

Advanced Geometry Summer Packet



This packet should be completed for the first day of school. All work should be done in pencil and final answers should be clearly stated. Please use scrap paper if necessary.

The purpose of this packet is to help you review and reinforce concepts/topics that are necessary for Geometry. This packet has been designed to provide a review of algebra 1 skills that are essential for student success in advanced geometry. If you are unsure of any topic, please see your geometry teacher within the first week of school for extra help.

Name: _____

Solve each equation.

1. $-x - 9 = x + 3$	2. $7r - 4 + 2r = 12 + 7r$
3. $-5 - 4(n + 3) = -19 - 3n$	4. $-3(3 - k) = 3(k + 3)$

Solve for the indicated variable.

5. $d = rt$ for r	6. $ax + by + c = 0$ for y
7. $A = \frac{e + f}{2}$ for e	8. $3k + 7n = p$ for k

Solve the following equations.

9. $\frac{3}{2} \left(\frac{7}{3}n + 1 \right) = \frac{3}{2}$	10. $-\frac{1}{2} = \frac{3}{2}x + \frac{5}{2}$
11. $\frac{1}{3} \left(-\frac{7}{4}k + 1 \right) - \frac{10}{3}k = -\frac{13}{8}$	12. $\frac{47}{9} + \frac{3}{2}x = \frac{5}{3} \left(\frac{5}{2}x + 1 \right)$

Simplify the following using exponent rules.

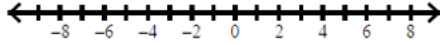
1. $v^4 \cdot 7v^3 \cdot 5v$	2. $(3x^2y^2)^3$	3. $(-2a^6bc^3)^2 \cdot -5ab^2$
4. $(-2y^4) \cdot (xy^3)^2 - 13x^2y^{10}$	5. $\frac{a^6b^7c^2}{a^5b^4c^2}$	6. $\frac{(-3x^6)^2}{5x^3 \cdot 3x^3}$
7. $\left(\frac{4x^4y^2}{6xy}\right)^2$	8. $\frac{-9n^8}{27n^{10}}$	9. $\frac{a^{12}b^{-3}}{(ab)^{-4}}$

Simplify the following polynomials.

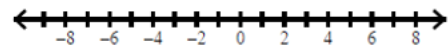
1. $(5 + 2x^3 + x - 3x^2) + (4x^3 + 11 - 6x + 7x^2)$	2. $(2x^2 + 3x + 2) - (x^2 - 4x - 1)$	3. $3a^2b^3(2a^2 - 7ab + b^2)$
4. $(x + 4)(x + 9)$	5. $(2a + 5b)(a - 3b)$	6. $(x + 8)(x - 8)$
7. $(2y - 1)^2$	8. $\frac{18a^3b + 12a^2b^2 - 6ab}{6ab}$	9. $\frac{-24x^4 + 48x^3 - 8x^2}{8x^3}$

Solve the following inequalities and graph your solution on the number line.

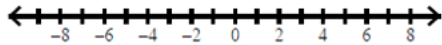
1. $11x + 13 \geq -20$



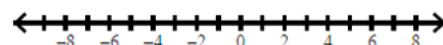
2. $-2x + 6 > 3x - 34$



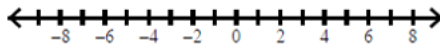
3. $3x - 7(x + 3) \geq -13$



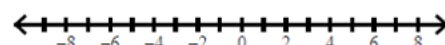
4. $4 - 8x < 2(5 - 3x)$



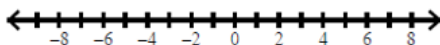
5. $x + 7 \leq 2$ or $x + 5 \geq 3$



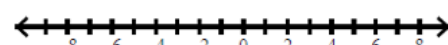
6. $3x + 5 < -16$ or $-5x - 8 \leq -13$



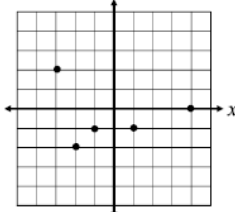
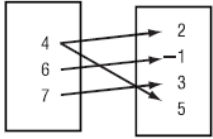
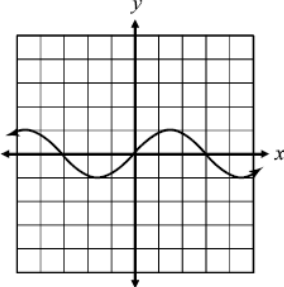
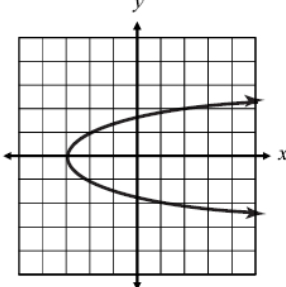
7. $-2 \leq 3x - 2 < 10$



8. $3 < 2x + 1 < 13$



State the domain and range of each then determine whether it is a function.

