

ALGEBRA REVIEW

for Geometry

Can you...

- ☐ use the distributive property?
- ☐ multiply polynomials?
- ☐ solve a multi-step equation?
- ☐ factor out a GCF?
- ☐ factor quadratics?
- ☐ solve a quadratic equation?
- ☐ complete the square?
- ☐ solve a proportion?
- ☐ transform a formula?
- ☐ simplify radicals?
- ☐ calculate slope?
- ☐ write the equation of a line?

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Date: _____

THE DISTRIBUTIVE PROPERTY

Simplify each of the following expressions.

1. $2(4x+7)$	2. $4x(5xy+2x^2)$	3. $3(x^2+5x+6)$
4. $-5y(3x^2y-4x)$	5. $8xy(-5x^2+2x^2y)$	6. $-(7y+2x-3z)$
7. $5x^2(7x+1)$	8. $7yz(2x^2-3y+4z)$	9. $\frac{1}{2}(3x^3+4x-1)$
10. $15-3(2x+y)$	11. $-8x+3(6+8x)$	12. $\frac{4}{3}(4y+3)$
13. $x^2(x^3+x^4+x^5)$	14. $7(2x-3)+6(x^2y+1)$	15. $4(-3x+2)-(5y+6)$

Name: _____

Date: _____

MULTIPLYING POLYNOMIALS

Multiply and simplify.

1. $(x+5)(x+3)$	2. $(x-2)(x-4)$	3. $(x+6)(x-1)$
4. $(x-2)(x+2)$	5. $(x-12)(x+4)$	6. $(x+6)(x-6)$
7. $(2x+1)(3x-4)$	8. $(4x-5)(4x+5)$	9. $(x^3+2x)(x-8)$
10. $(2x+y)(2x+y)$	11. $(x^2+1)(x-5)$	12. $(x^2-2)(x^2+9)$
13. $(x+1)(x^2+5x+6)$	14. $(x-5)(2x^3-5x^2-1)$	15. $(2x+7)(x^2-x+3)$

Name: _____

Date: _____

SOLVING MULTI-STEP EQUATIONS

Solve for all values of x .

1. $2x+5=17$	2. $2-3x=11$	3. $\frac{1}{2}x+6=22$
4. $3(x+5)=18$	5. $5x+7=3x-2$	6. $8(x-2)+6=4x-10$
7. $5-\frac{1}{3}(x-6)=4x$	8. $\frac{2}{9}\left(x+\frac{3}{2}\right)=\frac{2}{3}$	9. $-3(3x+4)=6-15x$
10. $\frac{x-2}{3}+\frac{1}{6}=\frac{5}{6}$	11. $\frac{x+3}{2}+\frac{2x}{7}=7$	12. $\frac{1}{4}=\frac{3x}{5}-5$

Name: _____

Date: _____

GREATEST COMMON FACTOR

Simplify each of the following expressions.

1. $4x+12$	2. $9x^4-3x+27$	3. $20x-5$
4. $65x+52xy-13x^2$	5. $8xy+16x^2$	6. $9x^5-36x^3+18x$
7. $-20x^3-80x^2$	8. $11x^6-11x^2+11$	9. $2x^2+8x+8$
10. $\frac{1}{2}x+\frac{5}{2}x^3$	11. $-4x-8xy$	12. $15y+30x$
13. x^2+5x+6	14. $4x^3-44x^2+28x$	15. $\frac{2}{5}y^2z+\frac{3}{5}yz-\frac{4}{5}yz^2$

Name: _____

Date: _____

FACTORING QUADRATICS

Factor completely.

1. $x^2 + 7x + 12$	2. $x^2 - 25$	3. $x^2 + 10x + 24$
4. $x^2 - 49$	5. $x^2 - 9x + 20$	6. $x^2 - x - 30$
7. $x^2 - 2x - 80$	8. $x^2 - 7x - 18$	9. $x^2 - 64$
10. $4x^2 - 100$	11. $3x^2 - 147$	12. $3x^2 - 3x - 126$
13. $2x^2 + 8x + 8$	14. $9x^2 + 24x + 16$	15. $3x^2 - 23x - 8$

Name: _____

Date: _____

SOLVING QUADRATICS

Solve for all values of x .

