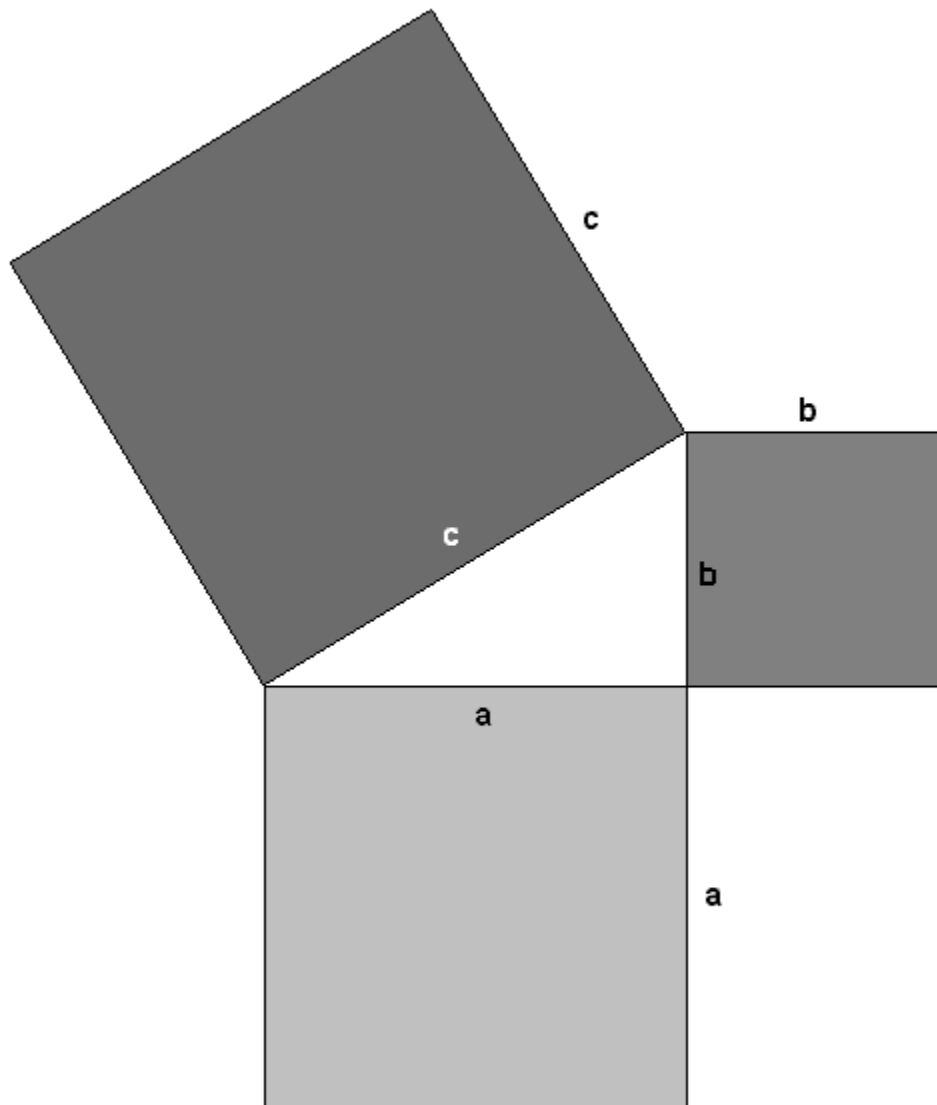


Lesson 00-B-Geometry

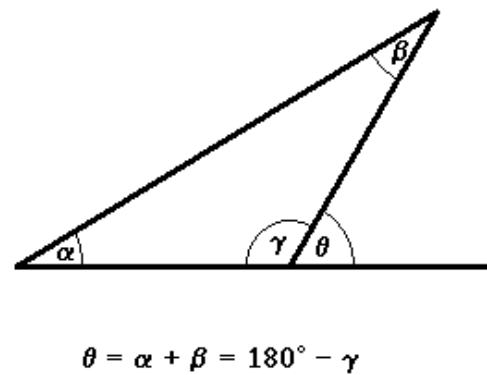
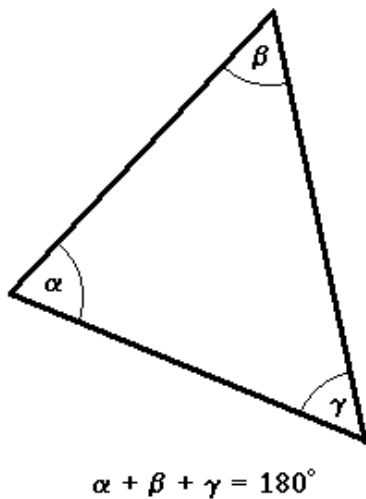
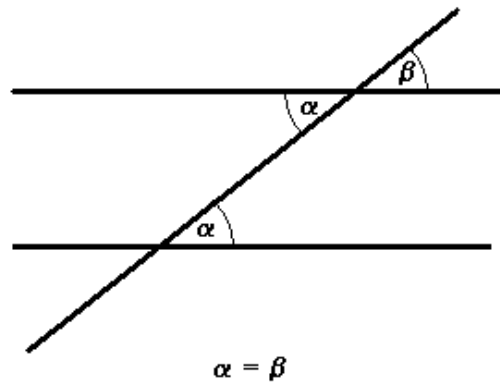
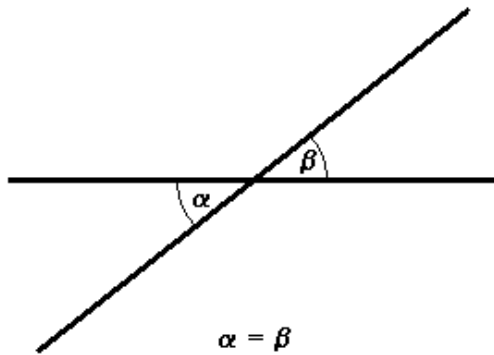
We are interested in two-dimensional physics in this course, so the geometry you need to learn is mostly plane geometry. The most important relationship in plane geometry is the Pythagorean Theorem, which relates the sides, a and b , of a right triangle to the hypotenuse, c ;

$$c^2 = a^2 + b^2$$

The figure below illustrates the Pythagorean Theorem. It can be viewed as a statement about the areas of the squares mounted on each of the three sides.



