

Name: _____

Date: _____

Grade 8 Math

Winter Break Packet

December 21nd, 2019 – January 1st, 2020



Homework is 10% of your grade. Please follow these directions to earn full credit



- Complete the page for each day of the week
- Show all work and complete every problem
- Put a circle around any problem you found difficult
- If you cannot complete a problem, write an explanation about what was confusing about that problem, to still receive credit (in a complete sentence).
- Hand in to your math teacher on January 2, 2020

Evaluate each expression.

$$\begin{aligned} 11) \quad & 1 + 2 + \frac{2}{-1} \\ & = 1 + 2 - 2 \\ & = \boxed{1} \end{aligned}$$

$$13) \quad (-7) - \frac{20}{10 - 6}$$

$$15) \quad \frac{11 - 4}{(-8) - (-7)}$$

$$17) \quad 3 - \frac{17 - 5}{-3}$$

$$19) \quad (9 - (-7) - (-3)) \times 2$$

$$12) \quad (-7) + \frac{14 \times 2}{-4}$$

$$\begin{aligned} & -7 + \frac{28}{-4} \\ & -\frac{28}{4} - \frac{28}{4} \\ & = \boxed{\frac{-56}{4}} \rightarrow -14 \end{aligned}$$

$$14) \quad (-5)((-8) - 7) - 2$$

$$16) \quad -\frac{18}{8 - 5} + 5$$

$$18) \quad -\frac{9}{(-8) - 5 - (-4)}$$

$$20) \quad 5 + 10 - 8 - 4$$

Simplify each expression.

$$21) (2x^3 - 3x - 4x^2) - (2x + 3x^2 + 6x^3)$$
$$2x^3 - 3x - 4x^2 - 2x - 3x^2 - 6x^3$$
$$-4x^3 - 7x^2 - 5x$$

$$22) (5v - v^3 + 5) + (8v^3 - 8 - 3v)$$
$$5v - v^3 + 5 + 8v^3 - 8 - 3v$$
$$7v^3 + 2v - 3$$

$$23) (n + 6 - n^4) - (1 + 2n + 3n^4)$$

$$24) (3b^2 - 7b - 5) - (5b - 6 + 3b^2)$$

$$25) (5m + 5m^3 + 5m^4) + (7m^2 + 8m + 8m^4)$$

$$26) (2n^3 + 8n^4 + 4n) - (4 + n^3 + 5n)$$

$$27) (2 - 6x^2 - 3x^3) + (7x^2 + 3 + 3x^3)$$

$$28) (6x^3 + 5x - 5x^4) - (2x^4 - x^3 - 6)$$

$$29) (3k - 6k^4 + k^3) + (4k^4 - 6k^3 - 2)$$

$$30) (4a + 4a^2 - 2a^4) + (2a^4 - 3a^2 - 7a)$$

Divide.

41) $(24x^3 + 4x^2 + 40x) \div 8x^2$

$$\frac{\cancel{24}x^3}{\cancel{8}x^2} + \frac{4x^2}{\cancel{8}x^2} + \frac{40x}{\cancel{8}x^2}$$

$$3x + \frac{1}{2} + \frac{5}{x}$$

42) $(45v^3 + 9v^2 + 9v) \div 9v^2$

$$\frac{45v^3}{9v^2} + \frac{9v^2}{9v^2} + \frac{9v}{9v^2}$$

$$5v + 1 + \frac{1}{v}$$

43) $(3a^4 + 9a^3 + 9a^2) \div 9a^3$

44) $(32x^6 + 4x^5 + 2x^4) \div 8x$

45) $(40a^3 + 40a^2 + 30a) \div 10a^3$

46) $(12k^5 + 18k^4 + 2k^3) \div 6k$

47) $(4p^3 + 4p^2 + 4p) \div 4p^3$

48) $(3x^3 + 2x^2 + 3x) \div 9x$

49) $(2a^3 + 16a^2 + 2a) \div 8a$

50) $(2a^3 + 4a^2 + 12a) \div 4a$

Solve each equation for the indicated variable.

