2.



$(0, 2]$

7. The set of all real numbers between -2 and 1 including -2 and excluding 1.

$[-2, 1)$

Intermediate Algebra – Chapter 2
Lesson 1

Name: _____

Solve the equation. Check your solution.

1. $8 = \frac{t}{-3} + 4$

$-4 \quad -4$

$(-3)\ 4 = \frac{t}{-3}(-3)$

$\boxed{-12 = t}$

2. $\frac{p+5}{-2} = 9(-2)$

$p + 5 = -18$

$-5 \quad -5$

$\boxed{p = -23}$

3. 3k + 2k = 60

$\frac{5k}{5} = \frac{60}{5}$

$\boxed{k = 12}$

4. -43 = 12 - 6p + p

$-43 = 12 - 5p$

$-12 \quad -12$

$\frac{-55}{-5} = \frac{-5p}{-5}$

$\boxed{11 = p}$

5. 28 = 8b + 13b - 35

$28 = 21b - 35$

$+35 \quad +35$

$\frac{63B}{21} = \frac{21B}{21}$

$\boxed{3 = B}$

6. -11j - 6 + 3j = -30

$-8j - 6 = -30$

$+6 \quad +6$

$\frac{-8j}{-8} = \frac{-24}{-8}$

$\boxed{j = 3}$

Solve the equation. Check your solution.

7. 12 - 5(3r + 2) = 17

$12 - 15r - 10 = 17$

$-15r + 2 = 17$

$-2 \quad -2$

$\frac{-15r}{-15} = \frac{15}{-15}$

$\boxed{r = -1}$

8. 3(x - 2) + 5(2 - x) = 16

$3x - 6 + 10 - 5x = 16$

$4 - 2x = 16$

$-4 \quad -4$

$\frac{-2x}{-2} = \frac{12}{-2}$

$\boxed{x = -6}$

9 3 = -1(v - 4) + 4(2v - 9)

$3 = -v + 4 + 8v - 36$

$3 = 7w - 32$

$+32 \quad +32$

$\frac{35}{7} = \frac{7w}{7}$

$\boxed{5 = w}$

10. 6(q - 7) - 3(4 - q) = 0

$6q - 42 - 12 + 3q = 0$

$9q - 54 = 0$

$+54 \quad +54$

$\frac{9q}{9} = \frac{54}{9}$

$\boxed{q = 6}$

Write and solve an equation to find the number.

11. Seven plus the quotient of a number and 5 is -12.

$7 + \frac{x}{5} = -12$

$-7 \qquad -7$

$(5)\frac{x}{5} = -19(5)$

$\boxed{x = -95}$

12. The difference of three times a number and half the number is 60.

$2(3x - \frac{x}{2} = 60)$

$6x - x = 120$

$5x = 120$

$\boxed{x = 24}$

13. Eight times the difference of a number and 3 is 40.

$8(x-3) = 40$

$8x - 24 = 40$

$+24 \quad +24$

$\frac{8x}{8} = \frac{64}{8}$

$\boxed{x = 8}$

Intermediate Algebra – Chapter 2
Lesson 2

Name: _____

Solve the equation. Check your solution.

1. $5t + 7 = 3t - 9$

$-3t - 7 \quad -3t - 7$

$\frac{2t}{2} = \frac{-16}{2}$

$\boxed{t = -8}$

2. $-8u + 3 = 2u - 17$

$-2u - 3 \quad -2u - 3$

$\frac{-10u}{-10} = \frac{-20}{-10}$

$\boxed{u = 2}$

3. $6w + 3 - 10w = 7w - 8$

$3 - 4w = 7w - 8$

$-3 - 7w \quad -7w - 3$

$\frac{-11w}{-11} = \frac{-11}{-11}$

$\boxed{w = 1}$

4. $-a + 4a - 9 = 8a + 6$

$3a - 9 = 8a + 6$

$-3a - 6 \quad -3a - 6$

$\frac{-15}{5} = \frac{5a}{5}$

$\boxed{-3 = a}$

5. $9(k - 2) = 3(k + 4)$

$9k - 18 = 3k + 12$

$-3k + 18 \quad -3k + 18$

$\frac{6k}{6} = \frac{30}{6}$

$\boxed{k = 5}$

6. $-2(x - 4) = 7(x - 4)$

$-2x + 8 = 7x - 28$

$-7x - 8 \quad -7x - 8$

$\frac{-9x}{-9} = \frac{-36}{-9}$

$\boxed{x = 4}$

7. $\frac{2}{3}(3 - 6x) = -3(8x - 4)$

$2 - 4x = -24x + 12$

$-2 + 24x \quad +24x - 2$

$\frac{20x}{20} = \frac{10}{20}$

$\boxed{x = \frac{1}{2}}$

8. $8(3g + 2) - 3g = 3(5g - 4) - 2$

$24g + 16 - 3g = 15g - 12 - 2$

$21g + 16 = 15g - 14$

$-15g - 16 \quad -15g - 16$

$\frac{6g}{6} = \frac{-30}{6}$

$\boxed{g = -5}$

Intermediate Algebra – Chapter 2
Lesson 2

Solve the equation, if possible. Determine whether the equation has *one solution, no solution, or infinitely many solutions.*

9. $5(2f + 3) = 2(5f - 1)$

$10f + 15 = 10f - 2$
$-10f - 15 \quad -10f - 15$

$\boxed{0 = -17 \quad \text{No Sol}}$

10. $\frac{1}{\cancel{3}}(\cancel{12}^{4} - \cancel{24}^{8}v) = -2(v - 2)$

$4 - 8v = -2v + 4$
$-4 + 2v \quad +2v - 4$

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

$\boxed{v = 0}$

one Sol

11. $3(k + 1) + 11k = 2(4 + 5k) + 3$

$3k + 3 + 11k = 8 + 10k + 3$

$3 + 14k = 11 + 10k$
$-3 \quad -10k \quad -3 - 10k$

$\frac{4k}{4} = \frac{8}{4}$

$\boxed{k = 2 \quad \text{One Sol}}$

12. $-4(-m + 2) + 2m = -\frac{1}{2}(10 - 12m) - 3$

$4m - 8 + 2m = -5 + 6m - 3$

$\boxed{6m - 8 = 6m - 8 \quad \text{Inf. Many}}$

Intermediate Algebra – Chapter 2
Lesson 3

Name: _____

Solve the literal equation for y.

1. $3y = 9x + 24$

$\frac{3y}{3} = \frac{9x}{3} + \frac{24}{3}$

$\boxed{y = 3x + 8}$

2. $10 - 2y = 46$

$-10 \quad -10$

$\frac{-2y}{-2} = \frac{36}{-2}$

$\boxed{y = -18}$

3. $3x + 5 = 9 - 4y$

$-9 \quad -9$

$\frac{3x}{-4} - \frac{4}{-4} = \frac{-4y}{-4}$

$\boxed{-\frac{3}{4}x + 1 = y}$

4. $-5x + 7y = 8x + 7$

$+5x \quad +5x$

$\frac{7y}{7} = \frac{13x}{7} + \frac{7}{7}$

$\boxed{y = \frac{13}{7}x + 1}$

5. $3 + \frac{1}{5}y = 2x + 4$

$-3 \quad -3$

$(5)\frac{1}{5}y = (2x + 1)5$

$\boxed{y = 10x + 5}$

6. $10 - \frac{1}{3}y = 4 + 6x$

$-10 \quad -10$

$(-3)-\frac{1}{3}y = (-6 + 6x)-3$

$\boxed{y = 18 - 18x}$

Solve the literal equation for x.

7. $G = 4x + 5xy$

$\frac{G}{4+5y} = \frac{x(4+5y)}{4+5y}$

$\boxed{\frac{G}{4+5y} = x}$

8. $W = 4ax - 9x$

$\frac{W}{4a-9} = \frac{x(4a-9)}{4a-9}$

$\boxed{\frac{W}{4a-9} = x}$

9. $z = 6x + px + 2$

$-2 \quad -2$

$\frac{z-2}{6+p} = \frac{x(6+p)}{6+p}$

$\boxed{\frac{z-2}{6+p} = x}$

10. $t = 10 + 7x - qx$

$-10 \quad -10$

$\frac{t-10}{7-q} = \frac{x(7-q)}{7-q}$

$\boxed{\frac{t-10}{7-q} = x}$

11. $ax - bx = k$

$\frac{x(a-b)}{a-b} = \frac{k}{a-b}$

$\boxed{x = \frac{k}{a-b}}$

12. $P = qx + rx + s$

$-s \qquad -s$

$\frac{p-s}{q+r} = \frac{x(q+r)}{q+r}$

$\boxed{\frac{p-s}{q+r} = x}$

13. $11 - 4x - 3jx = w$

$-11 \qquad -11$

$\frac{x(-4-3j)}{-4-3j} = \frac{w-11}{-4-3j}$

$\boxed{x = \frac{w-11}{-4-3j}}$

14. $x - 8 + 3wx = y$

$+8 \qquad +8$

$\frac{x(1+3w)}{1+3w} = \frac{y+8}{1+3w}$

$\boxed{x = \frac{y+8}{1+3w}}$

15. Describe and correct the error in solving the equation for x.

X

$k = ax + bx + d$

$k = x(a + b + d)$

$x = \frac{k}{a + b + d}$

$k = ax + bx + d$

$-d \qquad -d$

$\frac{k-d}{a+b} = \frac{x(a+b)}{a+b}$

$\frac{k-d}{a+b} = x$

Solve the equation for the indicated variable.

16. Simple interest: $I = prt$; Solve for r.

$\frac{I}{pt} = \frac{prt}{pt}$

$\boxed{\frac{I}{pt} = r}$

17. Volume of a box: $V = lwh$; Solve for w.

$\frac{V}{lh} = \frac{lwh}{lh}$

$\boxed{\frac{V}{lh} = w}$

18. Heron's formula: $2S = a + b + c$; Solve for b.

$2S = a + b + c$

$-a-c \qquad -a \qquad -c$

$\boxed{2S - a - c = b}$

19. Coulomb's Law: $F = k\frac{q_1q_2}{d^2}$; Solve for k.

$(d^2)F = k\frac{q_1q_2}{d^2}(d^2)$

$Fd^2 = kq_1q_2$

$\frac{Fd^2}{q_1q_2} = \frac{kq_1q_2}{q_1q_2}$

$\boxed{\frac{Fd^2}{q_1q_2} = k}$

Intermediate Algebra – Chapter 2
Lesson 4

Name: _____

Solve the inequality. Graph the solution.

