Summer Work for Mr. Killheffer's Precalculus Classes

The following pages are a review of the materials covered in Algebra I and Algebra II.

You need to have a handle on this material prior to starting Precalculus.

If you have signed up for Precalculus Honors, do all of the problems.

If you have signed up for Precalculus CP do just the odd-numbered problems.

Please use the Internet as a resource if you do not know how to do any of the problems. A couple of resources you may find helpful are

Khanacademy.org

Larsonprecalculus.com

but feel free to use any site you find helpful. There are also many helpful Youtube videos out there. Youtube is also a great resource to find out how to do anything you want to do on your graphing calculator.

In all of my classes, I expect that if you don't know how to do something that you do something to get it. You have many resources to find solutions. Over the summer your primary resource is the Internet.

The summer work is due the first day of class. I will spend a day or two answering questions and then we will have a test to see how well prepared you are for the class.

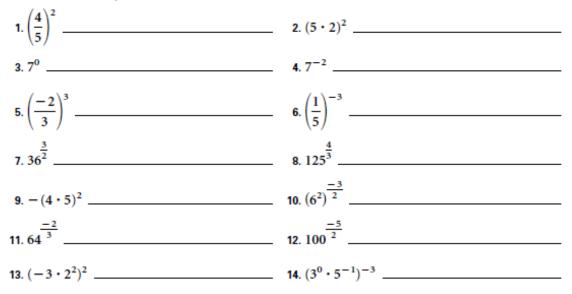


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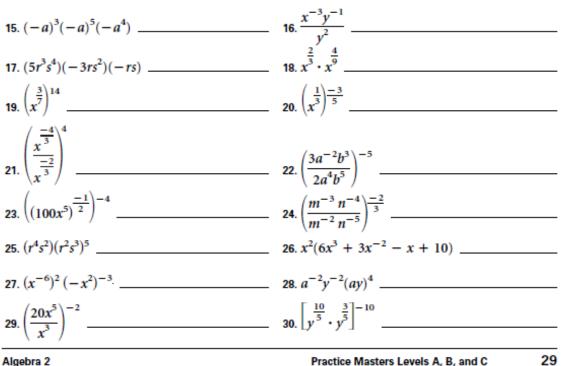
2.2 Properties of Exponents

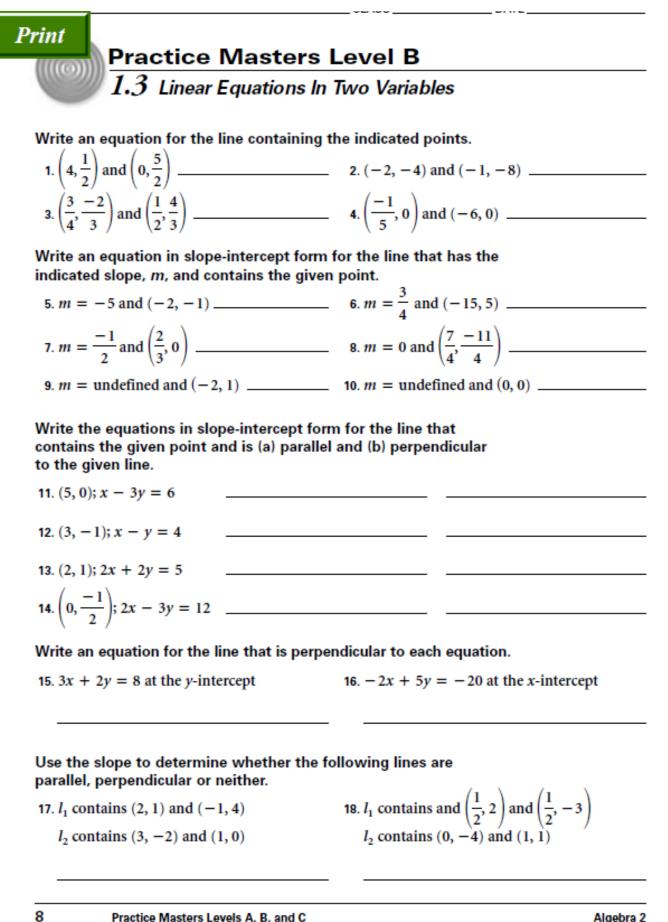
Evaluate each expression.

