



City of Brockton

BROCKTON PUBLIC SCHOOLS

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June 22, 2010

Dear Student/Parent,

The attached Math Packet is intended for students taking a Pre Calculus/Junior IB Class in the fall. The packet contains problems emphasizing necessary skills for the student beginning this course. While completion of these problems is optional, it is important to note that if you complete this packet successfully you will be eligible for up to 5 points extra credit on your term I average.

You may seek help on the problems. It is hoped that you will do whatever is necessary to complete all of the problems successfully. You must submit the answer sheet (which details the problems that must be done) and your work on separate sheets of paper. The answer sheet and work should be stapled together and submitted to your teacher on or before Tuesday, September 7, 2010. If you are in a second semester math class please return the completed packet to the Green Math Office by September 7, 2010. Late packets will not be accepted.

The following book references can be used to find information to help you complete these problems. You may also access any other sites or other means of help.

Go to www.Math.glencoe.com and use the appropriate user name and password.

Algebra I user name: ALG1 password: wRec84ehed

Geometry user name: GEO password: v7tr2SwAgU

Algebra II user name: ALG2 password: N4c6abrada

Advanced Math (Pre-Calculus) user name: AMC password Zaye9uB7ze

Good luck in completing this work. Remember while it is optional, it is an opportunity for all students to take a step in improving their term I grade and to review some important math skills at the same time.

Thanks,

Bob Perkins

Brockton High School ♦ 470 Forest Avenue ♦ Brockton, Massachusetts 02301-5633

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Refer to the indicated lesson in the Algebra 1 textbook for help with the following problems.

12-3 Skills Practice

Multiplying Rational Expressions

Find each product.

$$2. \frac{3m^2}{2n} \cdot \frac{n^2}{12}$$

$$4. \frac{2x^2y}{3x^2y} \cdot \frac{3xy}{4y}$$

$$6. \frac{4(n+2)}{n(n-2)} \cdot \frac{n-2}{n+2}$$

$$8. \frac{(x-2)(x+2)}{x(8x+3)} \cdot \frac{2(8x+3)}{x-2}$$

12-4 Skills Practice

Dividing Rational Expressions

Find each quotient.

$$2. \frac{x^3}{y^2} \div \frac{x^3}{y}$$

$$4. \frac{4m^3}{np^2} \div \frac{2m}{np}$$

$$6. \frac{x-5}{x+3} \div (x-5)$$

$$8. \frac{b^2-25}{2b} \div (b-5)$$

12-7 Skills Practice

Rational Expressions with Unlike Denominators

Find the LCM for each pair of expressions.

$$1. 4x^2y, 12xy^2$$

$$3. 2r-1, r+4$$

$$5. x^2-2x-3, (x-3)^2$$

Find each sum.

$$7. \frac{3}{y} + \frac{4}{y^2}$$

$$9. \frac{m+3}{2m} + \frac{m-2}{m}$$

$$11. \frac{b}{b-1} + \frac{2}{b-4}$$

$$13. \frac{3x+15}{x^2-25} + \frac{x}{x+5}$$

Find each difference.

$$15. \frac{5}{4r} - \frac{2}{r^2}$$

$$17. \frac{x}{x+2} - \frac{4}{x-1}$$

$$19. \frac{a}{2a-1} - \frac{2}{a+3}$$

$$21. \frac{6}{b^2-1} - \frac{b}{b+1}$$

12-8 Skills Practice

Mixed Expressions and Complex Fractions

Write each mixed expression as a rational expression.

$$1. 6 + \frac{4}{h}$$

$$3. 4b + \frac{b}{c}$$

Simplify each expression.

$$11. \frac{\frac{1}{2}}{\frac{3}{4}}$$

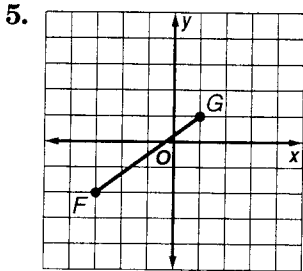
$$12. \frac{\frac{3}{3}}{\frac{2}{5}}$$

Refer to the indicated lesson in the Geometry textbook for help with the following problems.

1-3 Skills Practice

Distance and Midpoints

Use the Pythagorean Theorem to find the distance between each pair of points.



7. $K(2, 3), F(4, 4)$

Use the Distance Formula to find the distance between each pair of points.

9. $Y(2, 0), P(2, 6)$

11. $A(-7, -3), B(5, 2)$

Find the coordinates of the midpoint of a segment having the given endpoints.

17. $T(3, 1), U(5, 3)$

18. $J(-4, 2), F(5, -2)$

Find the coordinates of the missing endpoint given that P is the midpoint of \overline{NQ} .