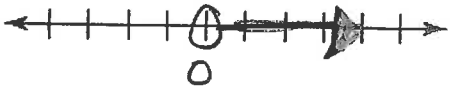
1. $W + 6 \le 2$ -4

$W+6 \le 2$
$-6 \quad -6$
$W \le -4$

2. $M - 3 > 6$ 9

$M-3>6$
$+3 \quad +3$
$M>9$

3. $4 < 4 + s$

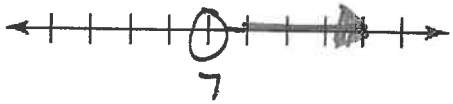


$4 < 4+s$
$-4 \quad -4$
$0 < s$

4. $7 \le x + 15$ -8

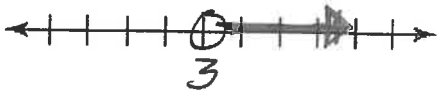
$7 \le x+15$
$-15 \quad -15$
$-8 \le x$

5. $p - (-3) > 10$



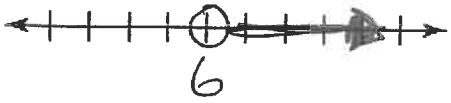
$p+3>10$
$-3 \quad -3$
$p>7$

6. $Q + 6 - 5 > 4$



$Q+1>4$
$-1 \quad -1$
$Q>3$

7. $3 - 11 + t > -2$



$-8+t>-2$
$+8 \quad +8$
$\boxed{t>6}$

8. $4 \le 6a - 4a - 2$

$4 \le 2a-2$
$+2 \quad +2$
$\frac{2}{2} \le \frac{2a}{2}$
$1 \le a$

Write the sentence as an inequality. Then solve the inequality.

9. A number plus 10 is less than 34.

$x+10<34$
$-10 \quad -10$
$x<24$

10. A number minus 8 is at least 14.

$x-8\geq 14$
$+8 \quad +8$
$x\geq 22$

11. The sum of a number and 7 is less than 15.

$7+x<15$
$-7 \quad -7$
$x<8$

12. Nine is less than or equal to the difference of a number and 1.

$9\leq x-1$
$+1 \quad +1$
$10\leq x$

13. You order a new pair of running shoes from a website that offers free shipping on order of $75 or more. Your shoes cost $69.95.

a. Write and solve an inequality that represents how much more you must spend to get free shipping.

$69.95+x\geq 75.00 \quad x\geq 5.05$
$-69.95 \quad -69.95$

b. The cost of shipping your shoes is $7.79. Would you purchase another item in order to get free shipping? Explain.

$69.95+7.79\geq 75$

7.74

Yes as long as I could find something between $5.05 + $7.74

Intermediate Algebra – Chapter 2
Lesson 5

Name: _____

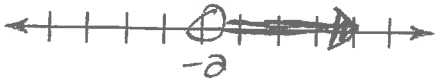
Solve the inequality. Graph the solution.

1. $56 \le 8b$

$\frac{56}{8} \le \frac{8b}{8}$

$7 \le b$

2. $-14 < 7t$



$\frac{-14}{7} < \frac{7t}{7}$

$-2 < t$

3. $\frac{x}{2} \le 1.7$

$(2)\frac{x}{2} \le 1.7(2)$

$x \le 3.4$

4. $\frac{p}{2} \ge -3$

$(2)\frac{p}{2} \ge -3(2)$

$p \ge -6$

5. $15 > \frac{2}{3}w$

$(\frac{3}{2})15 > \frac{2}{3}w(\frac{3}{2})$

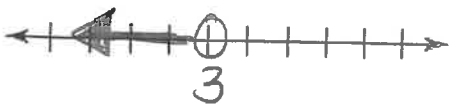
$\frac{45}{2} > w$

6. $-22 \le \frac{11}{2}h$

$(\frac{2}{11})\frac{-22}{1} \le \frac{11}{2}h(\frac{2}{11})$

$-4 \le h$

7. $-21 < -7a$



$\frac{-21}{-7} < \frac{-7a}{-7}$

$\boxed{3 > a}$

8. $-18 > -6u$

$\frac{-18}{-6} > \frac{-6u}{-6}$

$3 < u$

9. $\frac{n}{-2} < 3$

$(-2)\frac{n}{-2} < 3(-2)$

$n > -6$

10. $\frac{w}{-3} > 3$

$(-3)\frac{w}{-3} > 3(-3)$

$w > -9$

11. $-7 \le -\frac{1}{3}c$

21

$(-3)-7 \le -\frac{1}{3}c(-3)$

$\boxed{21 \ge c}$

12. $-15 > -\frac{3}{5}a$

$\left(-\frac{5}{3}\right)\cancel{-15}^{5} > -\frac{3}{5}a\left(-\frac{5}{3}\right)$

$25 < a$

13. You have $850 to buy new carpet for the game room. The dimensions of the game room are 20 feet by 12 feet. Write and solve an inequality that represents the costs per square foot that you can pay for the new carpet. Specify the units of measure.

$\frac{20(12)}{x} \le 850$

$x \cdot \frac{240}{x} \le 850 \cdot x$

$\frac{240}{850} \le \frac{850x}{850}$

$.28 \le x$

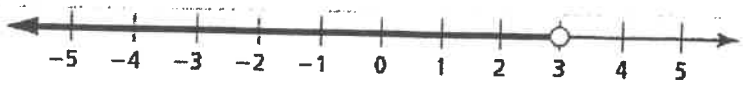
28¢ per sq foot

Intermediate Algebra – Chapter 2
Lesson 6

Name: _____

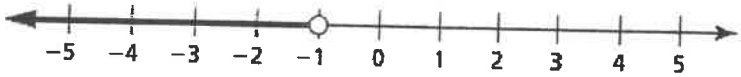
Match the inequality with its graph.

A.



B.

C.



1. $5(4 - y) < 25$

$20 - 5y < 25$
$-20 \quad -20$
$\frac{-5y}{-5} < \frac{5}{-5}$

$\boxed{y > -1}$ B

2. $-9k + 5 > 14$

$-5 \quad -5$
$\frac{-9k}{-9} > \frac{9}{-9}$

$\boxed{k < -1}$ C

3. $2(x - 7) < -8$

$2x - 14 < -8$
$+14 \quad +14$
$\frac{2x}{2} < \frac{6}{2}$

$\boxed{x < 3}$ A

Solve the inequality.

4. $6 < -5t - 4$

$+4 \quad +4$
$\frac{10}{-5} < \frac{-5t}{-5}$

$\boxed{-2 > t \quad t < -2}$

5. $\frac{m}{4} + 2 < 3$

$-2 \quad -2$
$4 \cdot \frac{m}{4} < 1(4)$

$\boxed{m < 4}$

6. $5 + \frac{k}{-2} \geq 2$

$-5 \quad -5$
$(-2)\frac{k}{-2} \geq -3(-2)$

$\boxed{k \leq 6}$

7. $\frac{d}{-6} + 7 < 11$

$-7 \quad -7$
$(-6)\frac{d}{-6} < 4(-6)$

$\boxed{d > -24}$

8. $4 < -2(y + 3)$

$4 < -2y - 6$
$+6 \quad +6$
$\frac{10}{-2} < \frac{-2y}{-2}$

$\boxed{-5 > y}$

$\boxed{y < -5}$

9. $24 \geq 6(w - 2)$

$24 \geq 6w - 12$
$+12 \quad +12$
$\frac{36}{6} \geq \frac{6w}{6}$

$\boxed{6 \geq w \quad w \leq 6}$

Intermediate Algebra – Chapter 2
Lesson 6

Solve the inequality.

10. $-5n - 4 > 7n + 20$

$-7n + 4 \quad -7n + 4$

$\frac{-12n}{-12} > \frac{24}{-12}$

$\boxed{n < -2}$

11. $4k - 6 < 3k + k - 1$

$4k - 6 < 4k - 1$

$-4k + 6 \quad -4k + 6$

$\boxed{0 < 5 \quad \text{Yes} \quad \text{ARN}}$

12. $10h - 3h + 6 \geq 11 + 7h$

$7h + 6 \geq 11 + 7h$

$-7h - 6 \quad -6 \quad -7h$

$\boxed{0 \geq 17 \quad \text{No} \quad \text{No Sol}}$

13. $6(t - 1) \leq 2(d + 12)$

$6d - 6 \leq 2d + 24$

$-2d + 6 \quad -2d + 6$

$\frac{4d}{4} \leq \frac{30}{4}$

$\boxed{d \leq \frac{15}{2}}$

14. $12(x - 2) > 3(4x - 8)$

$12x - 24 > 12x - 24$

$-12x + 24 \quad -12x + 24$

$\boxed{0 > 0 \quad \text{No} \quad \text{No Sol}}$

15. $6\left(\frac{1}{3}d + 4\right) > 2(d + 12)$

$2d + 24 > 2d + 24$

$-2d - 24 \quad -2d - 24$

$\boxed{0 > 0 \quad \text{No Sol}}$

Intermediate Algebra – Chapter 2

Lesson 7

Name: _____

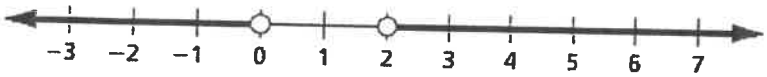
Write a compound inequality that is represented by the graph.

1. 

$-2 \le x < 6$

2. 

$x < -1$ OR $x \ge 4$

3. 

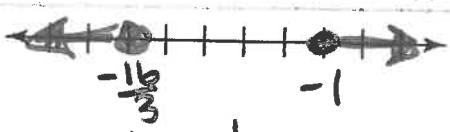
$x < 0$ or $x > 2$

Write the sentence as an inequality. Graph the inequality.

4. A number d is less than or equal to 2 and greater than or equal to -2.

$-2 < x \le 2$

5. A number m is no less than -1 or less than or equal to -16/3.



$m \ge -1$ OR, $m \le -\frac{16}{3}$

Intermediate Algebra – Chapter 2
Lesson 7

Solve the inequality. Graph the inequality.

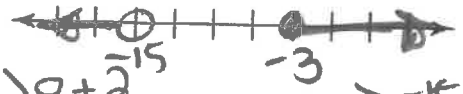
6. $-2 \geq 10 - 3g \geq -8$

$-2 \geq 10 - 3g \geq -8$
$-10 \quad -10 \quad -10$
$\frac{-12}{-3} \geq \frac{-3g}{-3} \geq \frac{-18}{-3}$
$4 \leq g \leq 6$

7. $-4 < 2p + 8 < 18$

$-4 < 2p + 8 < 18$
$-8 \quad -8 \quad -8$
$\frac{-12}{2} < \frac{2p}{2} < \frac{10}{2}$
$-6 < p < 5$

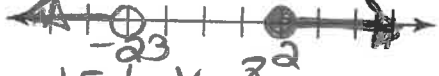
8. $-13 > q + 2$ or $5q \geq -15$



$-13 > q + 2$
$-2 \quad -2$
$-15 > q$

$\frac{5q}{5} \geq \frac{-15}{5}$
$q \geq -3$

9. $15 < -v - 8$ or $3v + 4 \geq 10$



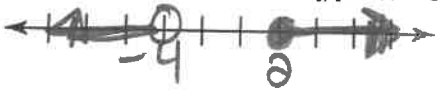
$15 < -v - 8$
$+8 \quad +8$
$\frac{23}{-1} > \frac{-v}{-1}$
$-23 < v$

$3v + 4 \geq 10$
$-4 \quad -4$
$\frac{3v}{3} \geq \frac{6}{3}$
$v \geq 2$

10. $-6 < \frac{1}{2}(6y + 12) < 14$

$-6 < \frac{1}{2}(6y+12) < 14$
$-6 < 3y + 6 < 14$
$-6 \quad -6 \quad -6$
$\frac{-12}{3} < \frac{3y}{3} < \frac{8}{3}$
$-4 < y < \frac{8}{3}$

11. $42 < 6(3 - k)$ or $\frac{1}{2}(14k - 8) \geq 10$



$42 < 18 - 6k$
$-18 \quad -18$
$\frac{24}{-6} < \frac{-6k}{-6}$
$-4 > k$

$\frac{1}{2}(14k - 8) \geq 10$
$7k - 4 \geq 10$
$+4 \quad +4$
$\frac{7k}{7} \geq \frac{14}{7}$
$k \geq 2$

Intermediate Algebra – Chapter 3
Lesson 1, Day 1

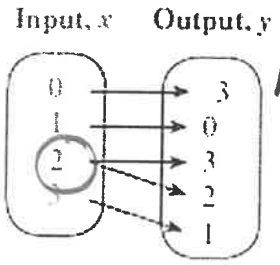
Name: _____ **Date** _____

Determine whether the relation is a function. Explain.