1. $x^2 + 8x + 7 = 0$	2. $x^2 - 11x + 18 = 0$	3. $x^2 - x - 90 = 0$
4. $x^2 + 6x + 9 = 0$	5. $x^2 - 81 = 0$	6. $x^2 - 144 = 0$
7. $2x^2 + 12x + 16 = 0$	8. $3x^2 - 12 = 0$	9. $x^2 + 3x = 18$
10. $2x^2 = 50$	11. $x^2 + 100 = -25x$	12. $3x^2 + 7x + 2 = 0$

Name: _____

Date: _____

COMPLETING THE SQUARE

Solve for all values of x .

1. $x^2 + 8x + 5 = 0$

2. $x^2 - 10x + 6 = 0$

3. $x^2 + 4x - 2 = 0$

4. $x^2 + 6x + 7 = 0$

5. $x^2 - 2x - 5 = 0$

6. $x^2 - 12x - 7 = 0$

7. $x^2 - 6x = -2$

8. $x^2 - 4x = 1$

9. $x^2 + 10x = 15$

10. $x^2 - x + 1 = 0$

11. $x^2 + 3x + 5 = 0$

12. $2x^2 + 5x = 4$

Name: _____

Date: _____

SOLVING PROPORTIONS

Solve for all values of x.

1. $\frac{2}{x} = \frac{8}{12}$

2. $\frac{x}{5} = \frac{15}{25}$

3. $\frac{9}{4} = \frac{x}{6}$

4. $\frac{3}{9} = \frac{8}{x-10}$

5. $\frac{5}{x-8} = \frac{8}{3}$

6. $\frac{5}{2} = \frac{x-1}{6}$

7. $\frac{x}{5} = \frac{x+2}{9}$

8. $\frac{x-10}{7} = \frac{x}{4}$

9. $\frac{x+8}{10} = \frac{x-9}{4}$

10. $\frac{x-4}{x+6} = \frac{3}{7}$

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

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

Name: _____

Date: _____

TRANSFORMING FORMULAS

Solve for the indicated variable.

1. Solve for h. $V=Bh$	2. Solve for w. $A=lw$	3. Solve for h. $V=\frac{1}{3}Bh$
4. Solve for w. $P=2l+2w$	5. Solve for b. $A=\frac{1}{2}bh$	6. Solve for a. $V=a^3$
7. Solve for n. $S=180(n-2)$	8. Solve for h. $V=\pi r^2 h$	9. Solve for h. $V=\frac{1}{3}\pi r^2 h$
10. Solve for r. $V=\pi r^2 h$	11. Solve for r. $V=\frac{1}{3}\pi r^2 h$	12. Solve for r. $V=\frac{4}{3}\pi r^3$

Name: _____

Date: _____

SIMPLIFYING RADICALS

Write each expression in simplest radical form.