51) $u = 2a$, for a

$$\frac{u}{2} = \frac{2a}{2}$$
$$a = \frac{u}{2}$$

53) $z = -6x$, for x

55) $g = -4 + 3x$, for x

57) $z = -12a$, for a

59) $u = 4 - 2x$, for x

52) $u = -3 - 2a$, for a

$$u = -3 - 2a$$
$$+3 \quad +3$$

$$\frac{u+3}{2} = \frac{-2a}{2}$$
$$a = -\frac{u+3}{2} = -\frac{u}{2} - \frac{3}{2}$$

54) $z = -2x$, for x

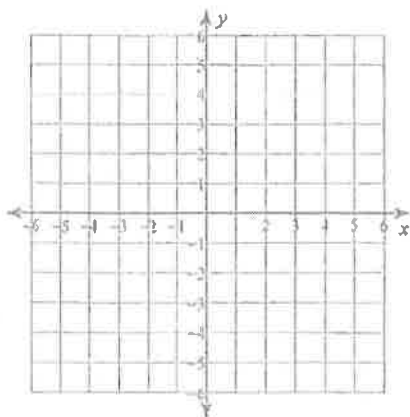
56) $g = 2x + 2$, for x

58) $u = \frac{4}{a}$, for a

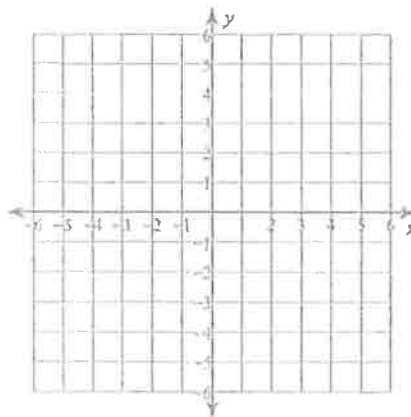
60) $g = 3 + 3x$, for x

Sketch the graph of each line.

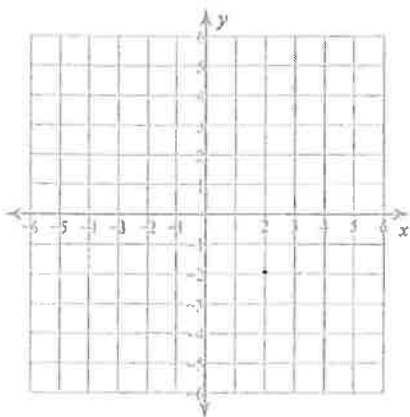
61) x -intercept = -4 , y -intercept = 5



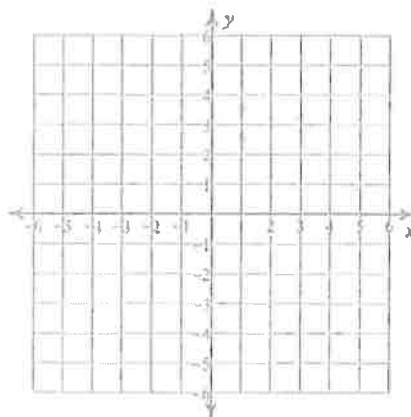
62) x -intercept = -2 , y -intercept = -2



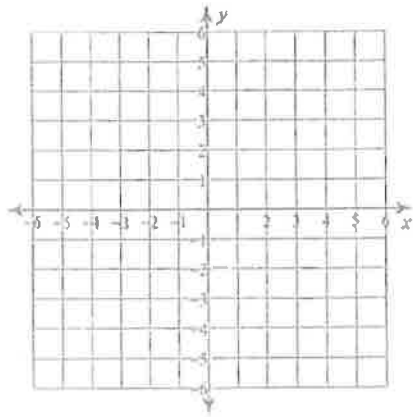
63) x -intercept = 4 , y -intercept = 4



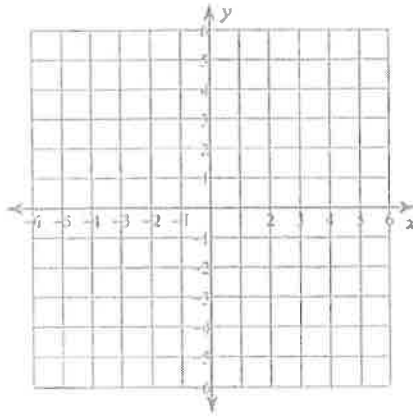
64) x -intercept = -3 , y -intercept = 4



