

A box of T-shirts contains 12 black shirts, 18 green shirts, and 6 red shirts. What percentage of the shirts are NOT red?

- A. 16%
- B. 33%
- C. 50%
- D. 83%

Percentages of a total.

Determining percentages from fractions.

Inverse of a percentage: what percent are NOT x?

Solution 1: Figure out what percentage are red, then subtract from 100 percent

$$\begin{array}{r} \text{Total shirts} = \\ 12 \text{ black} \\ 18 \text{ green} \\ +6 \text{ red} \\ \hline 36 \end{array}$$

$$\text{Percent red} = \frac{6 \text{ red}}{36 \text{ total}} = \frac{1}{6} = 0.1666$$

Percent: Move decimal 2 places to right  
(same as multiplying by 100)

$$0.1666 * 100 = 16.66\%$$

$$\text{Rounded} = 17\%$$

$$\begin{array}{r} 100\% \\ \text{total} \end{array} - \begin{array}{r} 17\% \\ \text{red} \end{array} = \begin{array}{r} 83\% \\ \text{not red} \end{array} \quad \checkmark$$

Solution 2: Figure out what percentage are NOT red directly

$$\begin{array}{r} \text{Total shirts} = \\ 12 \text{ black} \\ 18 \text{ green} \\ +6 \text{ red} \\ \hline 36 \end{array}$$

$$\begin{array}{r} 36 \\ \text{total} \end{array} - \begin{array}{r} 6 \\ \text{red} \end{array} = \begin{array}{r} 30 \\ \text{not red} \end{array} \quad \frac{\begin{array}{r} 30 \\ \text{not red} \end{array}}{\begin{array}{r} 36 \\ \text{total} \end{array}}$$

$$\frac{30}{36} = \frac{15}{18} = \frac{5}{6} \quad \text{reducing: factor of 2, 3}$$

$$\frac{5}{6} = 0.8333 * 100 = 83.33\%$$

$$\text{Rounded} = 83\% \quad \checkmark$$