Lines and Triangles - The following figures illustrate some important angular relationships when lines intersect and among the inside and outside angles of any triangle. We see plenty of triangles in force diagrams and these angular relationships will help you work through problems involving the forces in these diagrams.



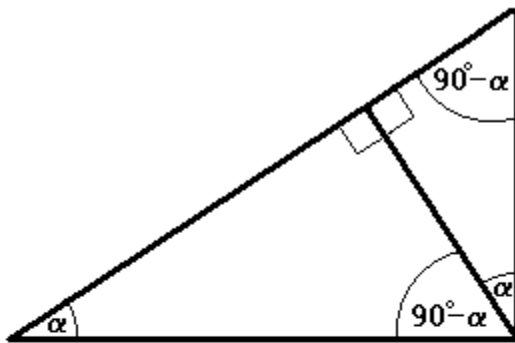
Study these diagrams very carefully. Familiarity with these principles will pay off many times over during the course of this year. Even if they seem familiar and obvious, it will still be up to you to spot the opportunities that occur within the problems we are trying to understand. The principles of geometry are encountered very frequently in your homework assignments and in the work we do in the classroom.

Right Triangles - The right triangle is the triangle that we exploit most frequently. It lends itself to our ends with surprising regularity. Therefore, you need to familiarize yourself with the diagrams below with especial diligence.

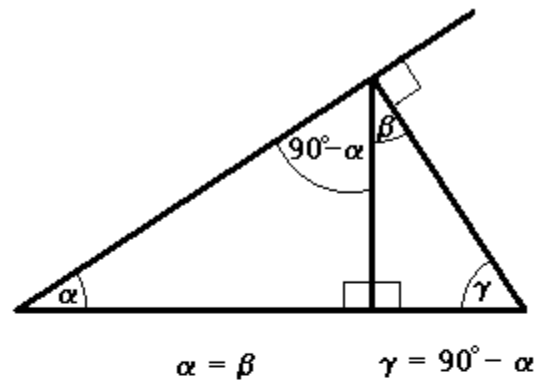
The first set shows the many different ways we can apply a right triangle to an incline. We will use diagrams like these to work out the components of force on inclines later in the course.

The second set shows the two most commonly encountered right triangles with integer sides.

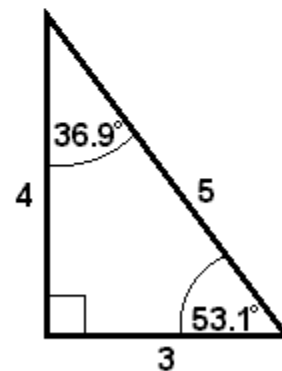
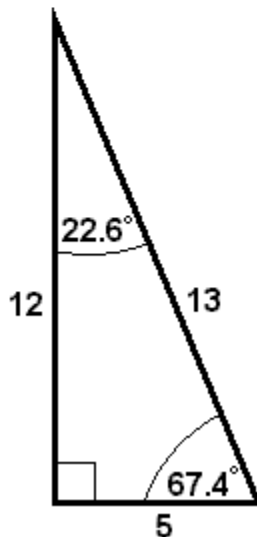
Three Similar Triangles



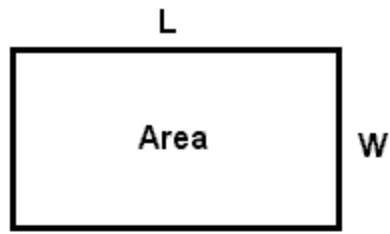
Three Similar Triangles



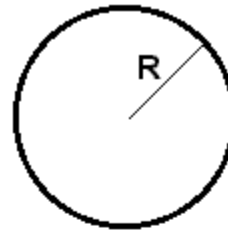
Triangles with Integer Sides



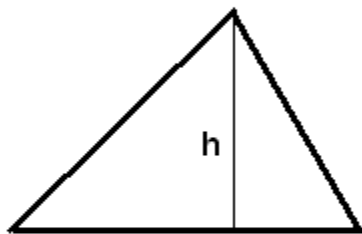
Plane Figures – Here are some important formulas for simple plane figures.



$Area = LW$
 $Circumference = 2L + 2W$



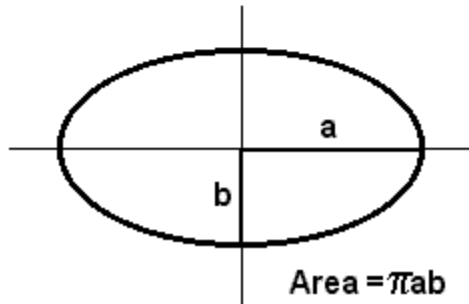
$Area = \pi R^2$
 $Circumference = 2\pi R$



$Area = \frac{1}{2}bh$



$Area = bh$



$Area = \pi ab$