69) x -intercept = -5 , y -intercept = -2

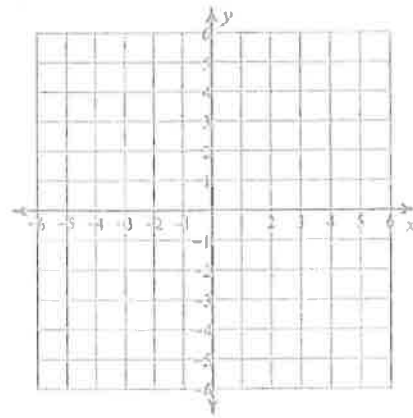


70) x -intercept = 1 , y -intercept = -2

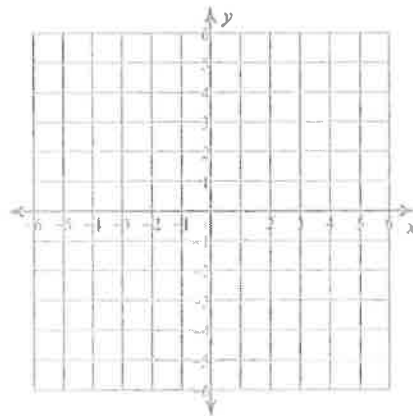


Sketch the graph of each linear inequality.

