Dear Trigonometry Students:

Summer is here and so is your summer packet!

It is important that you review some essential algebraic and geometry basics before starting your trigonometry course. This packet is designed to help you with that review.

Complete these problems, showing all of your work to support your answers. If necessary, you can use loose-leaf paper to show the work to support your answers. Write your final answer in the spaces provided in this packet. During the first couple of days of class, your packet and all supporting work will be collected and evaluated. We will take some time during the first couple days of class to go over any questions you have about the pre-requisite skills. You will then be tested on the work from the summer packet. It is always great to start a course with a good grade, so invest some time and energy during this vacation to prepare for an exciting semester of trigonometry.

If you need a refresher on how to solve certain types of problems, look for "key words" next to the to help you do an online search for help on various topics.

You will need at least a scientific calculator in order to successfully complete this course. We recommend a TI-30 or above. (You can get one for $15.) If you are taking Advanced Algebra or PreCalculus, then you will need a TI-84 (about $100) and that will also work for this course.

Have an enjoyable, relaxing summer. We're looking forward to seeing you during the next school year. If you have any questions, please contact the math department.

Name: _____

Graph the following: **Key words:** *Graphing points and lines*

1. Plot the following points on the grid below:
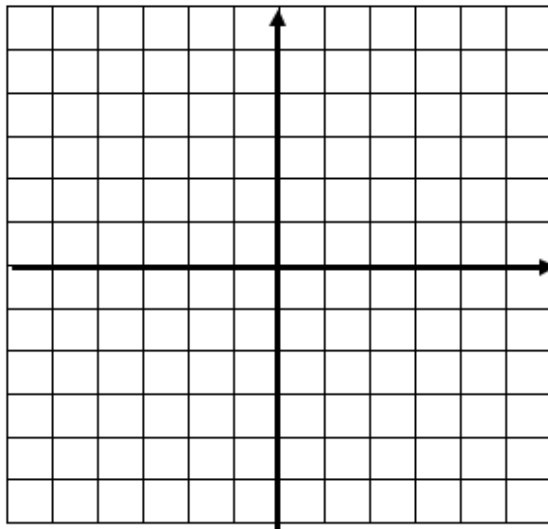
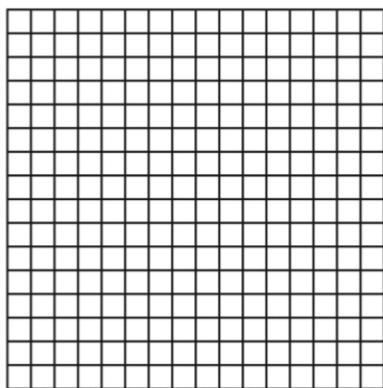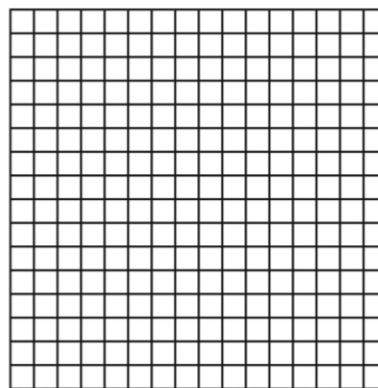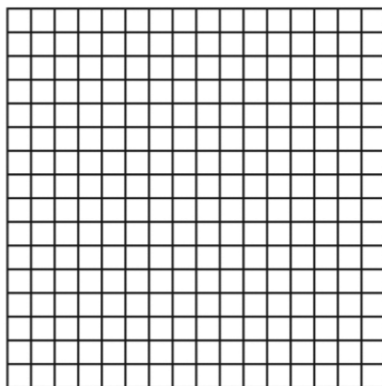   A(3,0)   B(5,5)   C(-1,2)   D(-3,-2)   E(0,-3)

