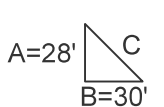


Grades & Stakes Formulas



For more Grades and Stakes info scan the QR code.

CONVERT INCHES TO DECIMAL FEET $8'' - 8/12 = 0.666 = 0.67'$ $1/4'' - 1/4 = /12 = 0.020 = 0.02'$ $8-1/4'' - 1/4 = +8 = /12 = 0.687 = 0.69'$		"GOLD"EN RULES RISE / RUN = FT/FT (NEVER ROUND) $\% / 100 = FT/FT$ (NEVER ROUND) $FT/FT \times 100 = \%$ RUN / RISE = SLOPE RATIO			
CONVERT DECIMAL FEET TO INCHES $0.25' = 0.25 \times 12 = 3''$		STATIONING EXAMPLES - 16+45 & 14+50 $1645.00 - 1450.00 = 195.00'$ APART NEGATIVE OFFSET = LEFT & POSITIVE OFFSET = RIGHT			
BASIC QUANTITIES FEET X FEET = SQUARE FEET (SQ FT) $SQ FT / 9 = SQUARE YARDS (SQ YDS)$ FEET X FEET X FEET = CUBIC FEET (CU FT) $CU FT / 27 = CUBIC YARDS (CU YDS)$		FG CUT/FILLS TO SUBGRADE SECTION + CUT = TOTAL CUT SECTION - FILL = POSITIVE # = CUT NEGATIVE # = FILL			
$A^2 + B^2 = C^2$  $(28 \times 28) + (30 \times 30)$ $784 + 900 = 1684$ $\sqrt{1684} = C = 41.04'$		SURVEYING 1 ACRE = 43560 SQ FT (66' X 660') 640 ACRES IN A SECTION SECTION DIMENSION - 1 MILE X 1 MILE 36 SECTIONS PER TOWNSHIP TOWNSHIP DIMENSION - 6 MILE X 6 MILE			
INCHES & DECIMAL FEET 12 INCHES OR 96 EIGHTHS PER FOOT 10 TENTHS OR 100 HUNDREDTHS PER FOOT 5280 FEET - 1 MILE		BENCHMARK (BM) + BACKSIGHT (BS) = HEIGHT OF INSTRUMENT (HI) HI - FORESIGHT (FS) = ELEVATION (EL) HI - EL = FORESIGHT ROD READING			
LEVEL LOOPING		BENCHMARK (BM) + BACKSIGHT (BS) = HEIGHT OF INSTRUMENT (HI) HI - FORESIGHT (FS) = ELEVATION (EL) HI - EL = FORESIGHT ROD READING			
Stake Reading with Section-Grade Rod		ROD READING ON HUB (RR)	RR+CUT RR-FILL = FG RR	FG RR + Section = SG RR	SG RR - GROUND RR = (-) = Fill (+) = Cut
Example	STAKE INFO F-1.56 To FG	SECTION THICKNESS 4" Concrete 4" Sand	5.06	(5.06-1.56) 3.50	(3.50+0.67) 4.17 F-1.08 SG
Stake Reading with Section-Lenker Rod		ROD READING ON HUB (RR)	RR-CUT RR+FILL = FG RR	FG RR - Section = SG RR	GROUND RR - SG RR = (-) = Fill (+) = Cut
Example	STAKE INFO F-1.56 To FG	SECTION THICKNESS 4" Concrete 4" Sand	3.72	(3.72+1.56) 5.28	(5.28-0.67) 4.61 F-1.10 SG
PRORATION					
SOLVING FOR STEPS = $\frac{35 \text{ (STEPS)} \times \text{(STEPS)}}{100'} = \frac{\quad}{60'}$ = 35 X 60 = /100 = 21 STEPS					
SOLVING FOR RISE = $\frac{1' \text{ (RISE)}}{4' \text{ (RUN)}} = \frac{X \text{ (RISE)}}{14' \text{ (RUN)}}$ = 14 X 1 = /4 = X = 3.5' RISE					
SOLVING FOR RUN = $\frac{1' \text{ (RISE)}}{4' \text{ (RUN)}} = \frac{5' \text{ (RISE)}}{X \text{ (RUN)}}$ = 5 X 4 = /1 = X = 20' RUN 20 X 2 (SIDES) = + DITCH BOTTOM = TOTAL TRENCH					

Common Abbreviations

•	BC/PC	Begin Curve	•	⊙ or O/S	Offset
•	BM	Bench Mark	•	PI	Point of Intersection
•	℄	Centerline	•	PL	Property Line
•	C	Cut	•	RAD	Radius Point
•	CP	<u>Catch Point</u>	•	R/W	Right-of-Way
•	EC/PT	End Curve	•	SG	Sub Grade
•	EL	Elevation	•	SS	Slope Stake
•	F	Fill	•	STA	Station
•	FG	Finished Grade	•	TBM	Temporary Bench Mark
•	FL	Flow Line	•	TC	Top of Curb
•	HP	<u>High Point</u>	•	TOE	Toe of Slope
•	INV	Invert of Drain	•	TOP	Top of Slope
•	L/O	Line Only	•	TP	Turning Point
•	MH	Manhole	•	TBC	Top Back of Curb

