ALG2A

Name:

Work over Break:

1. Do only circled problems on the attached sheets

2. IF you currently have a grade of C- or below you can do any missing work and prepare for a retake over any test or quiz to be done the week of school when we return (Jan 9).

3. This packet will be worth 20 summative points [included in Quizzes category]

SEC 1-3

Solve each formula for the indicated variable.

1. $V = \frac{\pi}{3} r^2 h$, for h
2. $S = L(1 - r)$, for r
3. $S = \ell w + wh + \ell h$, for w

Solve for x. State any restrictions on the variables.

4. $\frac{4}{9}(x + 3) = g$
5. $a(x + c) = b(x - c)$
6. $\frac{x + 3}{t} = t^2$
7. Two brothers are saving money to buy tickets to a concert. Their combined savings is \$55. One brother has \$15 more than the other. How much has each saved?
8. The sides of a triangle are in the ratio 5 : 12 : 13. What is the length of each side of the triangle if the perimeter of the triangle is 15 in.?
9. Find three consecutive numbers whose sum is 126.

Solve each equation.

10. $\frac{1}{2}(x - 3) + \left(\frac{3}{2} - x\right) = 5x$
11. $5w + 8 - 12w = 16 - 15w$
12. $7y + 5 = 6y + 11$
13. $1.2(x + 5) = 1.6(2x + 5)$
14. $t - 3\left(t + \frac{4}{3}\right) = 2t + 3$
15. $0.5(c + 2.8) - c = 0.6c + 0.3$
16. $3(x + 1) = 2(x + 11)$
17. $\frac{u}{5} + \frac{u}{10} - \frac{u}{6} = 1$

SEC 1-4

Solve each inequality. ~~Graph the solutions~~.

1. $16 - 4t \leq 36$
2. $2(m + 3) + 1 > 23$
3. $7 + 13(x + 1) \leq 3x$
4. $-6a < 21$
5. $\frac{2}{3}(4x + 5) > \frac{9}{4}x$
6. $2[5x - (3x - 4)] < 3(2x + 3)$
7. $8(x - 5) \geq 56$
8. $6 - x \leq 7x + 3$
9. $10 - x \geq -2(3 + x)$

Solve each compound inequality. ~~Graph the solutions~~.

10. $-9 \leq 4x + 3 \leq 11$
11. $16x \leq 32$ or $-5x < -40$
12. $9x < 54$ and $-4x < 12$
13. $6(x + 2) \geq 24$ or $5x + 10 \leq 15$
14. $14 > 3x - 1 \geq -10$
15. ~~$4 < 1 - 3x \leq 7$~~
16. $2(x - 1) < -4$ or $2(x - 1) > 4$
17. $3x - 5 \geq -8$ and $3x - 5 \leq 1$

SEC 1-5

Solve each inequality. ~~Graph the solutions~~.

4. $|x + 5| > 12$
5. $|k - 3| \leq 19$
6. $|x + 2| \geq 0$
7. $2|t - 5| < 14$
8. $|3x - 2| + 7 \geq 11$
9. $5|2b + 1| - 3 \leq 7$
10. $|2 - 3w| \geq 4$
11. $-3|7m - 8| < 5$
12. $|2u| > 6$

Solve each equation. Check for extraneous solutions.

13. $|4x| = 28$
14. $|3x + 6| = -12$
15. $|z - 1| = 7z - 13$
16. $|s + 12| = 15$
17. $|-3x| = 63$
18. $2|5x + 3| = 16$
19. $|6x + 7| = 5x + 2$
20. $|7r - 4| = 24$
21. $|3c| + 2 = 11$
22. $5|x + 1| + 6 = 21$
23. $|3x + 5| - 2x = 3x + 4$
24. $-|d + 2| = 7$

SEC 2-2

Write in point-slope form the equation of the line through each pair of points.

9. $(0, 1)$ and $(3, 0)$
10. $\left(\frac{1}{2}, \frac{2}{3}\right)$ and $\left(-\frac{3}{2}, \frac{5}{3}\right)$
11. $(-3, -2)$ and $(1, 6)$

Write an equation for each line. ~~Then graph the line~~.

22. through $(-1, 3)$ and parallel to $y = 2x + 1$
23. through $(2, 2)$ and perpendicular to $y = -\frac{3}{5}x + 2$
24. through $(-3, 4)$ and vertical
25. through $(4, 1)$ and horizontal

SEC 2-3

For each function, determine whether y varies directly as x. If so, find the constant of variation and write the equation.