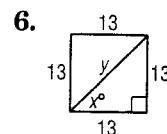
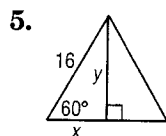
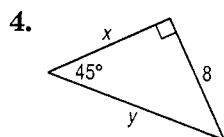
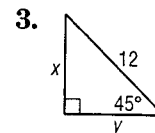
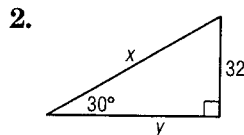
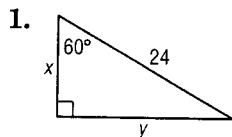
19. $N(2, 0), P(5, 2)$

21. $Q(3, 9), P(-1, 5)$

7-3 Skills Practice

Special Right Triangles

Find x and y .



Refer to the indicated lesson in the Geometry textbook for help with the following problems.

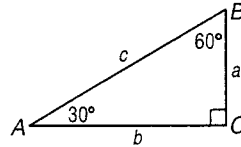


7-3 Skills Practice

Special Right Triangles

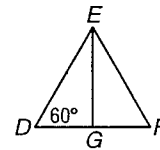
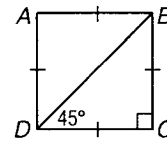
For Exercises 7–9, use the figure at the right.

- If $a = 11$, find b and c .
- If $b = 15$, find a and c .
- If $c = 9$, find a and b .



For Exercises 10 and 11, use the figure at the right.

- The perimeter of the square is 30 inches. Find the length of \overline{BC} .
- Find the length of the diagonal \overline{BD} .
- The perimeter of the equilateral triangle is 60 meters. Find the length of an altitude.

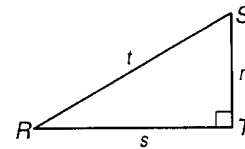


7-4 Skills Practice

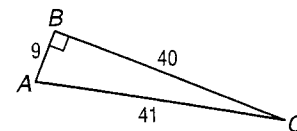
Trigonometry

Use $\triangle RST$ to find $\sin R$, $\cos R$, $\tan R$, $\sin S$, $\cos S$, and $\tan S$. Express each ratio as a fraction and as a decimal to the nearest hundredth.

- $r = 16, s = 30, t = 34$
- $r = 10, s = 24, t = 26$

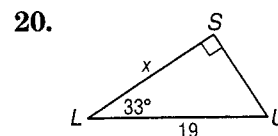
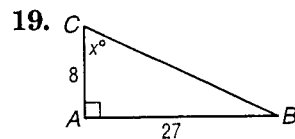
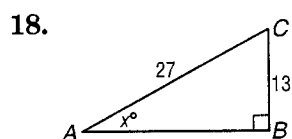


Use the figure to find each trigonometric ratio. Express answers as a fraction and as a decimal rounded to the nearest ten-thousandth.



- $\tan C$
- $\sin A$
- $\cos C$

Find x . Round to the nearest tenth.

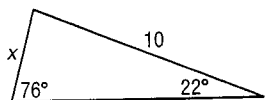


Refer to the indicated lesson in the Geometry textbook for help with the following problems.

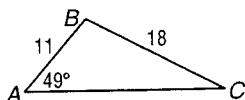
7-6 Skills Practice

The Law of Sines

2. Find x to the nearest tenth.



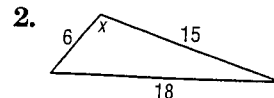
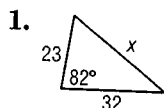
3. Solve $\triangle ABC$. Round your answers to the nearest tenth.



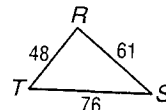
7-7 Skills Practice

The Law of Cosines

For Questions 1 and 2, find x to the nearest tenth.



3. Solve $\triangle RST$. Round your answers to the nearest degree.

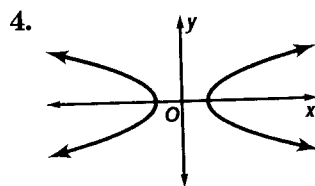
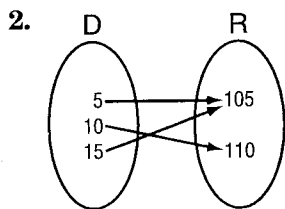


Refer to the indicated lesson in the Algebra 2 textbook for help with the following problems.

2-1 Practice

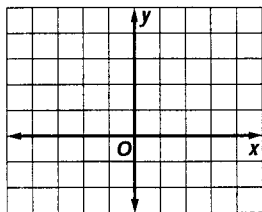
Relations and Functions

Determine whether each relation is a function. Write *yes* or *no*.

