

# Equation Cheat Sheet

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## Conversion

### Meters to Feet

$$\text{Meters} \times 3.28 = \text{Feet}$$

### Feet to Meters

$$\text{Feet} / 3.28 = \text{Meters}$$

### CM to Inches

$$\text{CM} \times .3937 = \text{Inches}$$

### Inches to CM

$$\text{Inches} / .3937 = \text{CMs}$$

### MM to Inches

$$\text{MM} \times .03937 = \text{Inches}$$

### Inches to MM

$$\text{Inches} / .03937 = \text{MMs}$$

### kN to Lbs

$$\text{kN} \times 224.8 = \text{Lbs}$$

### Lbs to kN

$$\text{Lbs.} / 224.8 = \text{kNs}$$

### Kilos to Lbs

$$\text{Kilos} \times 2.2 = \text{Lbs}$$

### Lbs to Kilos

$$\text{Lbs.} / 2.2 = \text{Kilos}$$

$$\text{Resultant Force} = \text{Load} (\sin \text{ of Angle} / (\sin \text{ of } (\text{Angle}/2)))$$

$$\text{Length of Bridle Leg} = \text{SQRT} ((V \times V) + (H \times H))$$

### Bridle Angle

$$\text{Angle} = (\text{TAN}^{-1} (H1 / V1)) + (\text{TAN}^{-1} (H2 / V2))$$

### Tension on Bridle Legs

$$\text{Tension on L1} = \text{Load} ((L1 \times H2) / ((V1 \times H2) + (V2 \times H1)))$$

$$\text{Tension on L2} = \text{Load} ((L2 \times H1) / ((V1 \times H2) + (V2 \times H1)))$$

$$\text{Horizontal Force on a Breastline} = \text{Load} (H1/V1)$$

### Dead hang Tension (on one end of a truss)

$$\text{Tension on L1} = \text{Load} (L1/V1)$$

### Center of Gravity for two loads on a beam

$$\text{Length of Side 1} = \text{Load 2} \times \text{Span} / \text{total load}$$

$$\text{Length of Side 2} = \text{Load 1} \times \text{Span} / \text{total load} \quad \text{or} \quad \text{Length of Side 2} = \text{Span} - \text{Length of Side 1}$$

### Simple load on a beam

$$L1 = (\text{Load} \times D1) / \text{Span} \quad \text{or} \quad L1 = \text{Load} (D1 / \text{Span}) \quad \text{if you prefer}$$

$$L2 = (\text{Load} \times D2) / \text{Span} \quad \text{or} \quad L2 = \text{Load} (D2 / \text{Span}) \quad \text{if you prefer}$$

$$\text{or} \quad L2 = \text{Load} - L1$$

### Distributed load on a beam

$$L1 = ((\text{Load1} \times D1) + (\text{Load2} \times D2)) / \text{Span}$$

$$L2 = (\text{Load1} + \text{Load 2}) - L1$$

### Complex load on a beam

$$L1 = ((\text{Load1} \times D1) + (\text{Load2} \times D2) - (\text{Load 3} \times D3)) / \text{Span}$$

$$L2 = (\text{Load1} + \text{Load 2} + \text{Load3}) - L1$$

$$\text{Shockload} = \text{Weight} ((\text{Free Fall Distance} / \text{Stopping Distance}) + 1)$$

### Fleet Angles

$$\text{Maximum Allowable Offset} = \text{Distance} \times .026$$

$$\text{Angle} = \text{ArcTangent of } (\text{Offset} / \text{Distance})$$