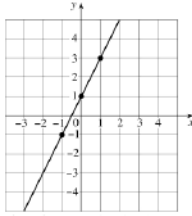
<p>1.</p> <table border="1" style="margin: 10px auto; border-collapse: collapse;"> <tbody> <tr> <td style="padding: 2px 5px;">x</td> <td style="padding: 2px 5px;">-1</td> <td style="padding: 2px 5px;">2</td> <td style="padding: 2px 5px;">5</td> <td style="padding: 2px 5px;">-1</td> </tr> <tr> <td style="padding: 2px 5px;">y</td> <td style="padding: 2px 5px;">7</td> <td style="padding: 2px 5px;">3</td> <td style="padding: 2px 5px;">0</td> <td style="padding: 2px 5px;">2</td> </tr> </tbody> </table> <p>D = _____</p> <p>R = _____</p> <p>Function? _____</p>	x	-1	2	5	-1	y	7	3	0	2	<p>2.</p>  <p>D = _____</p> <p>R = _____</p> <p>Function? _____</p>	<p>3.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; padding: 5px; text-align: center;"> x </div> <div style="border: 1px solid black; padding: 5px; text-align: center;"> y </div> </div>  <p>D = _____</p> <p>R = _____</p> <p>Function? _____</p>
x	-1	2	5	-1								
y	7	3	0	2								
<p>4.</p>  <p>D = _____</p> <p>R = _____</p> <p>Function? _____</p>	<p>5.</p>  <p>D = _____</p> <p>R = _____</p> <p>Function? _____</p>											

Evaluate each function.

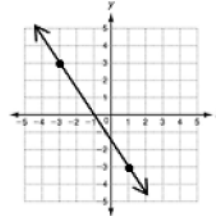
<p>1. If $f(x) = -x - 7$, find $f(5)$</p>	<p>2. If $f(x) = x^2 - 2x + 11$, find $f(-2)$</p>
<p>3. If $f(x) = 2x^2 - x$, find $f(-4) - f(9)$</p>	<p>4. If $f(x) = \frac{2}{3}x + 1$, find $f(-6)$</p>

Find the slope of the line.

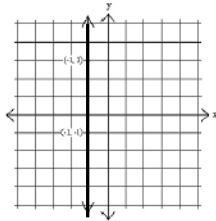
1.



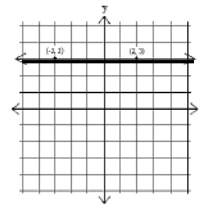
2.



3.



4.



Find the slope of the line that contains each pair of points.

5. (3,10) and (2,5)

6. (12,-2) and (0,6)

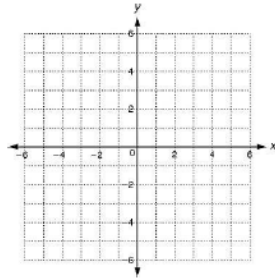
Find the slope of the line described by each equation.

7. $5x + 4y = 40$

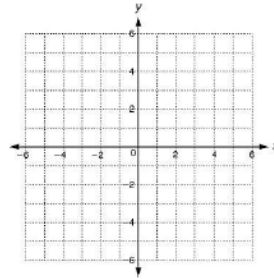
8. $7x + 42 = 2y$

Write each equation in slope-intercept form. Then graph the line described by the equation.

9. $y + x = 3$



10. $5x - 2y = 10$



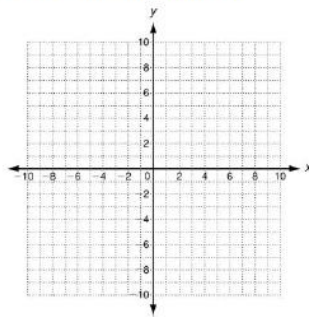
Write an equation in point-slope form for the line with the given slope that contains the given point.

