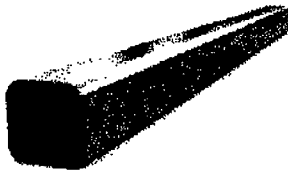


**Welding
Tolerance Worksheet**

Name Key

1. Using the given tolerances, find the longest possible length and the shortest possible length of the part.

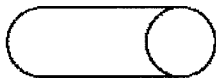


$$16' \pm \frac{1}{16} \text{ inch}$$

$$\frac{15' 11 \frac{15}{16}''}{16' \frac{1}{16}''}$$

$$\begin{aligned} 16' + \frac{1}{16}'' &= 16' \frac{1}{16}'' \\ 16' - \frac{1}{16}'' &= 15' 12'' - \frac{1}{16}'' = 15' 11 \frac{15}{16}'' \end{aligned}$$

2. Using the given tolerances, find the longest possible length and the shortest possible length of the part.



$$36'' \pm .125''$$

$$\frac{35.875''}{36.125''}$$

3. Find the acceptable range of values for a steel pipe with a length of 16 feet and a tolerance of 0.125 inches.

$$\begin{aligned} 16' - .125'' & \quad 16' + .125'' \\ 15' 12'' - .125'' & \quad 16' .125'' \\ 15' 11.875'' & \end{aligned}$$

$$15' 11.875'' \leq x \leq 16' .125''$$

4. Find the acceptable range of values for a steel pipe with a length of 12 feet and a tolerance of 0.0625 inches.

$$\begin{aligned} 12' - .0625'' & \quad 12' + .0625'' \\ 11' 12'' - .0625'' & \quad 12' .0625'' \\ 11' 11.9375'' & \quad 11' 11 \frac{15}{16}'' \end{aligned}$$

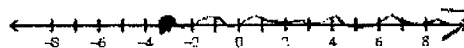
$$\begin{aligned} 11' 11 \frac{15}{16}'' &\leq x \leq 12' \frac{1}{16}'' \\ 11' 11.9375'' &\leq x \leq 12' .0625'' \end{aligned}$$

5. Solve and graph $-3x + 17 \leq 26$

$$\begin{aligned} -3x + 17 &\leq 26 \\ -3x &\leq 9 \\ \frac{-3x}{-3} &\leq \frac{9}{-3} \end{aligned}$$

$\div -3$
Flip sign

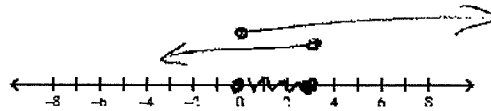
$$x \geq -3$$



6. Solve the compound inequality and graph the solution.

$$\begin{array}{rcl} 5x+10 & \geq & 10 \text{ and } 7x-7 \leq 14 \\ -10 & -10 & +7 \quad +7 \\ \hline 5x & \geq & 0 \quad 7x \leq 21 \\ \frac{5}{5} & & \frac{7}{7} \quad \frac{21}{7} \\ x & \geq & 0 \quad x \leq 3 \end{array}$$

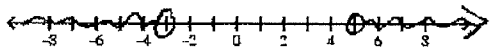
$$x \geq 0 \text{ \& } x \leq 3$$



7. Solve the compound inequality and graph the solution.

$$\begin{array}{rcl} 4x-5 & < & -17 \text{ or } 5x+6 > 31 \\ +5 & +5 & -6 \quad -6 \\ \hline 4x & < & -12 \quad 5x > 25 \\ \frac{4}{4} & & \frac{5}{5} \quad \frac{25}{5} \\ x & < & -3 \quad x > 5 \end{array}$$

$$x < -3 \text{ or } x > 5$$



8. Solve the compound inequality and graph the solution.

$$\begin{array}{rcl} -6 & \leq & 2x-4 \leq 8 \\ +4 & +4 & +4 \\ \hline -2 & \leq & 2x \leq 12 \\ \frac{-2}{2} & & \frac{12}{2} \end{array}$$

$$-1 \leq x \leq 6$$