1. (1, -2), (2, 1), (3, 6), (4, 13), (5, 22)

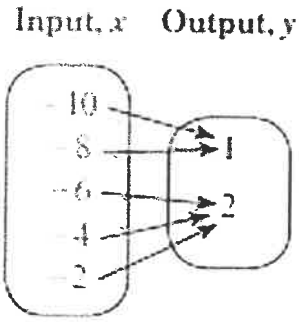
Function
x doesn't Repeat

2.



Not a function
X repeats

3.



Function
No Repeat

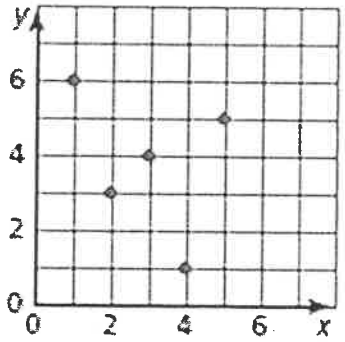
4.

Input, x	16	1	0	1	16
Output, y	−2	−1	0	1	2

Not a function
X repeats

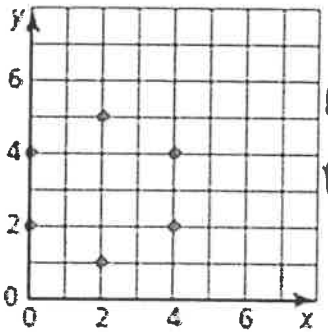
Determine whether the graph represents a function. Explain.

5.



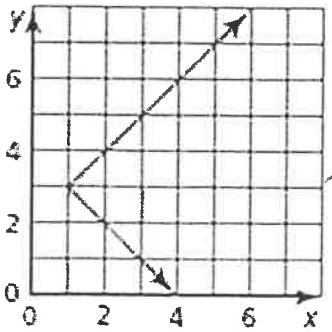
Function
Passes VLT

6.



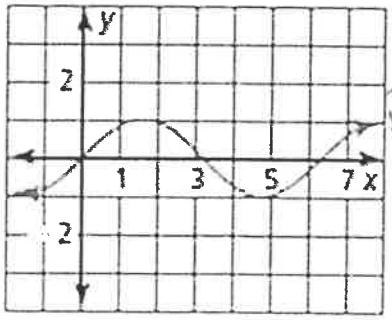
Not a Function
Does not pass VLT

7.



Not a function
Does not pass VLT

8.



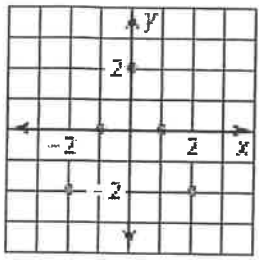
Function
Passes VLT

Intermediate Algebra – Chapter 3
Lesson 1, Day 2

Name: _____ **Date** _____

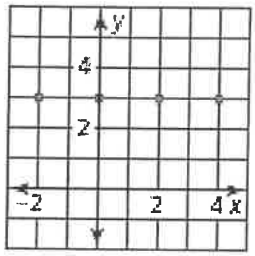
Find the domain and range of the function represented by the graph.

1.



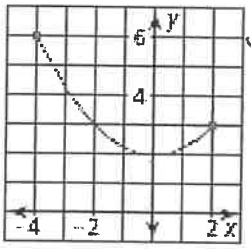
D: -2, -1, 0, 1, 2
R: 2, 0, -2

2.



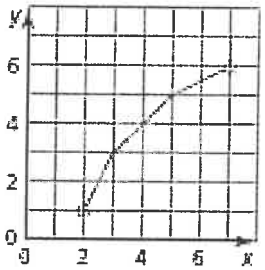
D: -2, 0, 2, 4
R: 3

3.



D: $-4 \le x \le 2$
R: $2 \le y \le 6$

4.



D: $2 < x < 7$
R: $1 < y < 6$

5. The function y = 25x + 500 represents your monthly rent y (in dollars) when you pay x days late.

a. Identify the independent and dependent variables.

dependent → y
independent → x

b. The domain is 0, 1, 2, 3, 4, and 5. What is the range?

0	1	2	3	4	5
500	525	550	575	600	625

6. The function 1.5x + 0.5y = 12 represents the number of hardcover books x and softcover books y you can buy at a used book sale.

a. Solve the equation for y.

$1.5x + 0.5y = 12$
$-1.5x \quad -1.5x$

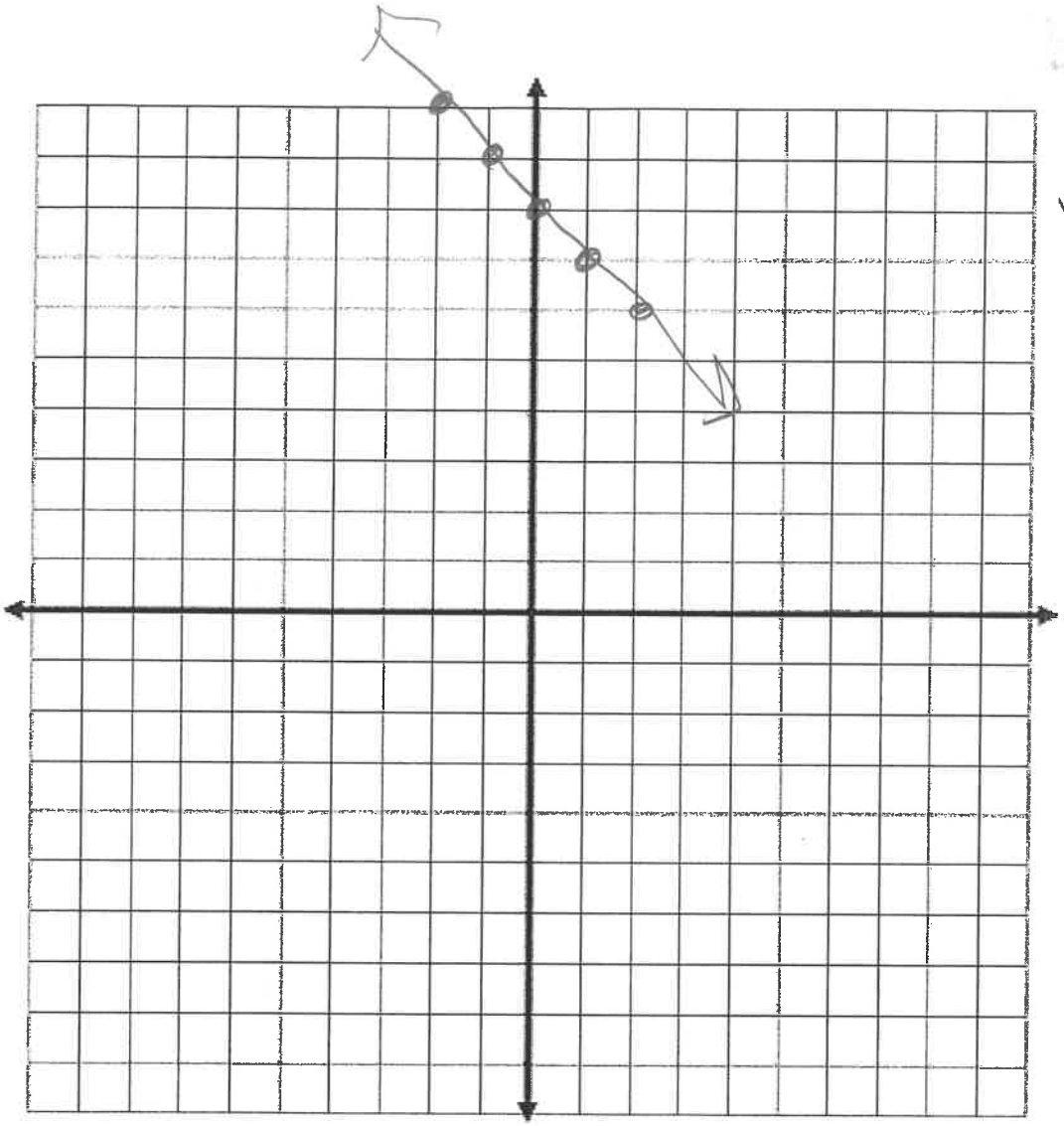
$\frac{0.5y}{0.5} = \frac{-1.5x}{0.5} + \frac{12}{0.5}$

$y = -3x + 24$

b. Make an input-output table to find the ordered pairs for the function (other side of paper)

-2	-1	0	1	2
30	27	24	21	18

c. Plot the ordered pairs in a coordinate plane (other side of paper)

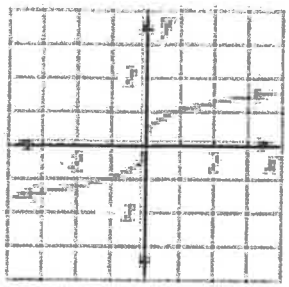


y goes by 3's

Intermediate Algebra – Chapter 3
Lesson 2, Day 1
Name: _____

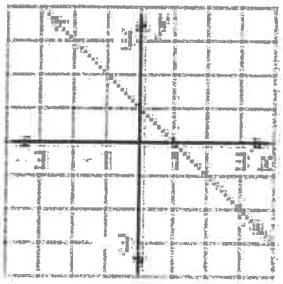
Determine whether the graph represents a *linear* or *nonlinear* function.

1.



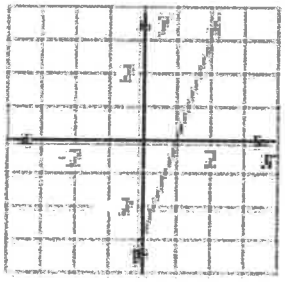
Nonlinear

2.



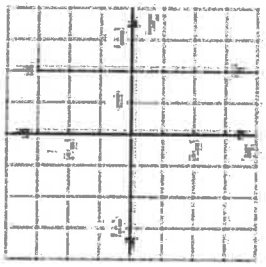
Linear

3.



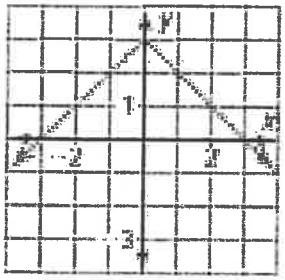
Linear

4.



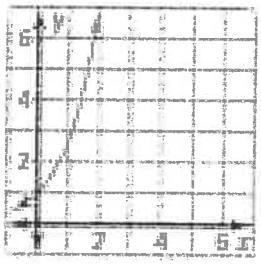
Linear

5.