(((())))



Simplify each expression, assuming that no variable equals zero. Write your answer with positive exponents.





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(IIIII)	1.5 Scatter Plots and Least-Squares Lines	
	question, state whether the statement is true or false.	
1. A coi	relation coefficient can be equal to -2 .	
	slope of a least-squares line is negative, the correlation coefficient	
	a set with a correlation coefficient of -0.72 has a stronger linear onship than a data set with a correlation coefficient of 0.64.	

Use a graphing calculator to create a scatter plot of the data in each table. Describe the correlation as positive, negative, or no correlation. Then find an equation for the least-squares line.

4.	x	4	3	5	6	8	8	5	2	1	7	9	7	2	1	3	4	7	5	2	1
	y	6	5	9	10	13	14	10	3	2	12	17	11	4	1	5	7	11	9	2	1

5.	x	8	10	6	2	5	10	3	9	12	10	10	8	6	1	2	4	3	3	5	8
	y	1	10	2	2	6	1	9	8	7	7	7	5	4	2	3	6	8	11	8	10

6. The average points per game for Larry Bird for a 10-year period is shown below.

[1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
[21.3	21.2	22.9	23.6	24.2	28.7	25.8	28.1	29.9	19.3

- Enter the data in a graphics calculator and find the equation of the least-squares line.
- b. Find the correlation coefficient, r, to the nearest hundredth.
- c. Use the least-squares line to predict Bird's scoring average in 1990.
- d. Explain using the correlation coefficient whether your prediction for Bird's 1990 scoring average is accurate or inaccurate, given the fact that Bird's actual scoring averages was 24.3 points per game in 1990.

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1.6 Introduction to Solving Equations

Solve each equation.

1.
$$7n + 10 = 3n + 2$$
 2. $2(y + 1) = y - 8$

 3. $3(m - 2) - 5 = 6 - 2(m - 4)$
 4. $2x - \frac{2}{3} = -3x + \frac{7}{3}$

 5. $6(a + 2) - 8a = 10a + 9$
 6. $\frac{1}{3}x - \frac{7}{3} = \frac{1}{6}$

 7. $\frac{m}{6} + \frac{m}{4} + \frac{m}{3} = 1$
 8. $24 + 2(x + 4) = 2(x + 3)$

Solve each equation by graphing. Give answers to the nearest hundredth.

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9. 6.46 + 2.3x = 1.24x - 7
10. -2.05x + 1.8(x - 3) = 6.2
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11.0.38 - 0.66x + 0.72x - 0.54 = 0
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12.1.84 - 0.23x = 0.5(-0.46x + 3.68)

Solve each literal equation for the variable indicated.

 13. $A = \frac{1}{2}h(b_1 + b_2)$ for b_1 14. P = 2l + 2w for l

 15. A = P(1 + RT) for T 16. $V = V_o + b(s + s_o)$ for s

 17. $A = 2\pi r(r + h)$ for h 18. $A = \frac{1}{2}d_1 d_2$ for d_1

Write and solve an appropriate equation for each situation.

- The measure of one complementary angle is 20° more than twice the measure of angle x. Find the measure of angle x.
- 20. Carson charges \$18.75 per hour to fix computers, plus a flat service fee of \$30. Carson billed Miss Belkis \$255 for a job. How many hours did Carson spend fixing her computer?

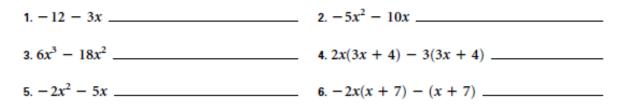
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Practice Masters Level A

5.3 Factoring Quadratic Expressions

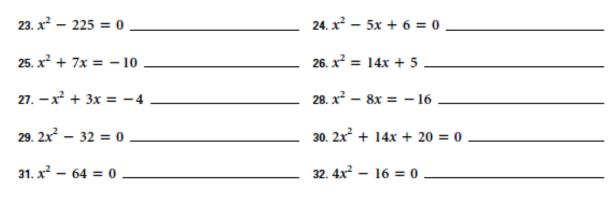
Factor each expression.



Factor each quadratic expression.

