Angle of the Taper Examples

The angle of a taper can be found with the following formula.
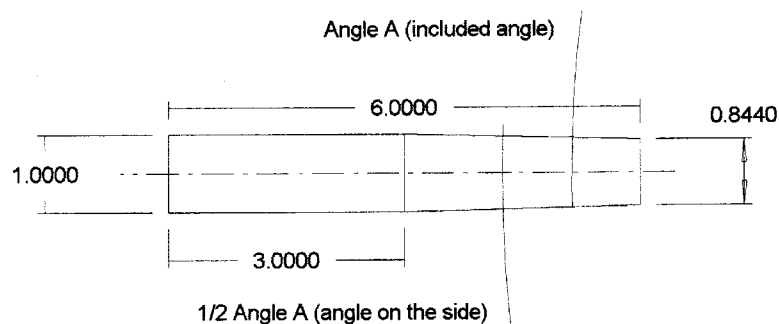
$$\tan \tfrac{1}{2} A = \frac{D-d}{2 \, x \, TL}$$

D = diameter at large end

d = diameter at small end

TL = length of taper

Tangent of an angle = side opposite divided by the side adjacent.
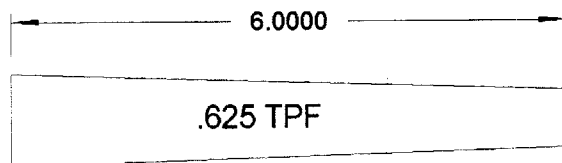
A = the included angle of the taper

Angle A (included angle)

6.0000   0.8440

1.0000

3.0000

1/2 Angle A (angle on the side)

For the example above:

$$\tan \tfrac{1}{2} A = \frac{D-d}{2 \, x \, TL} = \frac{1.000 - .844}{2 \, x \, 3.000} = \frac{.156}{6} = .026$$

$\tan \tfrac{1}{2} A = .02600$ This is the value you convert to an angle with your calculator or by lookup chart.

$\tfrac{1}{2} A = 1° \ 30"$
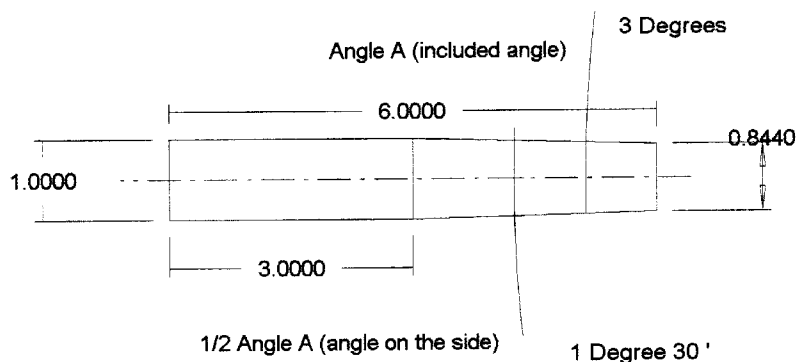
$A = 3°$

Find the included angle when TPF is known

.625 TPF

$$\tan \tfrac{1}{2} A = \frac{TPF}{2x12}$$

$$\tan \tfrac{1}{2} A = \frac{.625}{2x12} = \frac{.625}{24} = .026$$

$$\tfrac{1}{2} A = 1° \ 30'$$
$$A = 3° \ 00'$$

Find the Taper per Foot if the Included Angle is Known

$$\tan \tfrac{1}{2} A = \frac{TPF}{2x12} =$$

Angle $A = 3° \ 00'$ so $\tfrac{1}{2}A = 1° \ 30'$ and the tangent of $1° \ 30'$ is .02618, therefore:

$$.02618 = \frac{TPF}{24} = .02618 \ x \ 24 = TPF$$

$$.628 = TPF$$