Nonlinear

6.



Nonlinear

Determine whether the table represents a *linear* or *nonlinear* fucntion.

7.

x	1	2	3	4
y	5	10	15	20

Linear

8.

x	5	7	9	11
y	9	3	1	9

Nonlinear

9.

x	4	8	12	16
y	16	12	7	1

Nonlinear

10.

x	1	0	1	2
y	35	20	5	10

Linear

Determine whether the equation represents a *linear* or *nonlinear* function.

11. $y = x^2 + 11$

Nonlinear

12 $y = 7 - 3x$

Linear

13. $y - \sqrt[3]{8} - x$

Nonlinear

14. $Y = 4x(8 - x)$

Nonlinear

15. $2 + \frac{1}{2}y = 3x + 4$

Linear

16. $Y - x = 2x - 2/3y$

Linear

17. $18x - 2y = 26$

Linear

18. $2x + 3x = 9xy$

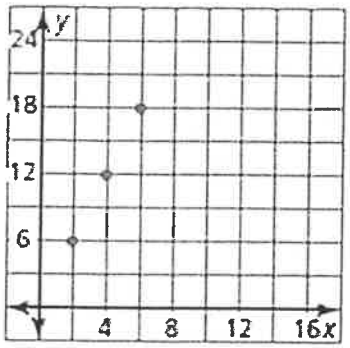
Nonlinear

Intermediate Algebra – Chapter 3
Lesson 2, Day 2

Name: _____ **Date** _____

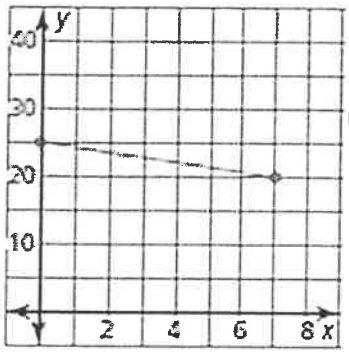
Find the domain of the function represented by the graph. Determine whether the domain is *discrete* or *continuous*.

1.



D: 2, 4, 6
Discrete

2.



D: $0 \le x \le 7$
Continuous

Determine whether the domain is discrete or *continuous*..

3.

Input Bags, x	2	4	6
Output Marbles, y	20	40	60

discrete

4.

Input Years, x	1	2	3
Output Height of tree (feet), y	6	9	12

Continuous

5.

Input Time (hours), x	3	6	9
Output Distance (miles), y	150	300	450

Continuous

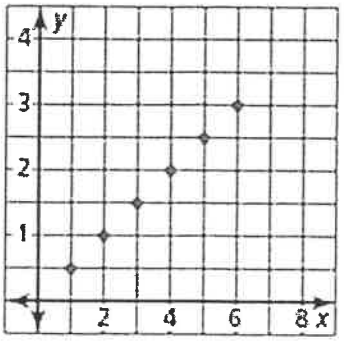
6.

Input Relay teams, x	0	1	2
Output Athletes, y	0	4	8

Discrete

Describe and correct the error in the statement about the domain.

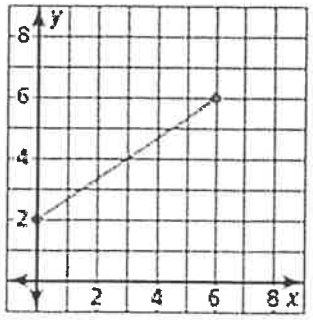
7. X



D: 1, 2, 3, 4, 5, 6

2.5 is in the domain.

8. X



The graph ends at $x = 6$, so the domain is discrete.

Continuous

Intermediate Algebra – Chapter 3
Lesson 3
Name _____

Evaluate the function when x = -2, 0, and 5.

1. g(x) = 3x

$g(-2) = 3(-2)$
$= -6$
$g(0) = 3(0)$
$= 0$
$g(5) = 3(5)$
$= 15$

2. r(x) = -x - 7

$r(-2) = -(-2) - 7$
$= 2 - 7$
$= 5$
$r(0) = -(0) - 7$
$= -7$
$r(5) = -(5) - 7$
$= -12$

3. b(x_ = 18 - 0.5x

$b(-2) = 18 - 0.5(-2)$
$= 18 + 1$
$= 19$
$b(0) = 18 - 0.5(0)$
$= 18 - 0$
$= 18$
$b(5) = 18 - 0.5(5)$
$18 - 2.5 = \boxed{15.5}$

4. n(x) = -1 - x + 4

$n(-2) = -1 - (-2) + 4$
$= -1 + 2 + 4$
$= 5$
$n(0) = -1 - 0 + 4$
$= 3$
$n(5) = -1 - 5 + 4$
$= -2$

Let c(t) be the number of customers in a restaurant t hours after 8 AM. Explain the meaning of each statement.

5. c(0) = 0

At 8 AM there were 0 customers

6. c(3) = c(8)

At 11 AM, there were 8 customers

7. c(n) = 29

At n hours passed 8AM, there were 29 customers

8. c(13) < c(12)

at 9PM there were fewer customers, then at 8PM

Intermediate Algebra – Chapter 3
Lesson 3
Name _____

Find the value of x so that the function has the given value.

9. h(x) = -7x; h(x) = 63

$\frac{63}{-7} = \frac{-7x}{-7}$

$\boxed{-9 = x}$

10. t(x) = 3x; t(x) = 24

$\frac{24}{3} = \frac{3x}{3}$

$\boxed{8 = x}$

11. k(x) = 6x - 12; k(x) = 18

$18 = 6x - 12$
$+12 \quad +12$

$\frac{30}{6} = \frac{6x}{6}$

$\boxed{5 = x}$

12. $j(x) = -\frac{4}{5}x + 7; j(x) = -5$

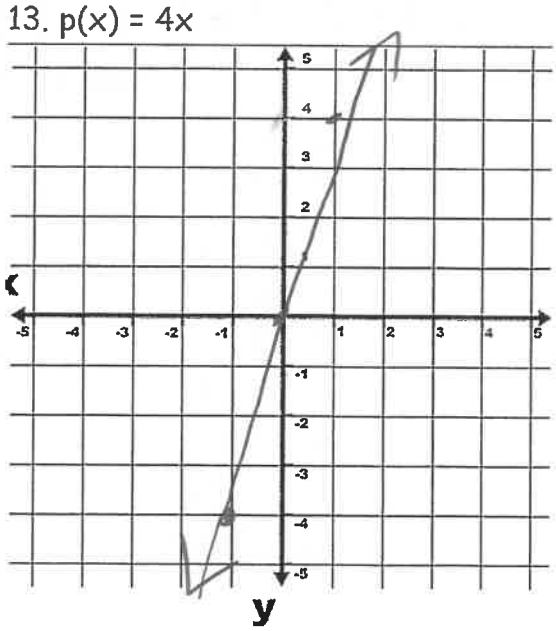
$-5 = -\frac{4}{5}x + 7$
$-7 \quad -7$

$\left(-\frac{5}{4}\right)\frac{-12}{1} = -\frac{4}{5}x\left(-\frac{5}{4}\right)$

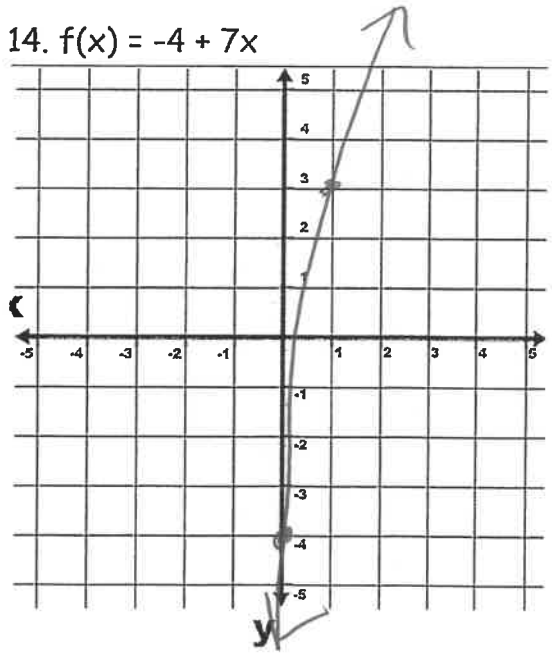
$\boxed{15 = x}$

Graph the linear function.

13. p(x) = 4x



14. f(x) = -4 + 7x

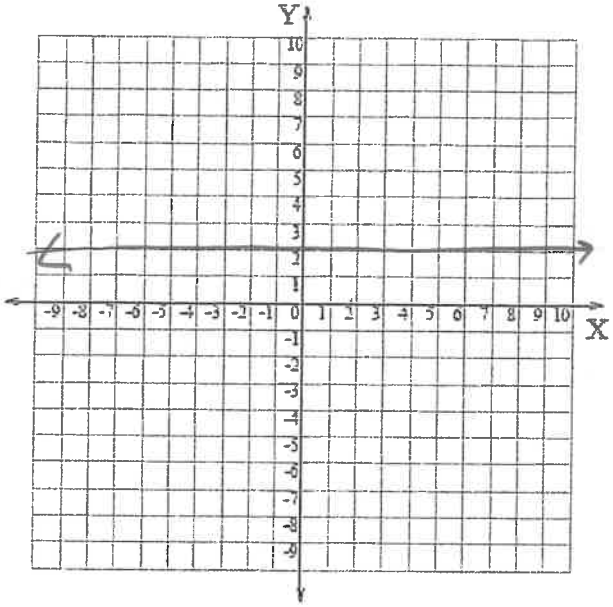


Intermediate Algebra – Chapter 3
Lesson 4

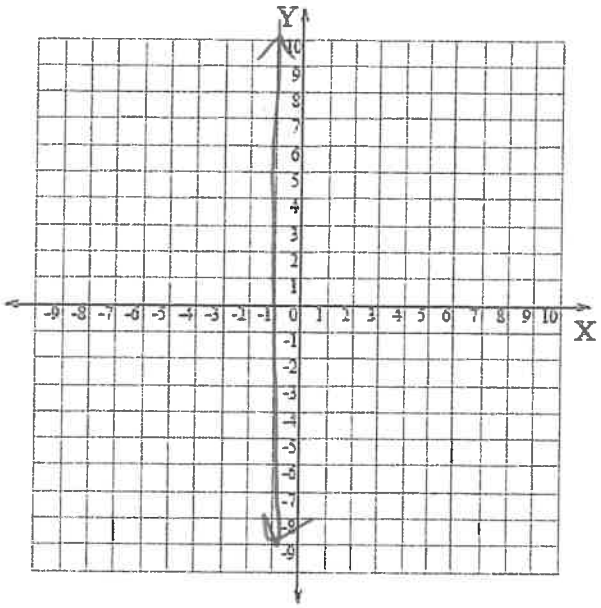
Name: _____ Date _____

Graph the linear equation.