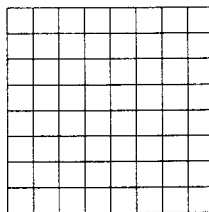


Graph each relation or equation and find the domain and range. Then determine whether the relation or equation is a function.

5. $\{(-4, -1), (4, 0), (0, 3), (2, 0)\}$



6. $y = 2x - 1$



Find each value if $f(x) = \frac{5}{x+2}$ and $g(x) = -2x + 3$.

7. $f(3)$

8. $f(-4)$

9. $g\left(\frac{1}{2}\right)$

10. $f(-2)$

11. $g(-6)$

12. $f(m - 2)$

Refer to the indicated lesson in the Algebra 2 textbook for help with the following problems.



2-4 Skills Practice

Writing Linear Equations

State the slope and y-intercept of the graph of each equation.

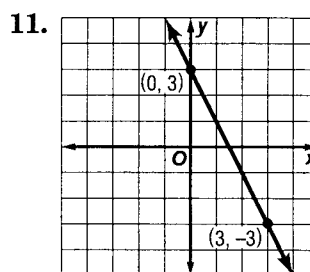
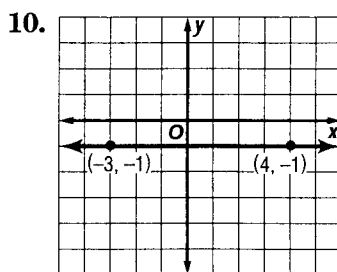
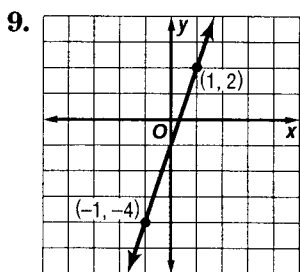
2. $y = -\frac{3}{5}x + 3$

4. $3x + 4y = 4$

6. $3x - 2y + 6 = 0$

8. $2y = 6 - 5x$

Write an equation in slope-intercept form for each graph.



Write an equation in slope-intercept form for the line that satisfies each set of conditions.

12. slope 3, passes through (1, -3)

16. passes through (-1, -2) and (-3, 1)

14. slope -2, passes through (0, -5)



5-6 Skills Practice

Radical Expressions

Simplify.

1. $\sqrt{24}$

7. $\sqrt[3]{-\frac{1}{8}d^2f^5}$

13. $(4\sqrt{12})(3\sqrt{20})$

19. $(1 - \sqrt{5})(1 + \sqrt{5})$

3. $\sqrt[3]{16}$

9. $-\sqrt{\frac{3}{7}}$

15. $\sqrt{12} - 2\sqrt{3} + \sqrt{108}$

21. $(\sqrt{2} - \sqrt{6})^2$

5. $4\sqrt{50x^5}$

11. $\sqrt{\frac{2g^3}{5z}}$

17. $2\sqrt{48} - \sqrt{75} - \sqrt{12}$

23. $\frac{4}{3 + \sqrt{2}}$

Refer to the indicated lesson in the Algebra 2 textbook for help with the following problems.

6-3 Skills Practice

Solving Quadratic Equations by Factoring

Solve each equation by factoring.

2. $x^2 - 100 = 0$

14. $x^2 + 18x = -81$

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

16. $2x^2 + 5x - 3 = 0$

6. $x^2 - 3x - 10 = 0$

18. $3x^2 - 13x - 10 = 0$

6-4 Study Guide and Intervention

Completing the Square

Complete the Square To complete the square for a quadratic expression of the form $x^2 + bx$, follow these steps.

1. Find $\frac{b}{2}$. → 2. Square $\frac{b}{2}$. → 3. Add $\left(\frac{b}{2}\right)^2$ to $x^2 + bx$.

Example 1 Find the value of c that makes $x^2 + 22x + c$ a perfect square trinomial. Then write the trinomial as the square of a binomial.

Step 1 $b = 22$; $\frac{b}{2} = 11$

Step 2 $11^2 = 121$

Step 3 $c = 121$

The trinomial is $x^2 + 22x + 121$, which can be written as $(x + 11)^2$.

Example 2 Solve $2x^2 - 8x - 24 = 0$ by completing the square.

$$2x^2 - 8x - 24 = 0$$

Original equation

$$\frac{2x^2 - 8x - 24}{2} = \frac{0}{2}$$

Divide each side by 2.

$$x^2 - 4x - 12 = 0$$

$x^2 - 4x - 12$ is not a perfect square.

$$x^2 - 4x = 12$$

Add 12 to each side.

$$x^2 - 4x + 4 = 12 + 4$$

Since $\left(-\frac{4}{2}\right)^2 = 4$, add 4 to each side.

$$(x - 2)^2 = 16$$

Factor the square.

$$x - 2 = \pm 4$$

Square Root Property

$$x = 6 \text{ or } x = -2$$

Solve each equation.