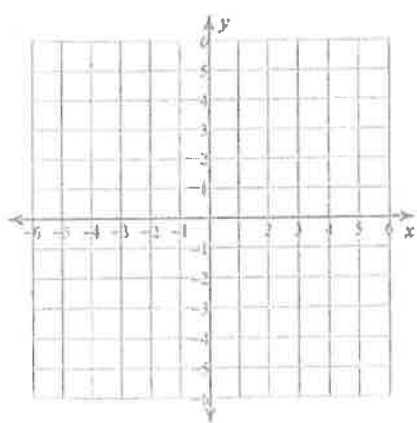
71) $y > -6x + 1$



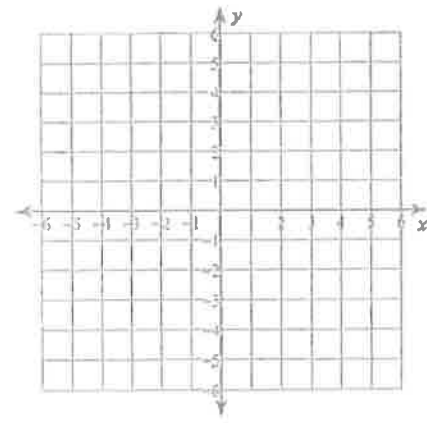
72) $y \leq -\frac{2}{5}x - 2$



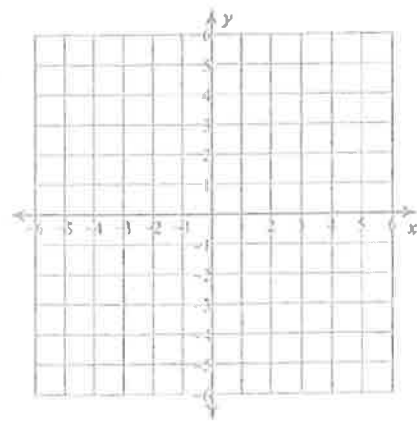
73) $y \geq -\frac{3}{5}x$



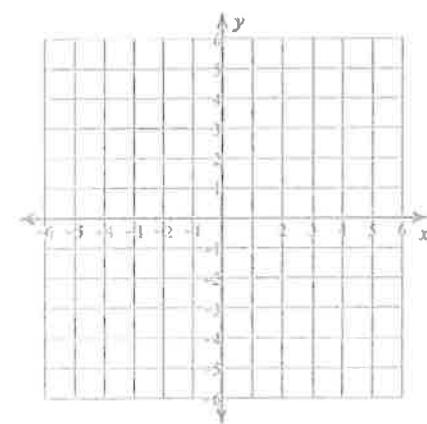
74) $x \leq -4$



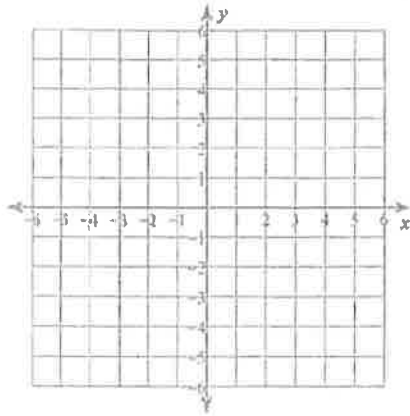
75) $y > -\frac{3}{2}x - 4$



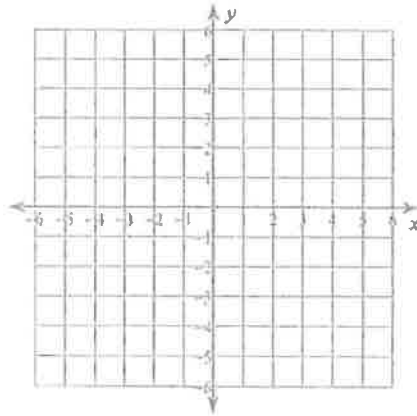
76) $y \leq \frac{1}{5}x + 4$



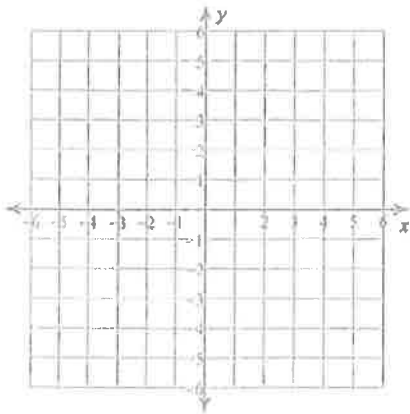
77) $y > -5$



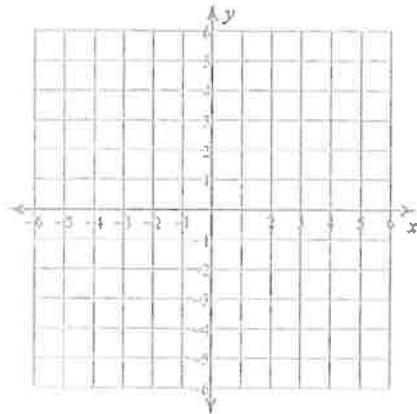
78) $y \leq -2x + 2$



79) $y \leq x + 2$



80) $y > x + 3$



Practice 7-2

Solving Systems Using Substitution

Solve each system using substitution. Write *no solution* or *infinitely many solutions* where appropriate.

1. $y = x$
 $y = -x + 2$

4. $x = -2y + 1$
 $x = y - 5$

7. $y = x - 7$
 $2x + y = 8$

10. $3x + y = 10$
 $y = -3x + 4$

13. $4x + 2y = 8$
 $y = -2x + 4$

16. $5x - 3y = -4$
 $x + y = -4$

2. $y = x + 4$
 $y = 3x$

5. $y = 5x + 5$
 $y = 15x - 1$

8. $y = 3x - 6$
 $-3x + y = -6$

11. $y = 2x + 7$
 $y = 5x + 4$

14. $6x - 3y = 6$
 $y = 2x + 5$

17. $y = -\frac{2}{3}x + 4$
 $2x + 3y = -6$

3. $y = 3x - 10$
 $y = 2x - 5$

6. $y = x - 3$
 $y = -3x + 25$

9. $x + 2y = 200$
 $x = y + 50$

12. $3x - 2y = 0$
 $x + y = -5$

15. $2x + 4y = -6$
 $x - 3y = 7$

18. $2x + 3y = 8$
 $\frac{3}{2}y = 4 - x$

Practice 7-3

Solving Systems Using Elimination



Solve by elimination. Show your work.