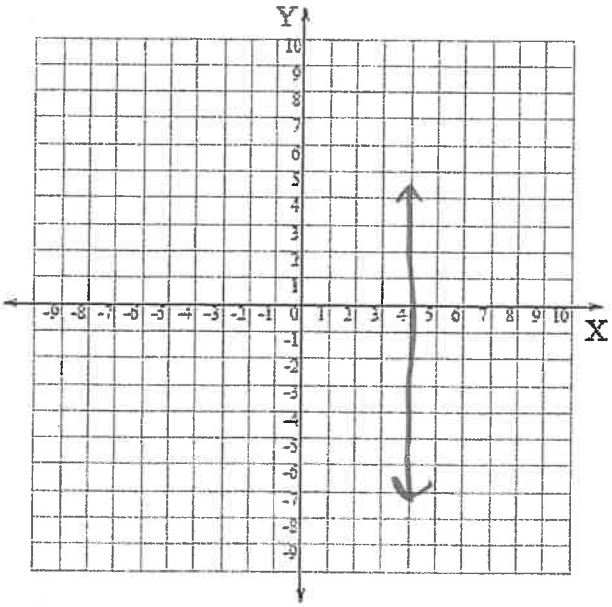
1. y = 2



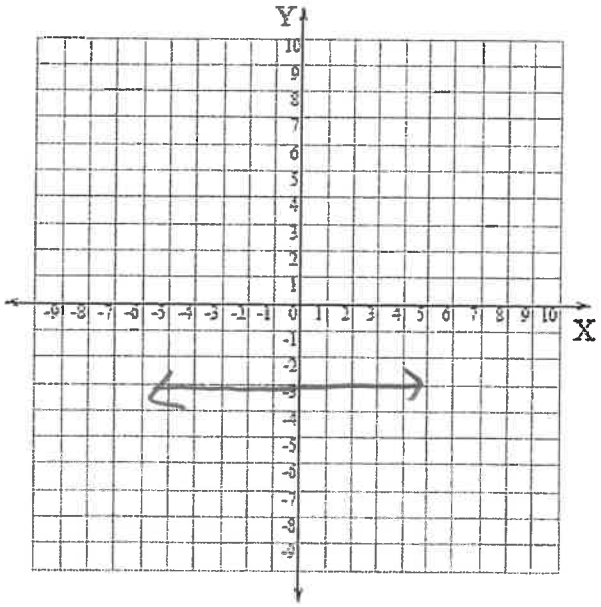
2. x = -1



3. x = 4



4. y = -3



Intermediate Algebra – Chapter 3

Lesson 4

Find the x- and y-intercepts of the graph of the linear function.

5. $3x + 6y = 24$

X-int

$3x + 6(0) = 24$

$3x = 24$

$\boxed{x = 8}$

Y-int

$3(0) + 6y = 24$

$6y = 24$

$\boxed{y = 4}$

6. $-4x + 8y = -16$

X-int

$-4x + 8(0) = -16$

$-4x = -16$

$\boxed{x = 4}$

Y-int

$-4(0) + 8y = -16$

$8y = -16$

$\boxed{y = -2}$

7. $-6x + 9y = -18$

X-int

$-6x + 9(0) = -18$

$-6x = -18$

$\boxed{x = 3}$

Y-int

$-6(0) + 9y = -18$

$9y = -18$

$\boxed{y = -2}$

8. $-x + 8y = 4$

X-int

$-x + 8(0) = 4$

$-x = 4$

$\boxed{x = -4}$

Y-int

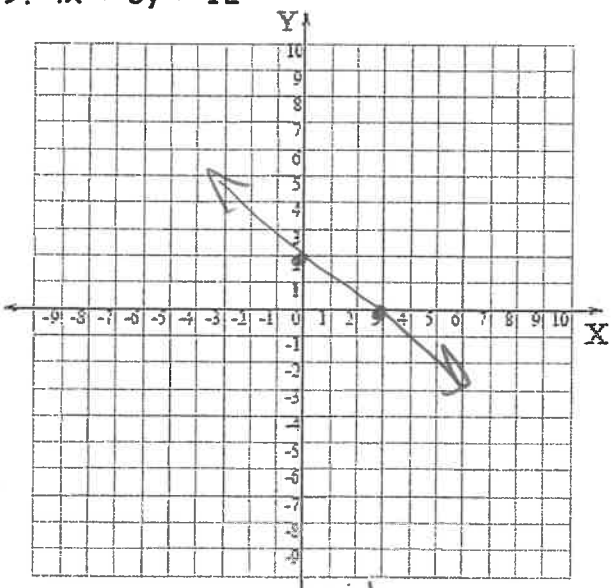
$-(0) + 8y = 4$

$8y = 4$

$\boxed{y = \frac{1}{2}}$

Use intercepts to graph the linear equation. Label the points corresponding to the intercepts.

9. $4x + 6y = 12$



X-int

$4x + 6(0) = 12$

$4x = 12$

$\boxed{x = 3}$

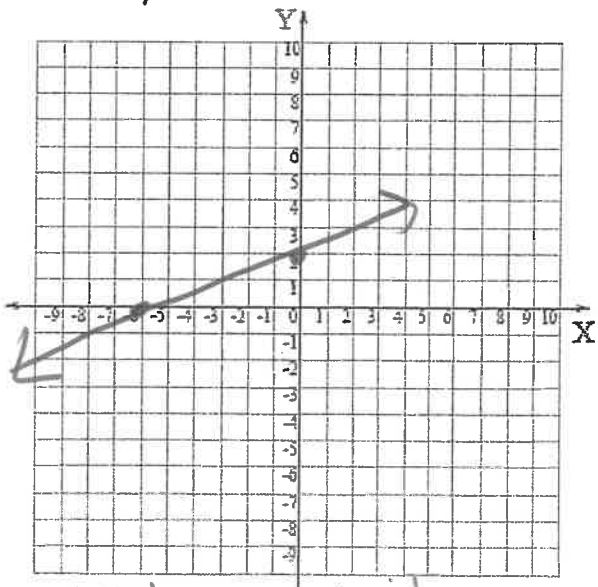
Y-int

$4(0) + 6y = 12$

$6y = 12$

$\boxed{y = 2}$

10. $-2x + 6y = 12$



X-int

$-2x + 6(0) = 12$

$-2x = 12$

$\boxed{x = -6}$

Y-int

$-2(0) + 6y = 12$

$6y = 12$

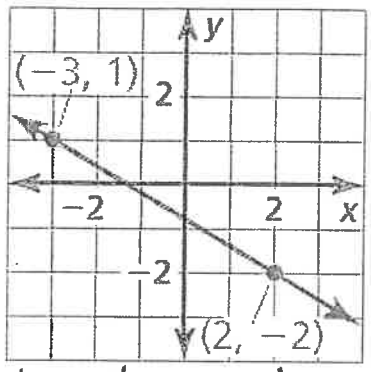
$\boxed{y = 2}$

Intermediate Algebra – Chapter 3
Lesson 5, Day 1

Name: _____ **Date** _____

Describe the slope of the line. Then find the slope.

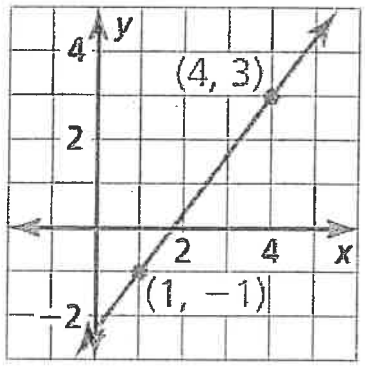
1.



Negative slope

$\frac{-2-1}{2-(-3)} = \frac{-3}{5}$

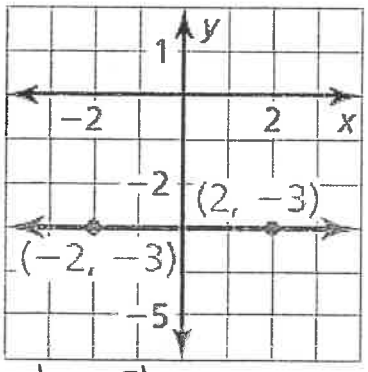
2.



Positive Slope

$\frac{3-(-1)}{4-1} = \frac{4}{3}$

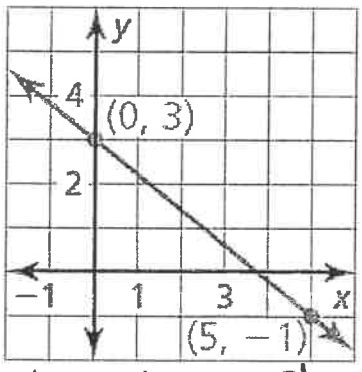
3.



No Slope

$\frac{-3-(-3)}{2-(-2)} = \frac{0}{4} = 0$

4.



Negative Slope

$\frac{3+(+1)}{0-5} = \frac{4}{-5}$

The points represented by the table lie on a line. Find the slope of the line.

5.

x	-9	-5	-1	3
y	-2	0	2	4

$\frac{-2-0}{-9+(+5)} = \frac{-2}{-4} = \frac{1}{2}$

6.

x	-1	2	5	8
y	-6	-6	-6	-6

$\frac{-6+(-6)}{-1-2} = \frac{0}{-3} = 0$

7.

x	0	0	0	0
y	-4	0	4	8

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

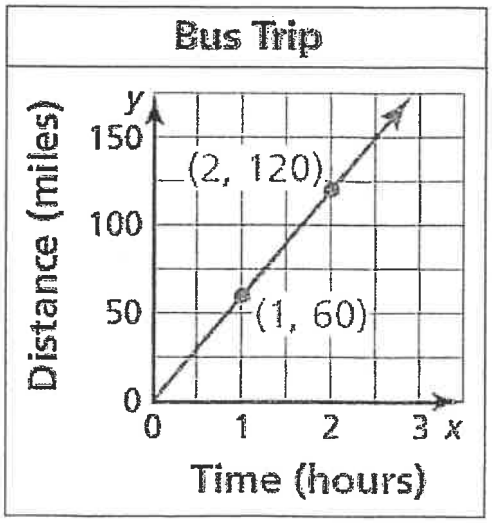
undefined

8.

x	-4	-3	-2	-1
y	2	-5	-12	-19

$\frac{2+(-15)}{-4+(+3)} = \frac{7}{-1} = -7$

9. The graph shows the distance y (in miles) that a bus travels in x hours. Find and interpret the slope of the line.



$\frac{120-60}{2-1} = \frac{60}{1} = 60$

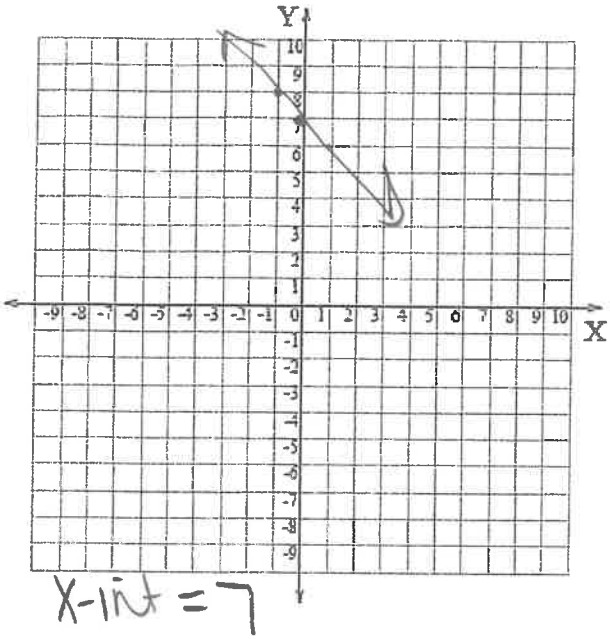
driving 60 mph

Intermediate Algebra – Chapter 3
Lesson 5, Day 2

Name: _____ Date _____

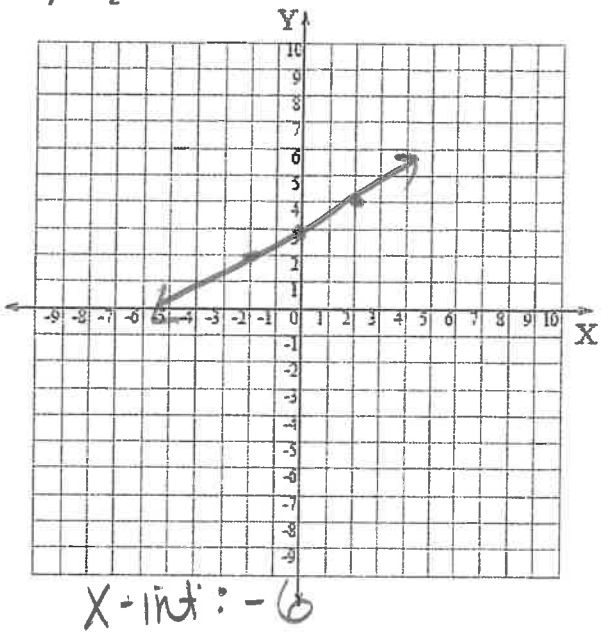
Graph the linear equation. Identify the x-intercept.

