

## Math-in-CTE Curriculum Map: Manufacturing (Welding)

CTE Course/Unit	CTE Concepts	Math Concepts	Common Core Math Standards Middle School	Common Core Math Standards High School
Tank Safety	Start up (shut down); 100% accuracy; 1/7 <sup>th</sup> rule; Adjust regulator; Max pressure; Dangers (hazards) (explosions, rupture); Tachometer analogy; <b>Shielding gas mixtures</b>	Reading gauges, scales; Finding numbers on a line (scale); Volume of cylinder; Order of operations; Lbs/ft <sup>3</sup> estimate; Vocabulary; Ratio-PSI; <b>Percent;</b> <b>Multiplication</b>	6.NS.2; 6.NS.3; 7.NS.1; 7.EE.3; 6.G.2; 6.G.3; 7.G.6; 8.G.9; 6.EE.2; 7.G.1; 6.RP.1; 6.RP.2; 6.RP.3; 7.RP.1; 7.RP.2; 7.RP.3	A.APR.1; A.APR.7; N.RN.3; N.Q.1; G.GMD.1; G.GMD.3; G.MG.2; G.MG.3
Grinder Safety	Keep hands out of the wheel; Drop wheel throw away; Check condition; Chunk off wheel; Cutting vs grinding; Know RPM; Match rpm to grinder	Circumference (diameter/ radius); Rpm to mph; Reaction time; Average each student (online reaction test); Change in size effects of speed at edge	6.NS.2; 6.NS.3; 7.NS.1; 7.EE.3; 6.G.1; 7.G.4; 7.G.6; 8.F.3	A.APR.1; A.APR.7; N.RN.3; N.Q.1; G.C0.5; G.GMD.1
Linear Measurement	Read to 1/16"; Read metric (millimeter, centimeter, meter); Estimating size	Reading a ruler; Reducing fractions; Equivalent fractions; Comparing fractions; Reasonable dimensions; Tolerance	6.NS.2; 6.NS.3; 7.NS.1; 7.EE.3; 6.NS.1; 6.EE.2; 7.NS.2; 7.NS.3	A.APR.1; A.APR.7; N.RN.3; N.Q.1; N.Q.3

Layout and cutting	Nesting parts (# coupons out of piece); Cutting off pieces; How many pieces; Kerf; Cutting coupon; Parallel to track	Area (length/width); Adding, subtracting, and multiplying fractions; Mixed numbers; Parallel lines	6.G.1; 6.G.2; 6.G.3; 7.G.1; 7.G.4; 7.G.6; 6.NS.1; 6.EE.2; 7.NS.1; 7.NS.2; 7.NS.3; 7.EE.3	G.GPE.7; G.MG.2
Squaring Projects	Using a square (types); 6-8-10; Check diagonals; 90°	Pythagorean (Triple); Right angle; Properties of rectangle/ Square; Congruent angles	8.G.6; 8.G.7; 8.G.8; 7.G.5	G.SRT.6; G.SRT.8; F.IF.8; G.CO.9; G.CO.12; G.CO.13
Angle cutting	Layout correct angle; Setup cutting equipment; Read protractor from 1 side; Material position (for correct angle to be cut); Cut 0-45; Axis point/pivot point	Measuring an angle; Read protractor; Name: acute/obtuse/ supplementary/ complimentary; Vertex of an angle	7.G.5	G.CO.9; G.CO.12; G.CO.13