1. $x + 2y = 7$
 $3x - 2y = -3$
2. $3x + y = 20$
 $x + y = 12$
3. $5x + 7y = 77$
 $5x + 3y = 53$
4. $2x + 5y = -1$
 $x + 2y = 0$
5. $3x + 6y = 6$
 $2x - 3y = 4$
6. $2x + y = 3$
 $-2x + y = 1$
7. $9x - 3y = 24$
 $7x - 3y = 20$
8. $2x + 7y = 5$
 $2x + 3y = 9$
9. $x + y = 30$
 $x - y = 6$
10. $4x - y = 6$
 $3x + 2y = 21$
11. $x + 2y = 9$
 $3x + 2y = 7$
12. $3x + 5y = 10$
 $x - 5y = -10$
13. $2x - 3y = -11$
 $3x + 2y = 29$
14. $8x - 9y = 19$
 $4x + y = -7$
15. $2x + 6y = 0$
 $-2x - 5y = 0$
16. $-2x + 3y = -9$
 $x + 3y = 3$
17. $4x - 3y = 11$
 $3x - 5y = -11$
18. $3x + 7y = 48$
 $5x - 7y = -32$
19. $-2x + 3y = 25$
 $-2x + 6y = 58$
20. $3x + 8y = 81$
 $5x - 6y = -39$
21. $8x + 13y = 179$
 $2x - 13y = -69$
22. $-x + 8y = -32$
 $3x - y = 27$
23. $2x + 7y = -7$
 $5x + 7y = 14$
24. $x + 6y = 48$
 $-x + y = 8$

Practice 7-1**Solving Systems by Graphing**

Solve by graphing. Write *no solution* or *infinitely many solutions* where appropriate.

1. $y = 3x - 1$

$y = -2x + 4$

5. $y = x - 3$

$y = \frac{1}{7}x + 3$

9. $y = x$

$y = 3x + 2$

2. $y = x - 1$

$y = -x + 7$

6. $y = -3x - 4$

$3x + y = -4$

10. $y = 4x - 3$

$y = -3x - 3$

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

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

7. $y = -x - 3$

$y = -2x - 8$

11. $y = \frac{5}{3}x - 4$

$y = 2x - 6$

4. $y = 4x + 7$

$y = -3x$

8. $y = -x + 2$

$3x + 3y = 12$

12. $y = 3x + 2$

$2x + y = -8$

Solve each system by using a graphing calculator. Write *no solution* or *infinitely many solutions* where appropriate.

29. $y = x + 6$

$y = 2x - 7$

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

$2x - 3y = 3$

35. $3x - 4y = 0$

$2x + y = 110$

38. $y = \frac{5}{6}x + 12$

$y = \frac{4}{3}x - 6$

30. $y = \frac{7}{2}x - 6$

$y = 3x - 2$

33. $y = -x - 5$

$y = 3x - 105$

36. $y = \frac{1}{7}x + 10$

$x - 2y = 0$

39. $2x - y = 8$

$3x - 2y = 0$

31. $y = 2x - 20$

$y = -x + 34$

34. $x + y = -10$

$2x + 3y = -30$

37. $2x + y = 6$

$3y = -6x + 9$

40. $x + 2y = 2$

$3x + 4y = 22$

You can use these online calculators:

[desmos.com/calculator](https://www.desmos.com/calculator)

[meta-calculator.com](https://www.meta-calculator.com) (computer only)