1. $y = -x + 7$



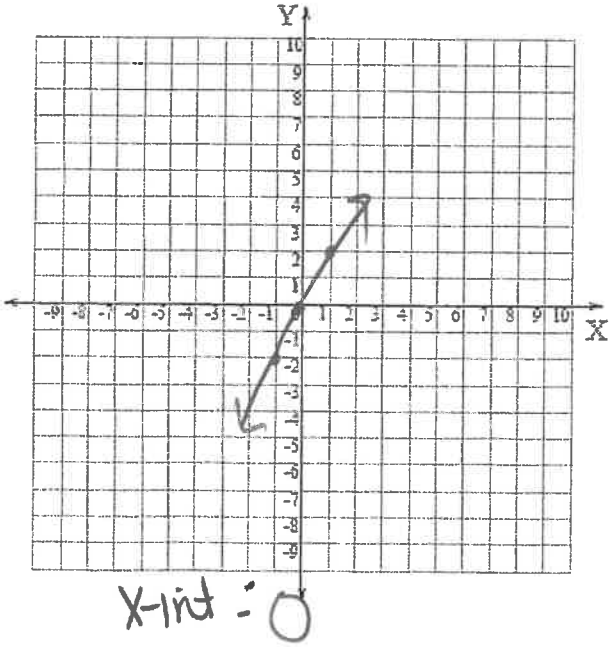
X-int = 7

2. $y = \frac{1}{2}x + 3$



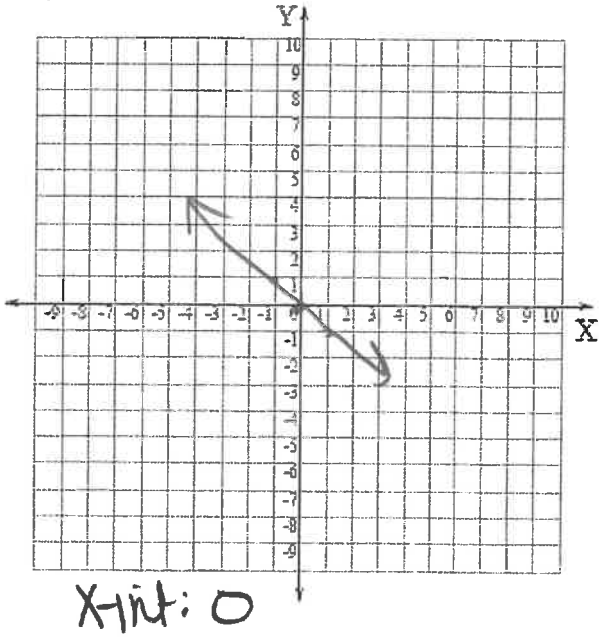
X-int : -6

3. $y = 2x$



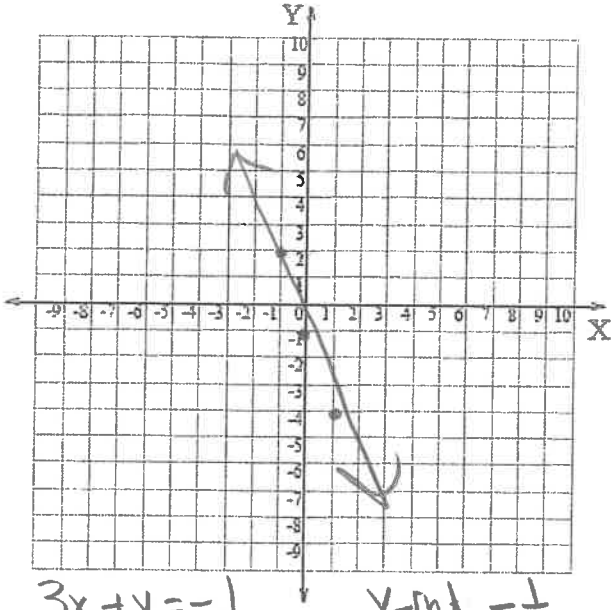
X-int : 0

4. $y = -x$



X-int: 0

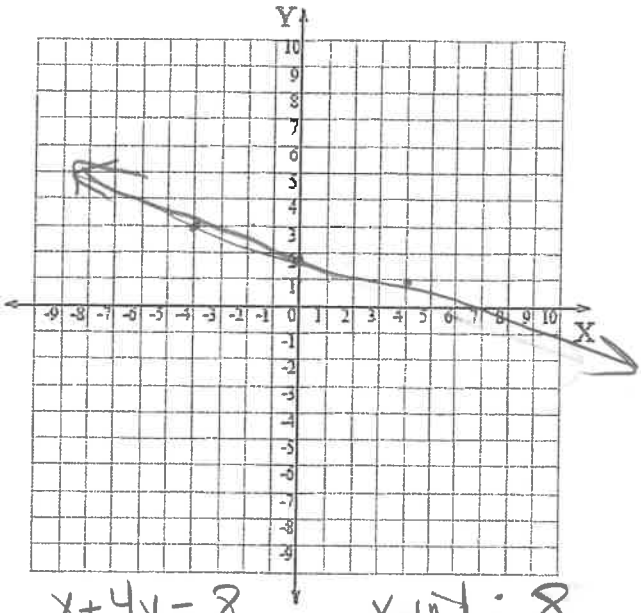
5. $3x + y = -1$



$3x + y = -1$
$-3x \quad -3x$
$y = -3x - 1$

X-int. $-\frac{1}{3}$

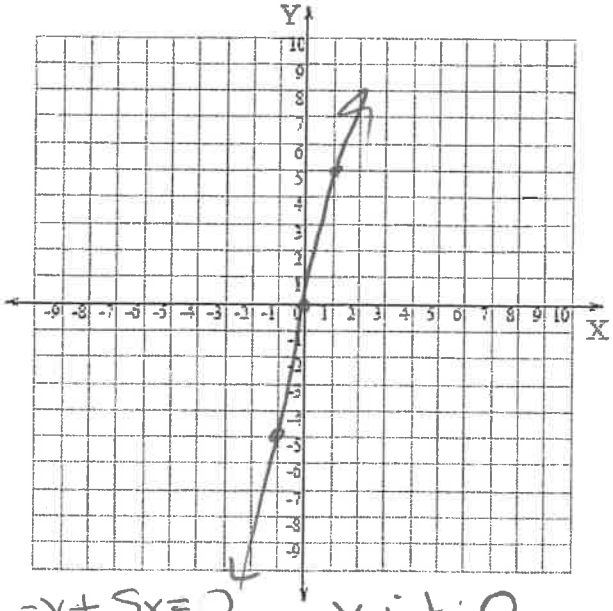
6. $x + 4y = 8$



$x + 4y = 8$
$-x \quad -x$
$\frac{4y}{4} = \frac{-x}{4} + \frac{8}{4}$
$y = -\frac{1}{4}x + 2$

X-int: 8

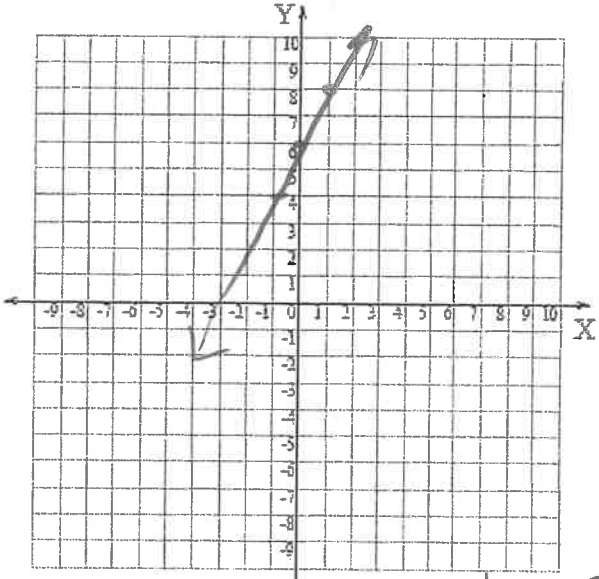
7. $-y + 5x = 0$



$-y + 5x = 0$
$-5x \quad -5x$
$-y = -5x$
$y = 5x$

X-int: 0

8. $2x - y + 6 = 0$



$2x - y + 6 = 0$
$-6 \quad -6$
$2x - y = -6$
$-2x \quad -2x$
$-y = -2x - 6$
$y = 2x + 6$

X-int: -3

Intermediate Algebra – Chapter 3
Lesson 6
Name: _____

Write an equation in slope-intercept form of the line that passes through the given point and has the given slope.

1. (2, 1); m = 2

$1 = 2(2) + b$
$1 = 4 + b$
$-4 \quad -4$
$-3 = b$

$\boxed{y = 2x - 3}$

2. (3, 5); m = -1

$5 = -1(3) + b$
$5 = -3 + b$
$+3 \quad +3$
$8 = b$

$\boxed{y = -x + 8}$

3. (7, -4); m = -6

$-4 = 7(-6) + b$
$-4 = -42 + b$
$+42 \quad +42$
$38 = b$

$\boxed{y = -6x + 38}$

4. (-8, -2); m = 5

$-2 = -8(5) + b$
$-2 = -40 + b$
$+40 \quad +40$
$38 = b$

$\boxed{y = 5x + 38}$

5. (9, 0); m = -3

$0 = 9(-3) + b$
$0 = -27 + b$
$+27 \quad +27$
$27 = b$

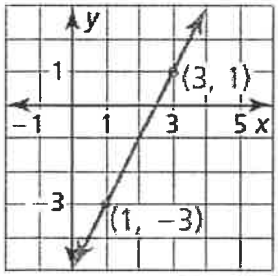
$\boxed{y = -3x + 27}$

6. (0, 2); m = 4

$\boxed{y = 4x + 2}$

Write an Equation of the line in slope-intercept form.