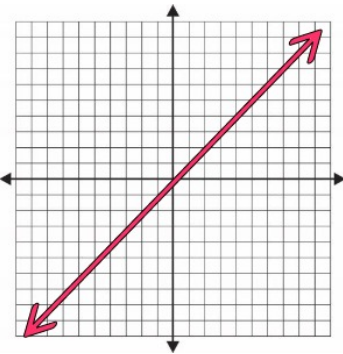
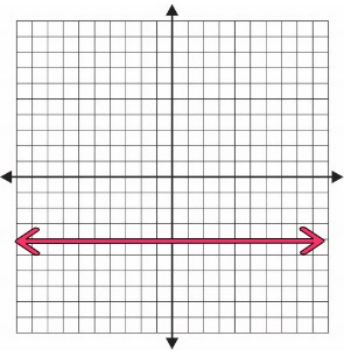
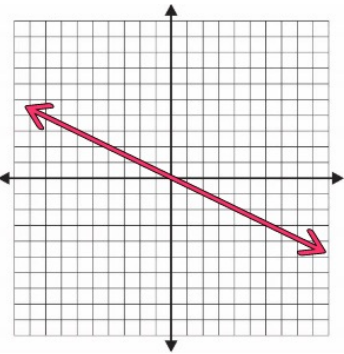
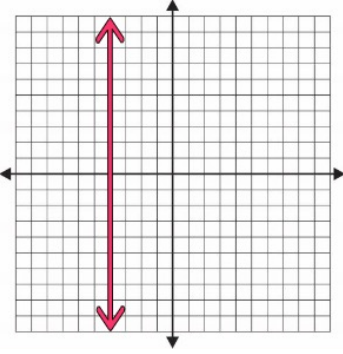
1. $\sqrt{25}$	2. $\sqrt{64}$	3. $\sqrt{100x^2}$
4. $\sqrt{50}$	5. $\sqrt{192}$	6. $\sqrt{40}$
7. $\sqrt{20}$	8. $\sqrt{48}$	9. $\sqrt{80}$
10. $\sqrt{4x^2y^4}$	11. $\sqrt{18x^3y^6}$	12. $\sqrt{144x^{10}y^6z^2}$

Name: _____

Date: _____

CALCULATING SLOPE

Determine the slope of each line or segment.

1. $y=3x-1$	2. $y-5=-2(x+1)$	3. $2y=3x+6$
4. The segment from (0,0) and (5,7)	5. The segment from (-2,1) and (4,-3)	6. The segment from (7,8) and (3,-2)
7. 	8. 	9. 
10. 	11. A line parallel to $y=5x+2$	12. A line perpendicular to $y=5x+2$

Name: _____

Date: _____

WRITING LINEAR EQUATIONS

Write the equation of each line described or shown below.

1. Slope of 2 and y-intercept of 5

2. Slope of $-\frac{1}{2}$ and a y-intercept of 6

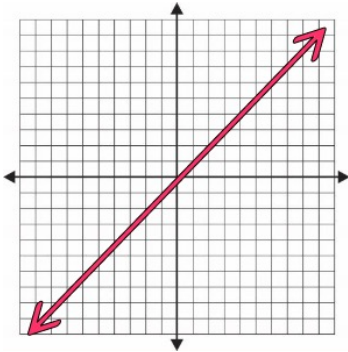
3. Slope of 0 and y-intercept of -3

4. Slope of 3 and passes through (2,2)

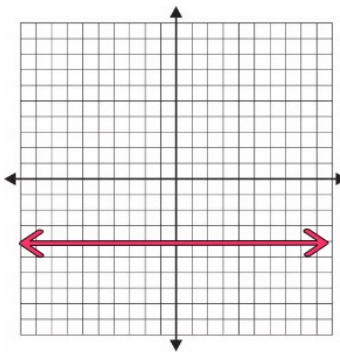
5. Slope of $\frac{3}{4}$ and passes through (8,-1)

6. Slope of 1 and passes through (6,7)

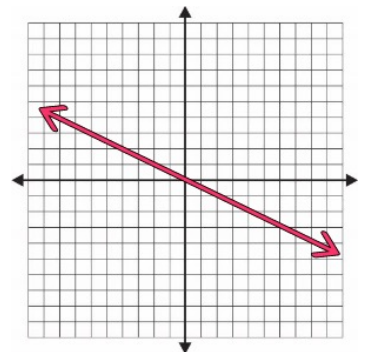
7.



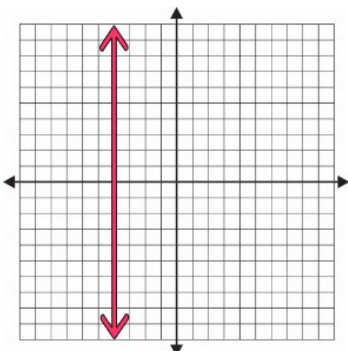
8.



9.



10.



11. Parallel to $y=5x+2$ and passes through the origin

12. Perpendicular to $y=5x+2$ and passes through (-5,8)