2. $3x + 4y = 12$

3. $x = -2$ *and* $y = 4$

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

5. Name the quadrant (I, II, III, IV) that each point lies in:

$(-2, 5)$ _____

$(7, -3)$ _____

$(-2, -5)$ _____

$(2, .5)$ _____

Operations with Fractions

1. Add the following fractions:

a). $\dfrac{2}{5} + \dfrac{2}{3} =$

b). $\dfrac{2}{7} + \dfrac{3}{5} =$

c). $2\dfrac{1}{3} + 1\dfrac{1}{4} =$

2. Subtract the following fractions:

a). $\dfrac{3}{4} - \dfrac{2}{12} =$

b). $3 - \dfrac{2}{5} =$

c). $3\dfrac{2}{4} - 1\dfrac{1}{6}$

3. Multiply the following fractions:

a). $5 \times \dfrac{2}{3} =$

b). $\dfrac{8}{7} \times \dfrac{7}{24} =$

c). $3\dfrac{2}{3} \times 1\dfrac{1}{3} =$

4. Divide the following fractions:

a). $5 \div \dfrac{1}{4} =$

b). $\dfrac{3}{8} \div \dfrac{1}{4}$

c). $\dfrac{10}{9} \div \dfrac{55}{3}$

Key words: *Simplifying radical expressions.*

Simplify the following radical expressions.

1. _____ $\sqrt{50}$

2. _____ $\sqrt{18}$

3. _____ $\sqrt{25x^2}$

4. _____ $\sqrt{27}$

5. _____ $\dfrac{1}{\sqrt{2}}$

6. _____ $\dfrac{2\sqrt{5}}{\sqrt{7}}$

7. _____ $4\sqrt{27} + 8\sqrt{48}$

8. _____ $3\sqrt{3} * 5\sqrt{6}$

9. _____ $\dfrac{3}{\sqrt{6}}$

Simplify the following polynomial expressions.

1. _____ $\left(2x^2+6x+3\right)+\left(3x^2+4x-4\right)$

2. _____ $\left(6x^3-7x^4+10x\right)-\left(4x^3-6x^2+2x-3\right)$

3. _____ $\left(2x+7\right)\left(x-5\right)$

4. _____ $\left(2x-3\right)^2$

5. _____ $\left(3x-2\right)^3$

6. _____ $\left(4x+3\right)\left(x^2-2x+5\right)$

Factor the following completely.

1. _____ $x^2+8x+15$

2. _____ $3x^2+11x-4$

3. _____ x^2-49

4. _____ $x^3+5x^2+8x+40$

5. _____ $3x^5+6x^3-45x$

6. _____ $2x^3-x^2-10x+5$

7. _____ $20r^3-4r^2+15r-3$

1. a.) $\dfrac{3x+9}{3}$

    b.) $\dfrac{3x+3}{9}$

    c.) $\dfrac{x+9}{9}$

    d.) $\dfrac{3x-12}{3x}$

    e.) $\dfrac{y-2}{y^2-5y+6}$

    f.) $\dfrac{x^2+2x+1}{x^2-1}$

    g.) $\dfrac{2x^2-18x+36}{x^2-9}$

    h.) $\dfrac{x^2-2x}{x^2+x-6}$

2. _____ $\dfrac{x^3+3x^2}{2x}\cdot\dfrac{5x^3}{x^2+5x+6}$

3. _____ $\dfrac{x^2+2x-35}{x^2-7x+12}\div\dfrac{x^2-13x+40}{3x^2-12x}$

4. _____ $\dfrac{4}{3x}+\dfrac{2}{5x}$

5. _____ $\dfrac{2x+1}{x^2-4}+\dfrac{5}{x-2}$

6. _____ $\dfrac{8x-1}{x^2+x-6}-\dfrac{4}{x-2}$

7. _____ $\dfrac{x-4}{x^3-4x^2+2x-8}$

8. _____ $\dfrac{5x}{15x^2-20x+50}$

Key words: *Solving equations (linear equations, proportions, quadratic equations)*