12.

x	y
1	1
2	4
3	9

13.

x	y
-1	-3
1	3
3	9

14.

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

15.

x	y
-2	-3
0	1
1	3

Write an equation for a direct variation with a graph that passes through each point.

16. $(6, 2)$

17. $(-1.5, 9)$

18. $(-5, 90)$

19. $(7, 3)$

20. $\left(-1, -\frac{2}{3}\right)$

21. $\left(\frac{3}{5}, -\frac{7}{2}\right)$

22. $(10, 25)$

23. $(3, 165)$

In Exercises 24–27, y varies directly as x.

24. If $y = 3$ when $x = 2$, find x when $y = 5$.

25. If $y = -4$ when $x = \frac{1}{2}$, find y when $x = \frac{2}{3}$.

26. If $y = -14$ when $x = -7$, find x when $y = 22$.

27. If $y = \frac{5}{17}$ when $x = 10$, find y when $x = 5$.

28. A 15-minute long-distance telephone call costs \$.90. The cost varies directly as the length of the call. Write an equation that relates the cost to the length of the call. How long is a call that costs \$1.32?

29. The distance a spring stretches varies directly as the amount of weight that is hanging on it. A weight of 2.5 pounds stretches a spring 18 inches. Find the stretch of the spring when a weight of 6.4 pounds is hanging on it.

SEC 2-6

Write an equation for each translation.

7. $y = |x|$, 1 unit up, 2 units left

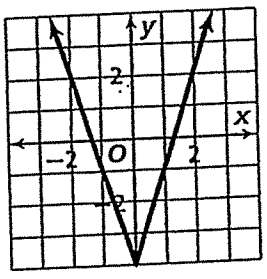
8. $y = |x|$, 4 units right

9. $y = -|x|$, 3 units up, 1 unit right

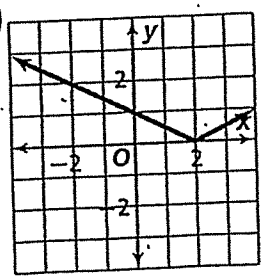
10. $y = -|x|$, $\frac{3}{2}$ units down, $\frac{1}{2}$ unit right

Write the equation for each graph.

19.



20.



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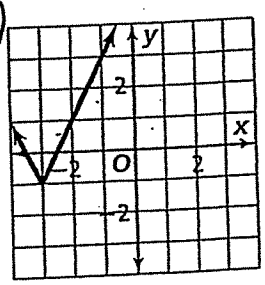

SEC 3-2

10. Suppose your drama club is planning a production that will cost $525 for the set and $150 per performance. A sold-out performance will bring in $325. Write an equation for the cost C and an equation for the income I for p sold-out performances. Find how many sold-out performances will make the cost equal to the income.

20. Suppose you bought eight oranges and one grapefruit for a total of $4.60. Later that day, you bought six oranges and three grapefruits for a total of $4.80. Now you want to find the price of each orange and of each grapefruit. Write an equation for each purchase. Solve the system of equations.

Solve each system.

21. $\begin{cases} y = x + 3 \\ 5x + y = 9 \end{cases}$

22. $\begin{cases} 5x + 4y = 2 \\ 5x - 2y = 4 \end{cases}$

23. $\begin{cases} y = 2x + 3 \\ 5x - y = -3 \end{cases}$

24. $\begin{cases} 14x + 2y = 10 \\ x - 5y = 11 \end{cases}$

25. $\begin{cases} x + 5y = 1 \\ 2x = 2 - 10y \end{cases}$

26. $\begin{cases} 0.3x + 0.4y = 0.8 \\ 0.7x - 0.8y = -6.8 \end{cases}$

SEC 3-6

Solve each system.

1. $\begin{cases} x + y + z = -1 \\ 2x - y + 2z = -5 \\ -x + 2y - z = 4 \end{cases}$

2. $\begin{cases} x + y + z = 3 \\ 2x - y + 2z = 6 \\ 3x + 2y - z = 13 \end{cases}$

3. $\begin{cases} 2x + y = 9 \\ x - 2z = -3 \\ 2y + 3z = 15 \end{cases}$

4. $\begin{cases} x - y + 2z = 10 \\ -x + y - 2z = 5 \\ 3x - 3y + 6z = -2 \end{cases}$

5. $\begin{cases} 2x - y + z = -4 \\ 3x + y - 2z = 0 \\ 3x - y = -4 \end{cases}$

6. $\begin{cases} 2x - y - z = 4 \\ -x + 2y + z = 1 \\ 3x + y + z = 16 \end{cases}$