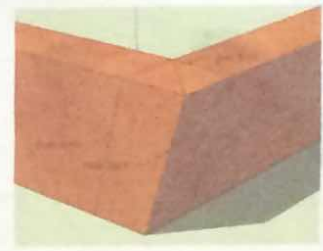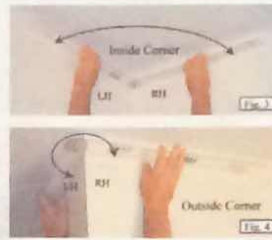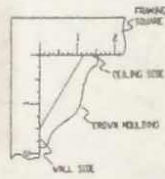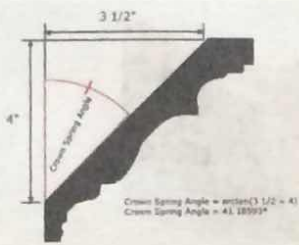# CROWN MOLDING AND OTHER COMPOUND ANGLES

Crown molding angles are the same as roof sheathing angles. The miter angle is the same as the face cut angle of the plywood along the hip rafter. The bevel angle is the same as the hip backing angle and if you were to miter the plywood along the hip this would be the angle to use. It cannot be stressed enough that the next two formulas given have so many applications that the reader would be well advised to commit them to memory. Note: <u>spring angle defined as degrees off vertical -slope is degrees off the horizontal.</u>

Lets assume that the wall angle is 90°, and 1/2 of that is 45° and the spring angle is 38°
It should be noted that the tan of 45 is 1 so a short cut is to find sine of spring angle then the arctan of that

Crown Miter Angle=ARCTAN (sine(spring angle) ÷ tan(1/2 wall angle)

Crown Miter Angle=ARCTAN (sine 38°) ÷ tan (45°)= $\boxed{31.62°}$

Sine of 38°=.615661475325658÷1=.615661475325658

The ARCTAN of .615661475325658=31.61900653746454

Crown bevel Angle=ARCSINE (cosine(spring angle)×cosine(1/2 wall angle)

Crown bevel Angle=ARCSINE (cosine(38°)×cosine (45°)= $\boxed{33.86°}$

Cosine of 38°=.788010753606722×cosine of 45°=.707106781186548=.557207747523235
The ARCSINE of .557207747523235=33.86291398096768° rounded off to 33.86°

Hopper Joint Butt Angle= 90-(2×bevel angle)--The miter angle stays the same, only the bevel angle changes

The step box that I presented in the May meeting has 15° sloping sides (spring angle) with a Butt joint.

The bevel angle (blade tilt) was 3.84°. The math was cosine of 15°×cosine of 45°=.683012701892219 then use the

2nd trig function to get the arcsine of that number which was 43.079° then multiply that by 2 equaling 86.159 and then

subtracting that from 90° equaling 3.841°.

  When doing crow molding the spring angle will be the same thru out the job so put that in the memory of the

calculator. Each corner will be different so measure that and divide by 2. example corner = 93°÷2=46.5° The cosine

of 46.5=.688354575693754×the memory of cal.= a number then use 2nd trig function to get arcsine of that number

and that will be the degrees for blade tilt. (Note ARCVALUE always gives you the degrees of an angle) note2(set calculator to degrees NOT radians)

  When figuring the miter I put the tangent of wall angle÷2 in the memory of cal. Then clear all but memory. Then

enter 38 hit sine then divide by memory recall and get a number then hit 2nd function and hit arctan for the degrees to

set miter. All this and more can be done with a $12 TI calculator and you will not be dependent on a $100+

construction master calculator or the internet calculators that do all the work but leave feeling like you can't do this

without us.   I use my I-Phone :-)