

PERCENTS

32. PERCENT FORMULA

Whether you need to find the part, the whole, or the percent, use the same formula:

$$\text{Part} = \text{Percent} \times \text{Whole}$$

Example: What is 12% of 25?

Setup: $\text{Part} = .12 \times 25$

Example: 15 is 3% of what number?

Setup: $15 = .03 \times \text{Whole}$

Example: 45 is what percent of 9?

Setup: $45 = \text{Percent} \times 9$

33. PERCENT INCREASE AND DECREASE

To increase a number by a percent, **add the percent to 100%**, convert to a decimal, and multiply. To increase 40 by 25%, add 25% to 100%, convert 125% to 1.25, and multiply by 40. $1.25 \times 40 = 50$.

34. FINDING THE ORIGINAL WHOLE

To find the **original whole before a percent increase or decrease**, set up an equation. Think of a 15% increase over x as $1.15x$.

Example: After a 5% increase, the population was 59,346. What was the population *before* the increase?

Setup: $1.05x = 59,346$

**35. COMBINED PERCENT INCREASE
AND DECREASE**

To determine the combined effect of multiple percents increase and/or decrease, **start with 100 and see what happens.**

Example: A price went up 10% one year, and the new price went up 20% the next year. What was the combined percent increase?

Setup: First year: $100 + (10\% \text{ of } 100) = 110$. Second year: $110 + (20\% \text{ of } 110) = 132$. That's a combined 32% increase.