Advanced Geometry Summer Work 2022 Name: _____

Practice Problems to Prepare You for the Section Quizzes

Section 1: Factoring Out a GCF

Factor each polynomial completely.		
1. $6x^2+12x$	2. $7x^2y-21xy^2$	3. $15x^2-3x$
4. $4x-8y+10z$	5. $8x^2y-16xy-24xz$	

Section 2: Factoring a Difference of Two Squares

Factor each polynomial completely.		
1. $25x^2-9$	2. x^2-144	3. $36x^2-1$
4. $3x^2-147$	5. x^4-16	6. $50x^2-32y^2$

Section 3: Factoring a Trinomial w/ Leading Coefficient of 1

Factor each polynomial completely.		
1. x^2+7x+6	2. $x^2-10x+16$	3. $x^2-10x-24$
4. $5x^2+55x-300$	5. $2x^2y-34xy+144y$	

Section 4: Factoring a Trinomial w/ Leading Coefficient Not 1

Factor each polynomial completely.		
1. $2x^2+5x+3$	2. $6x^2-31x+35$	3. $12x^2+24x-15$
4. $20x^2-5x-15$	5. $30x^3+33x^2-24x$	

Section 5: Factoring by Grouping

Factor each polynomial completely. Use the method "factoring by grouping".		
1. $2x^2+5x+2xy+5y$	2. $3x^2-2xy+12x-8y$	3. $5ab+4ax+5bx+4x^2$
4. $x^2y+4x^2-36y-144$	5. $4x^2y-12x^2-9y+27$	

Section 6: Solving by Factoring

Solve each equation by factoring.		
1. $x^2-13x=30$	2. $8x^2+12x=36$	3. $27x^2=12$
4. $25x^3+100x^2=x+4$	5. $(x-7)^2+x^2=(x+1)^2$	

Section 7: Solving Systems of Equations

Solve each system of equations.

1. $2x+3y=-12$
   $x+3y=-18$

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

3. $4x-2y=-14$
   $y=6x+11$

4. $6x+5y=-2$
   $2x+3y=6$

5. $2x-7y=10$
   $5x=6y+2$

Section 8: Slope of Lines

Give the slope of the line containing the given points.

1. $(-5,6)$ and $(3,4)$

2. $(2,-7)$ and $(-4,-8)$

3. $(11,5)$ and $(2,-8)$

4. $(0,-7)$ and $(6,-4)$

5. $(-3,6)$ and $(12,-18)$

Section 9: Midpoint

Find the midpoint of the lines segment with the given endpoints.		
1. $(-5,6)$ and $(3,4)$	2. $(2,-7)$ and $(-4,-8)$	3. $(11,5)$ and $(2,-8)$
4. $(a,b+3)$ and $(a-4,3b)$	5. $(a+5,b-2)$ and $(3,-b+5)$	

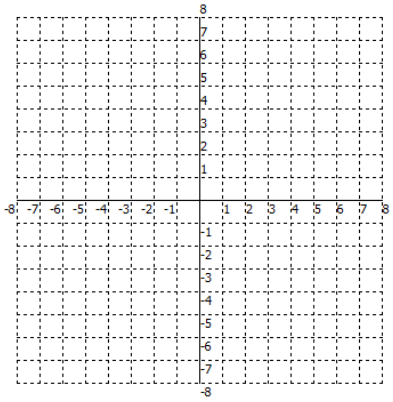
Section 10: Distance Formula

Find the distance between the two points to the nearest tenth of a unit.		
1. $(-5,6)$ and $(3,4)$	2. $(2,-7)$ and $(-4,-8)$	3. $(11,5)$ and $(2,-8)$
4. $(0,-7)$ and $(6,-4)$	5. $(-3,6)$ and $(12,-18)$	

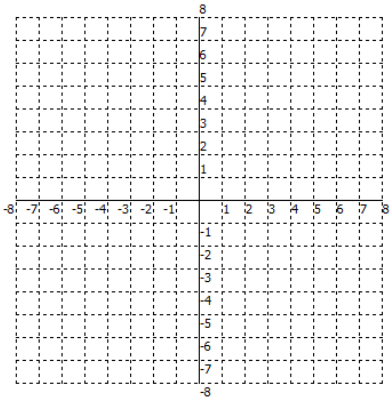
Section 11: Graphing Lines in Various Forms

Graph each line.