The solution set is $\{6, -2\}$.

Exercises

Find the value of c that makes each trinomial a perfect square. Then write the trinomial as a perfect square.

1. $x^2 - 10x + c$

3. $x^2 - 3x + c$

5. $x^2 + \frac{1}{2}x + c$

Solve each equation by completing the square.

8. $x^2 - 8x - 65 = 0$

10. $2x^2 - 3x + 1 = 0$

12. $25x^2 + 40x - 9 = 0$

This page is for students entering Precalculus **Honors**. Refer to the indicated lesson in the Algebra 2 textbook for help.



5-1 Practice

Monomials

Simplify. Assume that no variable equals 0.

3. $t^9 \cdot t^{-8}$

5. $(2f^4)^6$

7. $(4d^2t^5v^{-4})(-5dt^{-3}v^{-1})$

9. $\frac{12m^8y^6}{-9my^4}$

11. $\frac{-27x^3(-x^7)}{16x^4}$

13. $-(4w^{-3}z^{-5})(8w)^2$

15. $\left(\frac{3}{2}d^2f^4\right)^4\left(-\frac{4}{3}d^5f\right)^3$

17. $\frac{(3x^{-2}y^3)(5xy^{-8})}{(x^{-3})^4y^{-2}}$



5-7 Skills Practice

Rational Exponents

Write each expression in radical form.

1. $3^{\frac{1}{6}}$

3. $12^{\frac{2}{3}}$

Write each radical using rational exponents.

5. $\sqrt{51}$

7. $\sqrt[4]{15^3}$

Evaluate each expression.

9. $32^{\frac{1}{5}}$

11. $27^{-\frac{1}{3}}$

13. $16^{\frac{3}{2}}$

15. $27^{\frac{1}{3}} \cdot 27^{\frac{5}{3}}$

Simplify each expression.

17. $c^{\frac{12}{5}} \cdot c^{\frac{3}{5}}$

19. $\left(q^{\frac{1}{2}}\right)^3$

21. $x^{-\frac{6}{11}}$

23. $\frac{y^{-\frac{1}{2}}}{y^{\frac{1}{4}}}$



5-8 Study Guide and Intervention

Radical Equations and Inequalities

Solve each equation.

1. $3 + 2x\sqrt{3} = 5$

2. $2\sqrt{3x + 4} + 1 = 15$

3. $8 + \sqrt{x + 1} = 2$

9. $\sqrt{x^2 + 7x} = \sqrt{7x - 9}$

10. $4\sqrt[3]{2x + 11} - 2 = 10$

Name: _____ Precalculus Summer Work Answer Sheet

Write the answer to each specified problem on the indicated line on this answer sheet. The work supporting these answers must be done neatly on separate paper and included along with this answer sheet and the downloaded worksheets as part of the complete packet. Submit the packet to your Precalculus teacher by September 7, 2010. If your Precalculus class is scheduled for second semester, you must submit the packet to Mr. Perkins or Mr. Corbett in the Green Math office by September 7, 2010. Packets will **not** be accepted after this date.

Please note that the last page is part of the packet for Honors level only.

Algebra 1

Lesson 12-3

2. _____

4. _____

6. _____

8. _____

Lesson 12-4

2. _____

4. _____

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Lesson 12-7

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Lesson 12-8

1. _____

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12. _____

Geometry

Lesson 1-3

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Lesson 7-3

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Lesson 7-4

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Lesson 7-6

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Lesson 7-7

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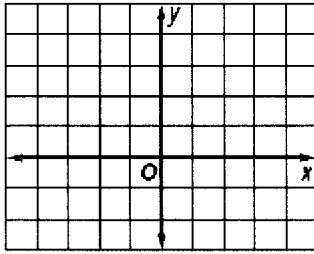
Algebra 2

Lesson 2-1

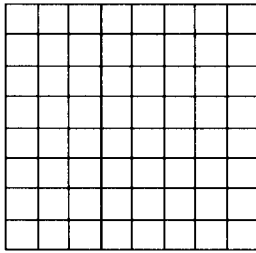
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Lesson 2-4

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Lesson 5-6

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Lesson 6-3

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Lesson 6-4

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The following problems
are for Honors level
only.

Lesson 5-1

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Lesson 5-7

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Lesson 5-8

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2. _____

3. _____

9. _____

10. _____