$7. x^2 + 5x + 4$	8. $x^2 + x - 6$
9. $x^2 + 3x - 18$	10. $x^2 - 12x + 35$
11. $x^2 - x - 2$	12. $x^2 + 11x + 10$
13. $x^2 - 25x + 100$	14. $x^2 + 10x - 24$
15. $x^2 - 12x + 32$	16. $x^2 + 21x + 54$
17. $2x^2 - x - 15$	18. $3x^2 + 11x - 4$
	20. $25x^2 + 10x - 3$
	22. $12x^2 + 17x - 5$

Solve each equation by factoring and applying the Zero-Product Property.



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- 16. Joel and Wyatt toss a baseball. The height in feet, of the baseball, above the ground is given by $h(t) = -16t^2 + 55t + 6$, where t represents the time in seconds after the ball is thrown. How long is the ball in the air?
- 17. A rocket is launched into the air. The height in feet, of the rocket, above the ground is given by $h(t) = -4.9t^2 + 220t$, where *t* represents the time in seconds after the launch.
 - a. How long is the rocket in the air?
 - b. When is the rocket at its highest point?
 - c. How high is the rocket at its highest point?
- 18. A 15-inch by 28-inch poster is to be framed using a border of uniform width. To make the framing visually appealing, the border should have an area equal to 60% of the area of the poster. How wide should the border be?

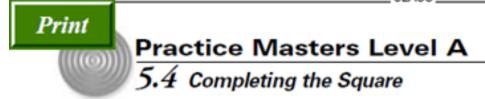
A baseball player throws a ball. The table shows the height, *h*, of the ball, *t*, seconds after it is thrown.

- 11. Use regression to find a quadratic model for the data.
- 12. What was the maximum height reached by the ball?
- 13. How long did it take the ball to reach maximum height?

14. Determine the height of the ball 1.5 seconds after it was thrown.

15. Determine how many seconds it took for the ball to hit the ground.

Time (in seconds)	Height (in feet)
1	21
3	25
5	10
6	1



Complete the square for each quadratic expression to form a perfect-square trinomial. Then write the new expression as a binomial squared.

$1. x^2 + 12x$	2. $x^2 - 14x$
3. $x^2 + 26x$	4. $x^2 + 5x$
5. $x^2 - 3x$	6. $x^2 + x$

Solve each equation by completing the square. Give exact solutions. Then give answers rounded to the nearest hundredth, if necessary.

 $7. x^2 + 8x + 2 = 0$

9. $x^2 + 6x = 0$

 $11. x^2 - 3x + 9 + 6 = 0$

Write each quadratic function in vertex form. Give the coordinates of the vertex and the equation of the axis of symmetry.

13. $f(x) = x^2 + 4x + 3$

15. $f(x) = x^2 + 2x + 5$

Practice Masters Level A 8.3 Multiplying and Dividing Rational Expressions

Simplify each expression.

 $1.\frac{x^2+6x+8}{x^2+x-12}$ $3.\frac{x^2 - x - 12}{x^2 + 5x + 6}$ 5. $\frac{x^{12}}{5} \cdot \frac{15}{x^4} \cdot \frac{x^3}{9}$ $7.\frac{6x^2 + 18x - 108}{x^2 + 4x - 12} \cdot \frac{x + 4}{10x - 30}$ 9. $\frac{x^2 + 4x - 5}{18} \div \frac{x^2 - x}{6}$ $11. \frac{x^4 + 2x^3}{x^2 + 3x + 2} \cdot \frac{x^2 - 1}{5x - 5}$ $13.\frac{\frac{x^2+x-6}{x+5}}{\frac{3x^2-12}{}}$ $15. \frac{\frac{5x - 35}{3x + 9}}{5x^2 + 15x}$

Print Practice Masters Level A 8.4 Adding and Subtracting Rational Expressions

Write each expression as a single rational expression in simplest form.

1.	$\frac{4}{x} + \frac{6}{x}$
3.	$\frac{7x}{12} - \frac{3x}{4}$
5.	$\frac{4x-2}{10} - \frac{3x-2}{6}$
7.	$\frac{5x}{x+5} + \frac{-8x}{x-7}$
9.	$\frac{x-2}{x^2+8x} + \frac{x+5}{x-3}$
11.	$\frac{4x}{x^2 - 16} + \frac{6}{x - 4}$
13.	$\frac{x}{x^2 - 9} + \frac{x}{x^2 + 6x - 27}$
15.	$\frac{x}{x^2 + 4x + 4} + \frac{5}{x^2 - 4}$