7.

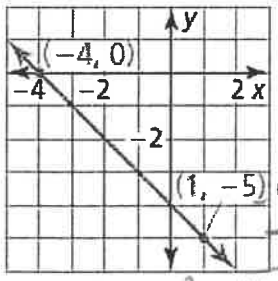


$\frac{-3-1}{1-3} = \frac{-4}{-2} = 2$

$1 = 3(2) + b$
$1 = 6 + b$
$-6 \quad -6$
$-5 = b$

$\boxed{y = 2x - 5}$

8.

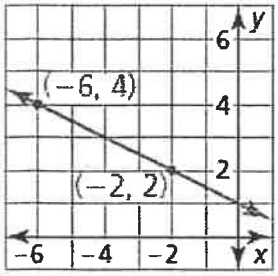


$\frac{0-(-5)}{-4-1} = \frac{5}{-5} = -1$

$0 = -4(-1) + b$
$0 = 4 + b$
$-4 \quad -4$
$-4 = b$

$\boxed{y = -x - 4}$

9.

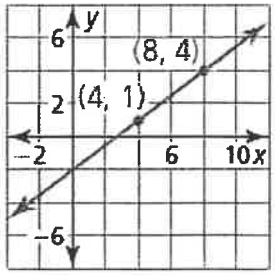


$\frac{4-2}{-6-(-2)} = \frac{2}{-4} = -\frac{1}{2}$

$4 = -\frac{1}{2}(-6) + b$
$4 = 3 + b$
$-3 \quad -3$
$1 = b$

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

10.



$\frac{4-1}{8-4} = \frac{3}{4}$

$4 = \frac{3}{4}(8) + b$
$4 = 6 + b$
$-6 \quad -6$
$-2 = b$

$\boxed{y = \frac{3}{4}x - 2}$

Intermediate Algebra – Chapter 3
Lesson 7
Name: _____

Write an equation in point-slope form of the line that passes through the given point and has the given slope.

1. (2, 1); m = 2

$y-1=2(x-2)$

2. (3, 5); m = -1

$y-5=-1(x-3)$

3. (7, -4); m = -6

$y+4=-6(x-7)$

4. (-8, -2); m = 5

$y+2=5(x+8)$

5. (9, 0); m = -3

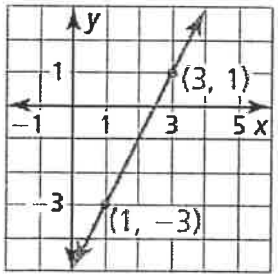
$y-0=-3(x-9)$

6. (0, 2); m = 4

$y-2=4(x-0)$

Write an Equation of the line in point-slope form.

7.



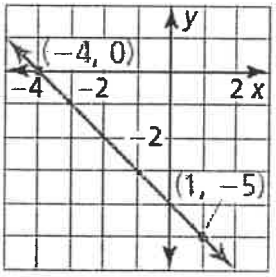
$\frac{-3-1}{1-3}=\frac{-4}{-2}=2$

$y-1=2(x-3)$

OR

$y+3=2(x-1)$

8.



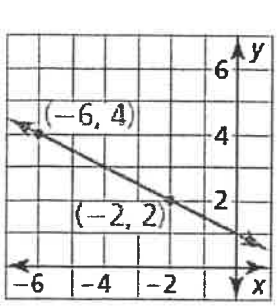
$\frac{-5-0}{1-(-4)}=\frac{-5}{5}=-1$

$y-0=-1(x+4)$

OR

$y+5=-1(x-1)$

9.

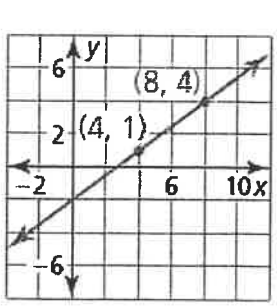


$\frac{4-2}{-6-(-2)}=\frac{2}{-4}=-\frac{1}{2}$

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

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

10.



$\frac{4-1}{8-4}=\frac{3}{4}$

$y-4=\frac{3}{4}(x-8)$

$y-1=\frac{3}{4}(x-4)$

Intermediate Algebra – Chapter 3

Lesson 7

Write an equation in slope-intercept form of the line that passes through the given points by using point-slope form first.

11. (7, 2), (2, 12)

$\frac{12-2}{2-7} = \frac{10}{-5} = -2$

$y-2 = -2(x-7)$

$y-2 = -2x+14$

$+2 \qquad +2$

$\boxed{y = -2x+16}$

12. (6, -2), (12, 1)

$\frac{-2-1}{6-12} = \frac{-3}{-6} = \frac{1}{2}$

$y+2 = \frac{1}{2}(x-6)$

$y+2 = \frac{1}{2}x-3$

$-2 \qquad -2$

$\boxed{y = \frac{1}{2}x-5}$

13. (6, -1), (3, -7)

$\frac{-1+(+7)}{6-3} = \frac{6}{3} = 2$

$y+1 = 2(x-6)$

$y+1 = 2x-12$

$-1 \qquad -1$

$\boxed{y = 2x-13}$

14. (-2, 5), (-4, -5)

$\frac{5+(-5)}{-2+(+4)} = \frac{10}{2} = 5$

$y-5 = 5(x+2)$

$y-5 = 5x+10$

$+5 \qquad +5$

$\boxed{y = 5x+15}$

Write a linear function *f* with the given values.

17. f(2) = 2, f(1) = 1 (2,2) (1,1)

$\frac{2-1}{2-1} = \frac{1}{1} = 1$

$\boxed{y-1 = 1(x-1)}$ OR $\boxed{y-2 = 1(x-2)}$

OR $y-1 = 1(x-1)$

$y-1 = x-1$

$+1 \qquad +1$

$\boxed{y = x}$

18. f(5) = 7; f(-2) = 0 (5,7) (-2,0)

$\frac{7-0}{5+(-2)} = \frac{7}{7} = 1$

$\boxed{y-7 = 1(x-5)}$ OR $\boxed{y-0 = 1(x+2)}$

or

$y-0 = 1(x+2)$

$\boxed{y = x+2}$

19. f(-10) = 4; f(-2) = 4 (-10,4) (-2,4)

$\frac{4-4}{-10+(-2)} = \frac{0}{-8} = 0$

$\boxed{y-4 = 0(x+10)}$ or $\boxed{y-4 = 0(x+2)}$

or $y-4 = 0(x+2)$

$y-4 = 0$

$+4 \qquad +4$

$\boxed{y = 4}$

20. f(-9) = 10, f(-1) = -2 (-9,10) (-1,-2)

$\frac{10+(+2)}{-9+(+1)} = \frac{12}{-8} = -\frac{3}{2}$

$\boxed{y-10 = -\frac{3}{2}(x+9)}$ or $\boxed{y+2 = -\frac{3}{2}(x+1)}$

or

$y+2 = -\frac{3}{2}(x+1)$

$y+2 = -\frac{3}{2}x-\frac{3}{2}$

$-2 \qquad -\frac{4}{2}$

$\boxed{y = -\frac{3}{2}x-\frac{7}{2}}$

Intermediate Algebra – Chapter 3
Lesson 8
Name: _____ Date _____

Determine which of the lines, if any, are parallel.

1. Line *a* passes through (-1, -2) and (1,0)
   Line *b* passes through (4, 2) and (2, -2)
   Line *c* passes through (0, 2) and (-1, 1)

A: $\frac{-2-0}{-1-1} = \frac{-2}{-2} = 1$

B: $\frac{2+(-2)}{4-2} = \frac{4}{2} = 2$

C: $\frac{2-1}{0+(-1)} = \frac{1}{1} = 1$

A + C are parallel

2. Line *a*: 4y + x = 8
   Line *b*: 2y + x = 4
   Line *c*: 2y = -3x + 6

A: $4y+x=8$
$-x \quad -x$
$4y=-x+8$
$y=-\frac{1}{4}x+8$
A: $-\frac{1}{4}$

B: $2y+x=4$
$2y=-x+4$
$y=-\frac{1}{2}x+2$
B: $-\frac{1}{2}$

C: $2y=-3x+6$
$y=\frac{-3}{2}x+6$
C: $-\frac{3}{2}$

None

3. Line *a*: 3y - x = 6
   Line *b*: 3y = x + 18
   Line *c*: 3y - 2x = 9

A: $\frac{1}{3}$ B: $\frac{1}{3}$
C: $\frac{2}{3}$

A: $3y-x=6$
$3y=x+6$
$y=\frac{1}{3}x+2$

B: $3y=x+18$
$y=\frac{1}{3}x+6$

C: $3y-2x=9$
$3y=2x+9$
$y=\frac{2}{3}x+3$

A + B are parallel

Write an equation of the line that passes through the given point and is parallel to the given line.

4. (1, 2); y = -5x + 4

Slope: -5
$y-2=-5(x-1)$
$y-2=-5x+5$
$+2 \quad +2$
$\boxed{y=-5x+7}$

5. (2, -5); $\frac{2y}{2} = \frac{3x}{2} + \frac{10}{2}$

$y=3/2x+5$
$y+5=\frac{3}{2}(x-2)$
$y+5=\frac{3}{2}x-3$
$-5 \quad -5$
$\boxed{y=\frac{3}{2}x-8}$

6. (-1, 3); y = 2x + 2

$y-3=2(x+1)$
$y-3=2x+2$
$+3 \quad +3$
$\boxed{y=2x+5}$

7. (18, 2); 3y - x = -12

$3y-x=-12$
$+x \quad +x$
$\frac{3y}{3}=\frac{x}{3}-\frac{12}{3}$
$y=\frac{1}{3}x-4$

$y-2=\frac{1}{3}(x-18)$
$y-2=\frac{1}{3}x-6$
$+2 \quad +2$
$\boxed{y=\frac{1}{3}x-4}$

Determine which lines, if any, are parallel or perpendicular.

8. Line *a* passes through (-2, 1) and (0, 3)
   Line *b* passes through (4, 1) and (6, 4)
   Line *c* passes through (1, 3) and (4, 1)

A: $\frac{1-3}{-2-0} = \frac{-2}{-2} = 1$

B: $\frac{1-4}{4-6} = \frac{-3}{-2} = \frac{3}{2}$

C: $\frac{3-1}{1-4} = \frac{2}{-3} = -\frac{2}{3}$

None para
B + C perp

9. Line *a*: 4x - 3y = 2 A: $\frac{4}{3}$ C: $-\frac{3}{4}$
   Line *b*: $y = \frac{4}{3}x + 2$ B: $\frac{4}{3}$
   Line *c*: 4y + 3x = 4

A + B para
no perp

A: $4x - 3y = 2$
$-4x \quad -4x$
$-3y = -4x + 2$
$y = \frac{4}{3}x - \frac{2}{3}$

B: $y = \frac{4}{3}x + 2$

C: $4y + 3x = 4$
$-3x \quad -3x$
$\frac{4y}{4} = \frac{-3x+4}{4}$
$y = -\frac{3}{4}x + 1$

10. Line *a*: y = 6x - 2 A: 6
    Line *b*: 6y = -x B: $-\frac{1}{6}$
    Line *c*: y + 6x = 1 C: -6

A + B are perp
None para

B. $6y = -x$
$y = -\frac{1}{6}$

C: $y + 6x = 1$
$-6x \quad -6x$
$y = -6x + 1$

Write an equation of the line that passes through the given point and is perpendicular to the line given.