11. slope = 4; (5, 6)

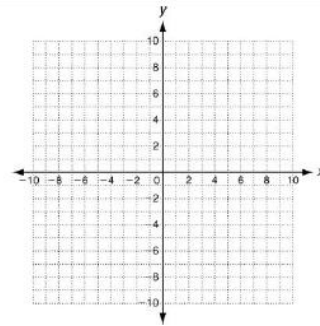
12. slope = -3; (7, -2)

Graph the line described by each equation.

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

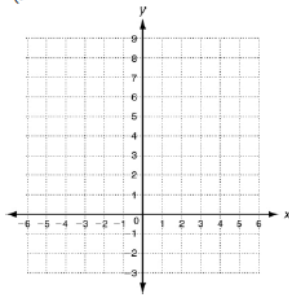


14. $y + 4 = -3(x - 4)$

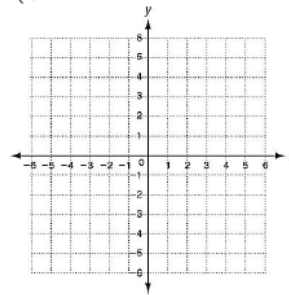


Solve each system by graphing.

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



16. $\begin{cases} y = -3x + 4 \\ y = 2x + 4 \end{cases}$ Solution: _____



Solve each system by substitution.

1. $\begin{cases} y = 3x + 4 \\ y = 4x + 5 \end{cases}$	2. $\begin{cases} -2x + 2y = 4 \\ 4x + 3y = -15 \end{cases}$
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Solve each system by elimination.

3. $\begin{cases} x + 6y = -8 \\ 7x + 2y = 24 \end{cases}$	4. $\begin{cases} 9x + 6y = 12 \\ -18x - 8y = -4 \end{cases}$
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Set up and solve a system of equations to answer the following.

5. The cost of 12 oranges and 7 apples is \$5.36. Eight oranges and 5 apples cost \$3.68. Find the cost of one orange.	6. A collection of dimes and nickels is worth \$3.30. If there are 42 coins in all, how many dimes are there?
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Factor each polynomial. (GCF)

1. $12c^3 - 5c$	2. $6x^2 - 18x + 6$
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Factor each polynomial.

3. $x^2 + 11x + 28$	4. $x^2 - 8x + 7$
5. $x^2 - 2x - 24$	6. $x^2 + 4x - 21$
7. $2x^2 + 13x - 7$	8. $3x^2 + 14x + 15$
9. $4x^2 - 8x - 5$	10. $9x^2 - 64$

Solve each quadratic equation by factoring. Check your answer.

11. $x^2 + 2x - 15 = 0$	12. $x^2 - 5x - 6 = 0$
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Solve each quadratic by factoring. Check your answer.

13. $5x^2 - 8x + 3 = 0$

14. $x^2 + 4x + 17 = 8 - 2x$

Solve using the Quadratic Formula.

15. $x^2 + 7x - 6 = 0$

16. $2x^2 - x - 11 = 0$

17. $2x^2 + 5x + 4 = 0$

18. $x^2 - 4x + 4 = 2x$

Solve the following quadratic equation word problems.

19. The dimensions of a rectangle can be given by $x+7$ and $x+2$. If the area of the rectangle is 66 square inches, what are the dimensions of the rectangle?

20. When Joey dives off a diving board, the equation of his pathway can be modeled by $h = -16t^2 + 15t + 12$. Find Joey's maximum height.

Write each as a simplified radical.

1. $\sqrt{24}$	2. $\sqrt{162}$	3. $\sqrt{80}$	4. $\sqrt{112}$
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Find each sum or difference. Make sure you simplify first.

$3\sqrt{6} - 2\sqrt{6}$	$10\sqrt{7} + 2\sqrt{63}$	$2\sqrt{32} - 3\sqrt{18}$	$-4\sqrt{28} + 4\sqrt{112}$
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Find each product. Be sure to leave as a simplified radical.

$\sqrt{8} \cdot -3\sqrt{2}$	$5\sqrt{10} \cdot -7\sqrt{12}$	$-4\sqrt{14} \cdot 2\sqrt{8}$	$-2\sqrt{3}(3\sqrt{10} - 3\sqrt{6})$
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