1. _____ $5 + 2(k + 4) = 5(k - 3) + 10$

2. _____ $2x^2 = 50$

3. _____ $\dfrac{x - 2}{3} = \dfrac{2x + 1}{4}$

4. _____ $\dfrac{2}{3}x - 18 = \dfrac{x}{6}$

5. _____ $\dfrac{7}{x} + \dfrac{1}{2} = 4$

6. _____ $\dfrac{1}{2x} + \dfrac{x}{3} = 7$

7. _____ $\dfrac{3}{x^2 - 4} = \dfrac{2}{x + 2} + \dfrac{x}{x - 2}$

8. _____ $2x^2 - 5x = 7$

9. _____ $-5(2x - 1) = 3(x + 4)$

Geometry Basics

1. Find x:
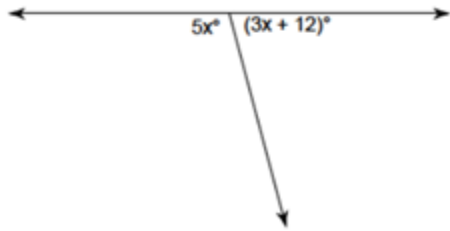
2. Find x:
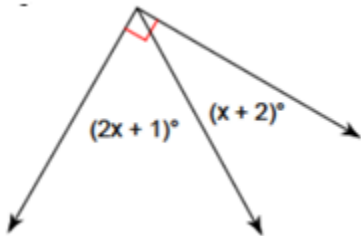
4. Find the area and perimeter of the rectangle below.
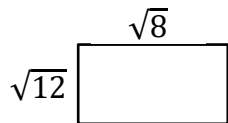
5.   a) In the right triangle shown, which side(s) is/are the legs? _____

    b) Which side(s) is/are the hypotenuse? _____

    c) Write the Pythagorean theorem: _____
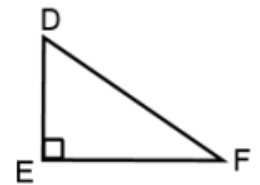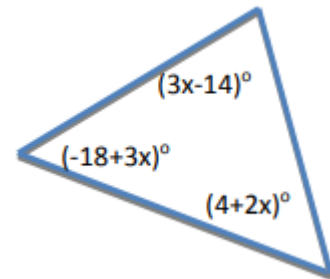

Find the length of the missing side.

6)

$x=$ _____

20

16

7)

$x =$ _____

6

2.5

8)

12   14

$x =$ _____
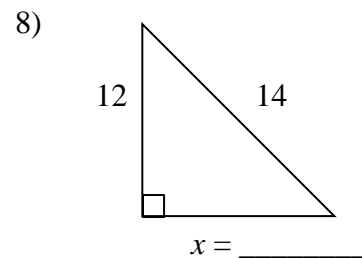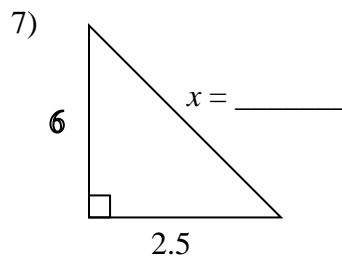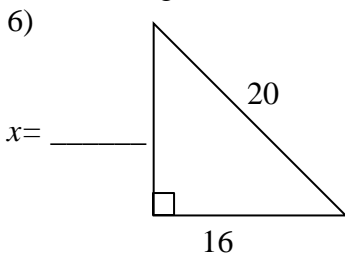
Solve for the missing angles:

9.

26°   17°   w°

10.

38°   43°   k°

11.

(3x-14)°   (-18+3x)°   (4+2x)°
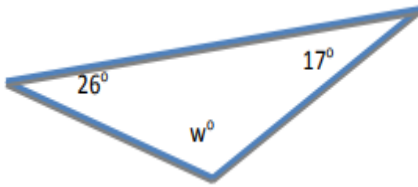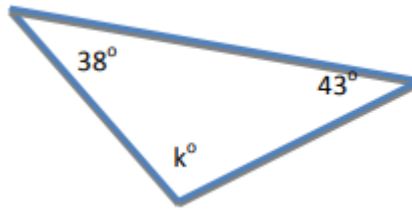
Classify the triangle:

12.

10   10   8

13.

6   8   7

14.

