

1. An engine bore measures 101.6 mm and has a tolerance of $\pm .0127$ mm. Find the longest and the shortest possible diameter of the bore.

$$101.6 \pm .0127$$

Longest 101.6127 mm
Shortest 101.5873 mm

2. A piston measures 4 inches with a tolerance of $\pm .001$ inches. Find the longest possible length and the shortest possible diameter of the piston.

$$4 \pm .001$$

Longest 4.001 in
Shortest 3.999 in

3. Find the acceptable range of values for a brake rotor with a thickness of 1.125 inches and a tolerance of $\pm .003$ inches.

$$|T - 1.125| \leq .003$$

$$T - 1.125 \leq .003 \quad \& \quad T - 1.125 \geq -.003$$

$$-.003 \leq T - 1.125 \leq .003$$

$$1.122 \text{ in} \leq T \leq 1.128 \text{ in}$$

$$1.122 \leq T \leq 1.128$$

4. Find the acceptable range of values for a connecting piston rod with a length of 3.5 inches and a tolerance of $\pm .002$ inches.

$$|L - 3.5| \leq .002$$

$$L - 3.5 \leq .002 \quad \& \quad L - 3.5 \geq -.002$$

$$-.002 \leq L - 3.5 \leq .002$$

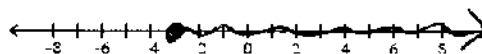
$$3.498 \text{ in} \leq L \leq 3.502$$

$$3.498 \leq L \leq 3.502$$

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

$$\begin{array}{r} -17 \quad -17 \\ -3x + 17 \leq 26 \\ \hline -3x \leq 9 \\ \div -3 \quad \text{flip sign b/c } \div \text{ by } -3 \\ x \geq -3 \end{array}$$

$$x \geq -3$$



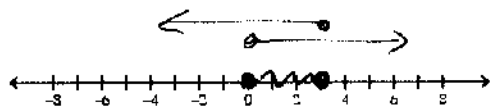
6. Solve the compound inequality and graph the solution.

$$\begin{array}{r} 5x + 10 \geq 10 \text{ and } 7x - 7 \leq 14 \\ \underline{-10 \quad -10} \quad \underline{+7 \quad +7} \end{array}$$

$$\begin{array}{r} 5x \geq 0 \quad 7x \leq 21 \\ \underline{\quad 5 \quad} \quad \underline{\quad 7 \quad} \end{array}$$

$$x \geq 0 \quad x \leq 3$$

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



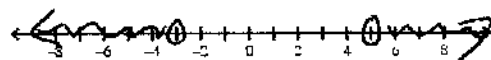
7. Solve the compound inequality and graph the solution.

$$\begin{array}{r} 4x - 5 < -17 \text{ or } 5x + 6 > 31 \\ \underline{+5 \quad +5} \quad \underline{-6 \quad -6} \end{array}$$

$$\begin{array}{r} 4x < -12 \quad 5x > 25 \\ \underline{\quad 4 \quad} \quad \underline{\quad 5 \quad} \end{array}$$

$$x < -3 \quad x > 5$$

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



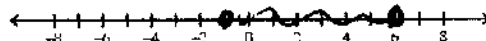
8. Solve the compound inequality and graph the solution.

$$\begin{array}{r} -6 \leq 2x - 4 \leq 8 \\ \underline{+4 \quad +4 \quad +4} \end{array}$$

$$\begin{array}{r} -2 \leq 2x \leq 12 \\ \underline{\quad 2 \quad} \quad \underline{\quad 2 \quad} \end{array}$$

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

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9. Find the acceptable range for a part with a length of 15 mm and a tolerance of .005 mm.

$$|L - 15| \leq .005$$

$$L - 15 \leq .005 \text{ \& } L - 15 \geq -.005$$

$$-.005 \leq L - 15 \leq .005$$

$$14.995 \leq L \leq 15.005$$