11. (7, 10); $y = \frac{1}{2}x - 9$

$m = \frac{1}{2} \rightarrow -2$
$y - 10 = -2(x - 7)$
$y - 10 = -2x + 14$
$+10 \quad +10$
$\boxed{y = -2x + 24}$

12. (-4, -1); $y = \frac{4}{3}x + 6$

$m = \frac{4}{3} \rightarrow -\frac{3}{4}$
$y + 1 = -\frac{3}{4}(x + 4)$
$y + 1 = -\frac{3}{4}x - 3$
$-1 \quad -1$
$\boxed{y = -\frac{3}{4}x - 4}$

13. (-3, 3); 2y = 8x - 6

$\frac{2y}{2} = \frac{8x}{2} - \frac{6}{2}$
$y = 4x - 3$
$m = 4 \rightarrow -\frac{1}{4}$
$y - 3 = -\frac{1}{4}(x + 3)$
$y - 3 = -\frac{1}{4}x - \frac{3}{4}$
$+3 \quad +\frac{12}{4}$
$\boxed{y = -\frac{1}{4}x + \frac{9}{4}}$

14. (8, 1); 2y + 4x = 12

$2x + 4x = 12$
$-4x \quad -4x$
$\frac{2y}{2} = \frac{-4x}{2} + \frac{12}{2}$
$y = -2x + 6$
$m = -2 \rightarrow \frac{1}{2}$

$y - 1 = \frac{1}{2}(x - 8)$
$y - 1 = \frac{1}{2}(x - 8)$
$y - 1 = \frac{1}{2}x - 4$
$+1 \quad +4$
$y = \frac{1}{2}x$

Intermediate Algebra – Chapter 3
Lesson 9
Name: _____

Tell whether the ordered pair is a solution of the inequality.

1. $X + y < 7$; (2, 3)

$2+3<7$
$5<7$
Yes

2. $X - y \le 0$; (5, 2)

$5-2\le 0$
$3\le 0$
No

3. $3x - 5y \ge 2$; (-1, -1)

$3(-1)-5(-1)\ge 2$
$-3+5\ge 2$
$2\ge 2$
Yes

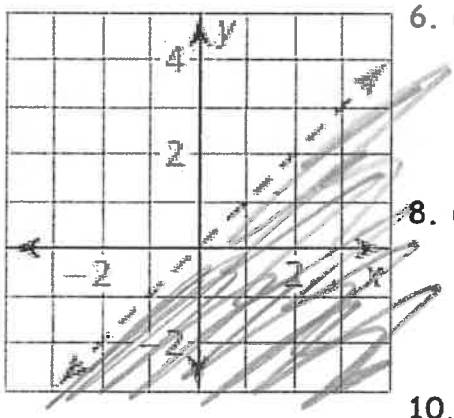
4. $-x - 6y > 12$; (-8, 2)

$-(-8)-6(2)>12$
$8-12>12$
$-4>12$
No

5. $-4x - 8y < 15$; (-6, 3)

$-4(-6)-8(3)<15$
$24-24<15$
$0<15$ Yes

Tell whether the ordered pair is a solution of the inequality whose graph is shown.



6. (0, -1)
Yes

7. (-1, 3)
No

8. (1, 4)
No

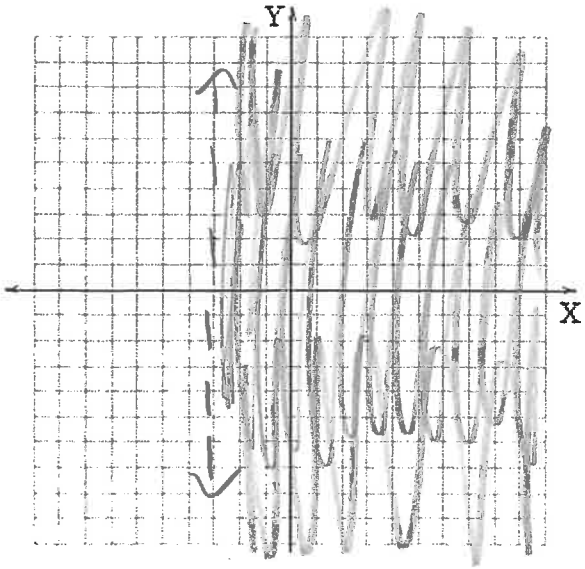
9. (0, 0)
No

10. (3, 3)
No

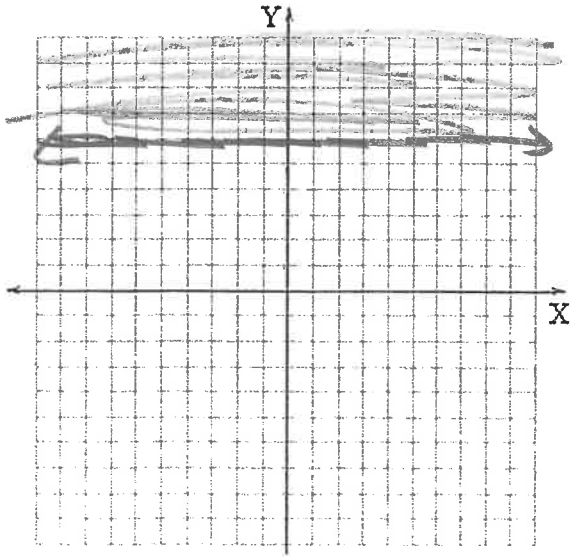
11. (2, 1)
Yes

Graph the inequality.

12. $X > -3$



13. $Y \ge 6$

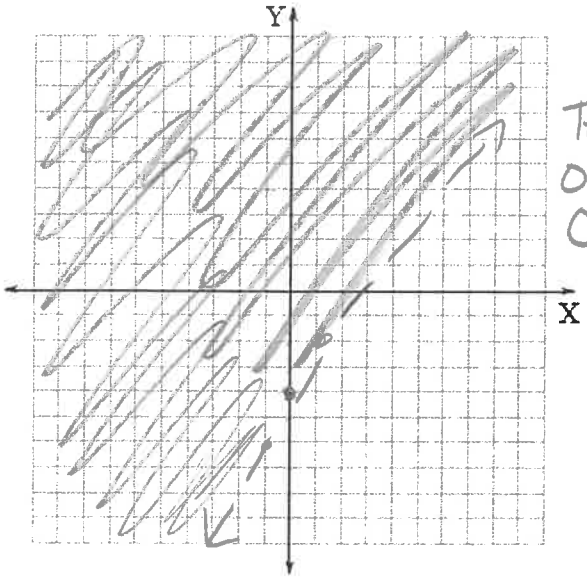


Intermediate Algebra – Chapter 3

Lesson 9

Graph the inequality.

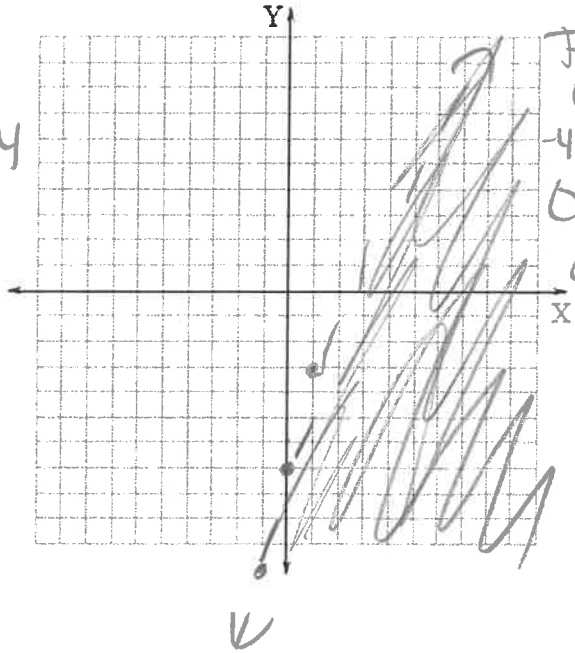
11. Y > -2x - 4



Test (0,0)
$0 > -2(0) - 4$
$0 > -4$
Yes

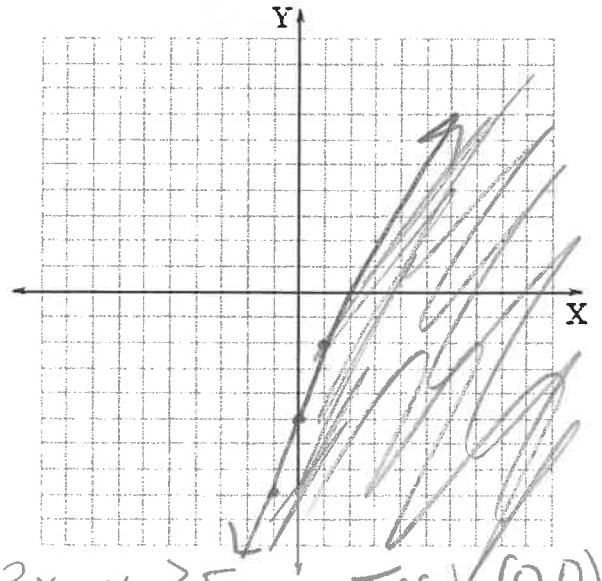
$y < 4x - 7$

12. -4x + y < -7



Test (0,0)
$-4(0) + 0 < -7$
$0 + 0 < -7$
$0 < -7$
No

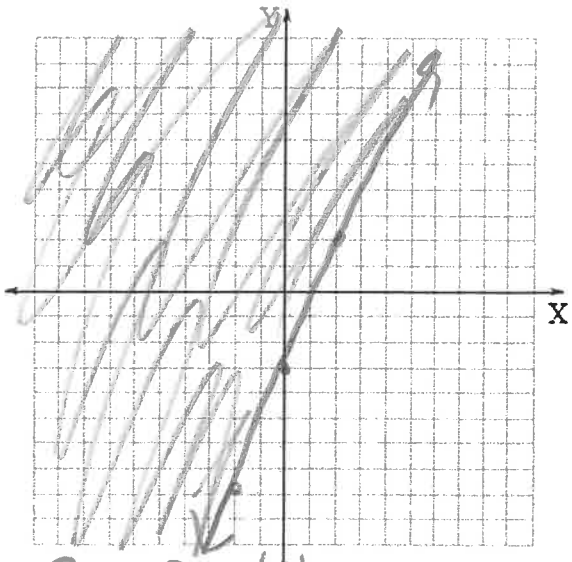
13. 3x - y ≥ 5



$3x - y \geq 5$
$-y \geq -3x + 5$
$y \leq 3x - 5$

Test (0,0)
$3(0) - (0) \geq 5$
$0 - 0 \geq 5$
$0 \geq 5$
No

14. 5x - 2y ≤ 6



$5x - 2y \leq 6$
$-2y \leq -5x + 6$
$y \geq \frac{5}{2}x - 3$

Test (0,0)
$5(0) - 2(0) \leq 6$
$0 \leq 6$
Yes.