7   7   7

15.
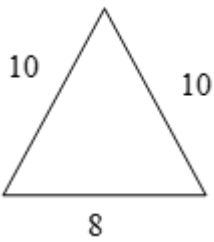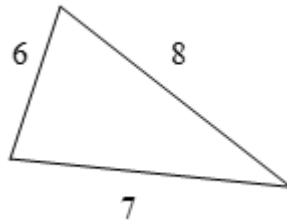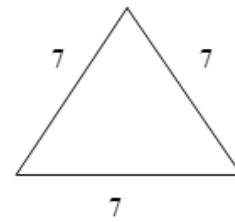
115
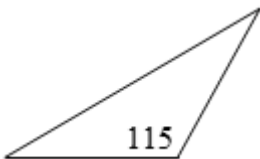
16.

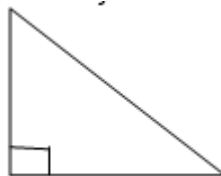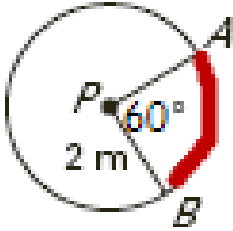## Circles:

1) The radius of a circle is 8 inches. What is the:
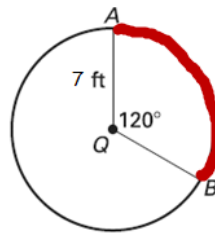   (a) diameter   (b) circumference   (c) area

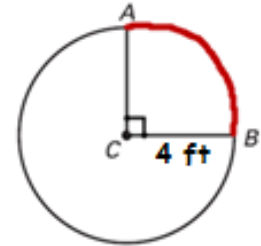2. Find the arc length of arc AB:

a.   b.   c.

Arc Length: _____   Arc Length: _____   Arc Length: _____
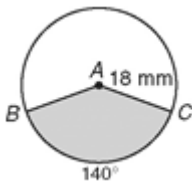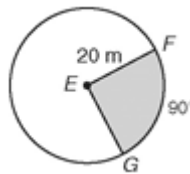
3. Find the area of the shaded sector:

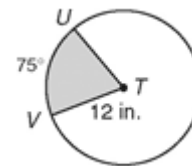a.   b.   c.
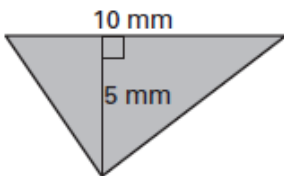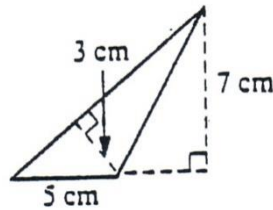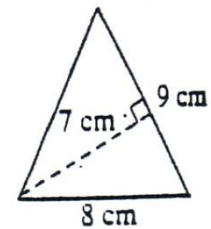
4. Find the area of the triangles:

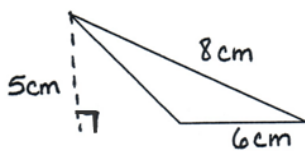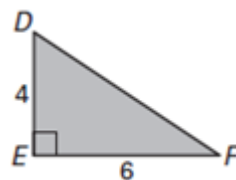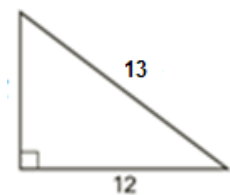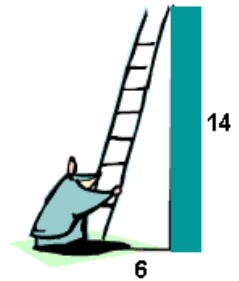a.   b.   c.

d.   e.   f.

Problem Solving:

1. The length of a rectangle is 5 cm more than three times the width. If the perimeter of the rectangle is 50 cm, what are its dimensions?

2. What is the length of the ladder? It's 6 ft. from the house at the bottom and touches the wall 14 ft. up at the top. Simplify your answer.

3. A soccer field is a rectangle 90 meters wide and 120 meters long. The coach asks players to run from one corner to the corner diagonally across the field. How far do the players run?

4. The diagonal of a rectangle is 25 in. The width is 15 in. What is the area of the rectangle?

5. The area of a square is 81 cm^2. Find the perimeter of the square.

6. How far from the base of the house do you need to place a 15' ladder so that it exactly reaches the top of a 12' wall?