



# Machinist LEVEL 3 Formulas

1.  $IPM = CPT \times N \times RPM$
2.  $RPM = \frac{CS \times 4}{D}$
3.  $Pitch = \frac{1}{\text{Threads per inch (TPI)}}$
4. Depth of an external thread =  $.6134 \times Pitch$  (17/24 of the theoretical height)
5. Depth of an internal thread =  $.5413 \times Pitch$  (5/8 of the theoretical height)
6. Minor diameter of an external or internal thread = Major diameter - (2 × depth of thread)  
\* Use appropriate internal or external thread depth.
7. Pitch Diameter = Major Diameter -  $(.6495 \times Pitch)$
8. Width of crest of an external thread =  $.125 \times Pitch$
9. Width of root of an external thread =  $.166 \times Pitch$
10. Width of crest of an internal thread =  $.25 \times Pitch$
11. Width of root of an internal thread =  $.125 \times Pitch$
12. Tap drill size = Nominal diameter – PitchG17