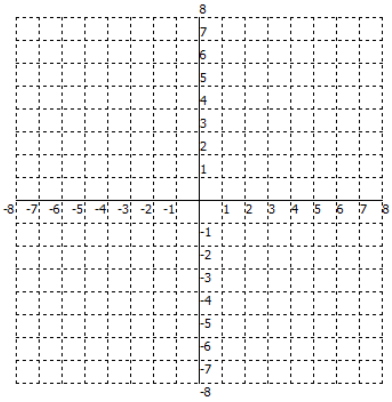
1. $y = 5$



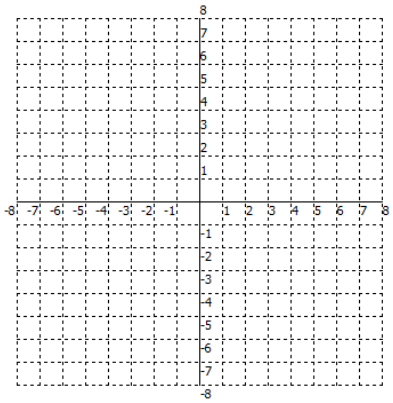
2. $x = -3$



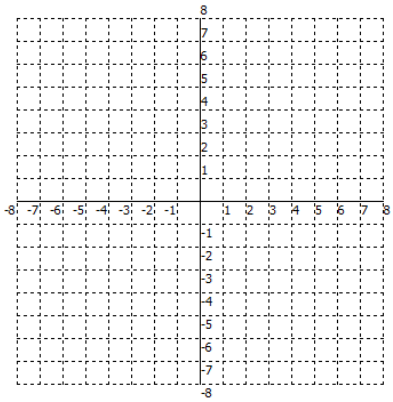
3. $y = -\frac{3}{4}x - 2$



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



5. $3x - 5y = -15$



Section 12: Writing Equations of Lines

Write the equation of the line described in the form requested.

1. containing the point $(-3, 4)$ with $m = -\frac{1}{2}$ in slope-intercept form

2. containing the point $(5, 6)$ with $m = \frac{2}{3}$ in standard form

3. containing the points $(1,-3)$ and $(-2,6)$ in point-slope form	4. containing the points $(-4,4)$ and $(5,6)$ in standard form
5. containing the points $(10,3)$ and $(7,-5)$ in slope-intercept form	6. containing the point $(2,-7)$ with $m=6$ in point-slope form

Section 13: Simplifying Radicals

Rewrite in simplified radical form.		
1. $\sqrt{40}$	2. $\sqrt{500}$	3. $\sqrt{124}$
4. $2\sqrt{27}$	5. $-10\sqrt{28}$	6. $-\sqrt{12}$

Section 14: Rationalizing Denominators

Rewrite in simplified radical form. Be sure to rationalize the denominator.		
1. $\frac{12}{\sqrt{3}}$	2. $\frac{5\sqrt{10}}{\sqrt{20}}$	3. $\frac{5}{4\sqrt{10}}$
4. $\frac{6\sqrt{18}}{\sqrt{2}}$	5. $\frac{-15\sqrt{22}}{\sqrt{6}}$	6. $\frac{10}{\sqrt{500}}$

Section 15: Squaring and Multiplying Radicals

Rewrite in simplified radical form.		
1. $\left(5\sqrt{7}\right)^2$	2. $\left(\frac{3}{\sqrt{5}}\right)^2$	3. $2\sqrt{10}\cdot 3\sqrt{5}$
4. $-4\sqrt{6}\cdot\sqrt{42}$	5. $\left(-3\sqrt{17}\right)^2$	6. $-8\sqrt{6}^2$ k

Section 16: Exact Versus Approximate

Simplify. Pay attention to the requested form for your answer.		
1. Round $\sqrt{30}$ to the nearest tenth.	2. Round $\frac{556}{13}$ to the nearest hundredth.	3. Round $5\sqrt{1000}$ to the nearest whole number.
4. Simplify $\frac{30}{438}$.	5. Simplify $5\sqrt{60}$.	6. Simplify $\frac{120}{7\sqrt{15}}$.