

Last year, an electronics store sold 55 DVD players and an average of 4 DVDs for every 5 DVD players. This year, the store sold 84 DVD players and an average of 7 DVDs for every 4 DVD players. How many more DVDs did the store sell this year than last year?

- A. 91
- B. 103
- C. 105
- D. 147

Ratios of elements to total, subtraction.

You can determine the number sold based on groups of elements in the total (solution 1) or by applying the ratio directly (solution 2).

Solution 1: Determine number sold by number of groups in the total

$$\text{Last year} \left\{ \begin{array}{l} 4 \text{ DVDs for every } 5 \text{ DVD players} \\ 55 \text{ DVD players} = 11 \text{ groups of } 5 \text{ (} 11 * 5 \text{)} \\ 4 \text{ DVDs for each group} = 4 * 11 = 44 \text{ DVDs} \end{array} \right.$$

$$\text{This year} \left\{ \begin{array}{l} 7 \text{ DVDs for every } 4 \text{ DVD players} \\ 84 \text{ DVD players} = 21 \text{ groups of } 4 \text{ (} 21 * 4 \text{)} \\ 7 \text{ DVDs for each group} = 7 * 21 = 147 \text{ DVDs} \end{array} \right.$$

$$\begin{array}{r} \checkmark \quad 147 \quad \text{Total DVDs this year} \\ \quad - 44 \quad \text{Total DVDs last year} \\ \hline \quad 103 \quad \text{More DVDs this year than last year} \end{array}$$

Solution 2: Apply ratio directly

$$\text{Last year} \left\{ \frac{4 \text{ DVDs}}{5 \text{ players}} * 55 \text{ players} = \frac{220}{5} = 44 \text{ DVDs} \right.$$

$$\text{This year} \left\{ \frac{7 \text{ DVDs}}{4 \text{ players}} * 84 \text{ players} = \frac{588}{4} = \frac{294}{2} = 147 \text{ DVDs} \right.$$

$$\begin{array}{r} \checkmark \quad 147 \quad \text{This year} \\ \quad - 44 \quad \text{Last year} \\ \hline \quad 103 \quad \text{More sold this year} \end{array}$$