

## Summer 2022- Preparation for Geometry Honors

### Solving Equations

1. Solve for  $x$ .  $-\frac{3}{4}(-8x + 12) + 4 = \frac{1}{2}(-20x - 10)$
2. Solve for  $x$ :  $\frac{8x}{3} = 120$
3. Solve for  $x_2$ :  $P = \frac{x_1 + x_2}{4b} \cdot m$
4. Solve for  $l$ :  $\frac{1}{2}Pl = S$
5. Given  $y = \frac{1}{3}(4 - x)^2$ , what is the value of  $x = -16$ ?

### Simplifying Polynomials

6. Simplify the following:  $2q^2 - \frac{5}{3}(3q - 2) + 9q^2$
7. Simplify the following:  $\frac{1}{2}g^2 + \frac{7}{2} + 3g^2 - \frac{4}{5}g + \frac{1}{4}$
8. Simplify the following:  $\frac{1}{3}g^2 + \frac{7}{3} - \left(2g^2 - \frac{2}{5}g + \frac{1}{2}\right)$
9. Simplify the following:  $(9x + 1)^2$

### Solving Systems

10. What is the solution to this linear system of equations?

$$\begin{aligned}2x &= 4y \\ -4x + 4 &= -4y\end{aligned}$$

11. A group of students go out to dinner. If 4 have pizza and 8 have pasta, the bill will be \$72. If 8 have pizza and 4 have pasta, the bill will be \$48. Solve the system of linear equations to determine the price of the pasta.
12. Molly and Stefan are selling cookie dough for a school fundraiser. Customers can buy packages of sugar cookie dough and packages of gingerbread cookie dough. Molly sold 7 packages of sugar cookie dough and 1 package of gingerbread cookie dough for a total of \$75. Stefan sold 14 packages of sugar cookie dough and 12 packages of gingerbread cookie dough for a total of \$270. Write a system of equations to find the cost of each type of cookie.
13. Solve the system.  $\begin{cases} y = 2x - 4 \\ y - 2x = 15 \end{cases}$
14. Solve the system.  $\begin{cases} 3x + 6y = 15 \\ 2x + 5y = 12 \end{cases}$

15. Solve.  $\begin{cases} 5x + 9y + 5y - 35 = 180 \\ 5y - 35 = 45 - 2x \end{cases}$

16. Solve.  $\begin{cases} 36 = x + y \\ 3y + 24 = 9x \end{cases}$

Linear Functions

17. Find the slope of the line between the two points: (6, 11) (-4, -1)

18. Write the equation of the line in point-slope form given the information below:  
*slope* =  $\frac{1}{2}$ , *going through* (2, -4)

19. Write the equation of the line with the given information.  
*m* = *undefined*, *going through* (0, 0)

20. Write the equation of the line that is **parallel** to the given equation and going through the given coordinate.  
 $3x + y = 10$ , (2, -1)

21. Write the equation of the line (in slope intercept form) that is **perpendicular** to the given equation and going through the given coordinate.  
 $y = -4x + 6$ , (-8, 5)

22. What is the slope of the line in the *xy - plane* that passes through the points  $(-\frac{5}{2}, 1)$  and  $(-\frac{1}{2}, 4)$ ?

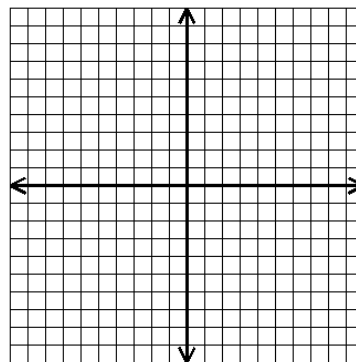
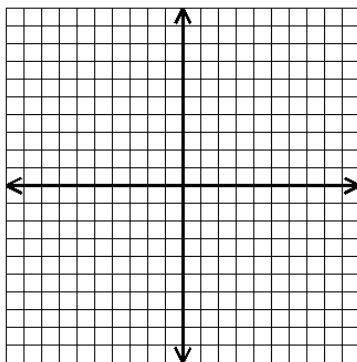
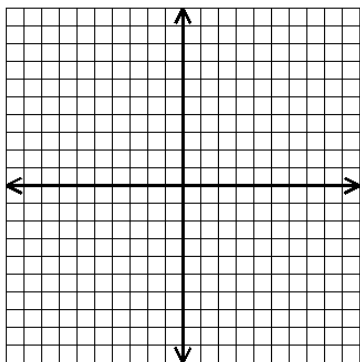
23. What is the equation of the line that passes through the point (-2,7) and has a slope of zero?

Graph the following:

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

27.  $x = 3$

28.  $y = -5$

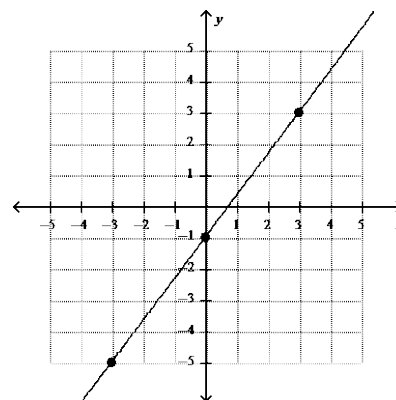


Write the equation of the line in all three forms for the graph to the right.

29. Slope-intercept form.

30. Point-slope form.

31. Standard form.



### Quadratic Functions

32. Using the quadratic formula, find the solutions:  $-2x^2 = -7x - 4$  Keep answer in exact form.
25. Factor the following:  $10x^2 - 11x = 6$
26. Solve the quadratic function:  $x^2 - 2x - 3 = 0$
27. Solve using the quadratic formula:  $4x^2 - 20x = -25$  Leave answer in exact form.
28. Factor the trinomial:  $x^2 - 12x + 35$
29. Solve by completing the square:  $x^2 + 4x = 32$
30. Solve by completing the square:  $x^2 - 6x - 22$  Keep answer in exact form.
31. Solve:  $2x^2 + 3x + 4x - 5 = 10$
32. Solve:  $x^2 + -9x = 70$
33. Solve:  $\frac{x^2+2x^2+7x}{2} = 6x + 1$
34. Solve:  $x^2 + (x + 7)^2 = (x + 9)^2$

### Simplifying Radicals

Simplify. Keep answers in simplified radical form.

35.  $\sqrt{98}$
36.  $8\sqrt{3} \times 6\sqrt{3}$
37.  $3\sqrt{45} + 7\sqrt{36}$
38.  $-3\sqrt{72} + 6\sqrt{52} - 7\sqrt{128}$
39.  $(4\sqrt{2})^2 + 8\sqrt{2}$
40.  $\sqrt{\frac{20}{6}}$
41.  $10\sqrt{6} \times \frac{20\sqrt{6}}{\sqrt{3}}$
42. Solve for  $g$ :  $3g - 3 = \frac{18}{\sqrt{3}}$
43. Solve for  $h$ :  $h\sqrt{2} = \frac{9}{\sqrt{3}}$