

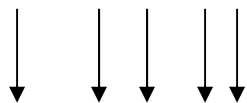
We will use our understanding to solve problems.

Again, we will keep in mind that percent is merely a way to break some **whole** into 100 equal pieces and consider a **part** of them. Recall, **percent = part / whole**. The book uses the word **base** for what I call the whole.

Here, we will see various problems involving percent. Some people will like to solve them using proportions (equations with one fraction on each side of the equal sign). Other problems will be more easily directly translated into an equation that we will then solve. Basic algebra will be needed.

Our first example could be asked in a few different ways. We could ask “Sixteen percent of 70 is what number?” or “Find 16% of 70.” or even “My restaurant bill came to \$70. If I want to leave a 16% tip, how much is that?” The wording below is yet another phrasing.

expl 1: What number is 16% of 70?



These problems can usually be directly translated.

The unknown is alone on one side of the equation. It takes little algebra to get the answer.

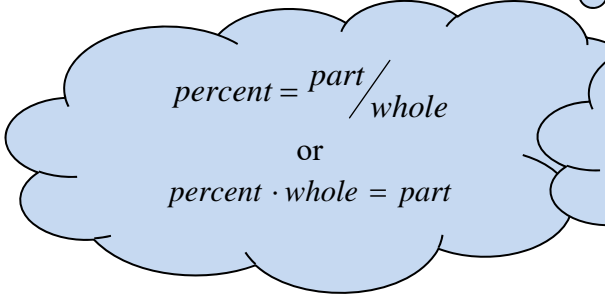
The book focuses most of its attention to solving by proportions, so let's practice that.

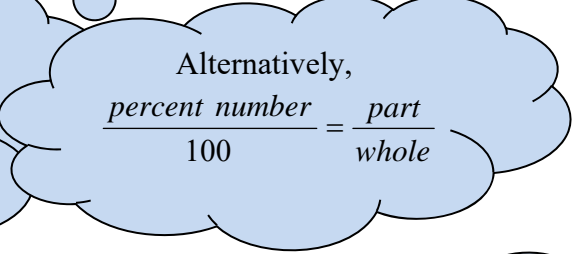
expl 2: What percent of 140 is 30? Round to the nearest tenth of a percent.

Identify the part and the whole.

Start seeing the difference between the decimal and percent forms.

There are three parts of a percent calculation, the **percent number** (like 16%, also called the **rate** in the book), the **whole** (like 70, also called the **base** in the book), and the **part** (like 11.2). Always be on the lookout for which they have given you and which they want you to find. I like to start with one of these basic equations.

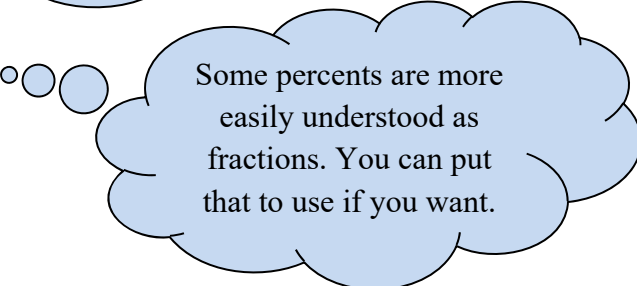

$$\begin{aligned} \text{percent} &= \frac{\text{part}}{\text{whole}} \\ \text{or} \\ \text{percent} \cdot \text{whole} &= \text{part} \end{aligned}$$



Alternatively,

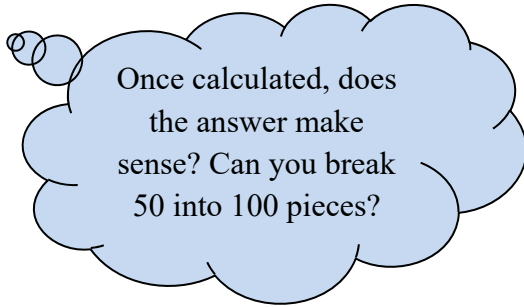
$$\frac{\text{percent number}}{100} = \frac{\text{part}}{\text{whole}}$$

expl 3: So, 12.5% of what number is 30?



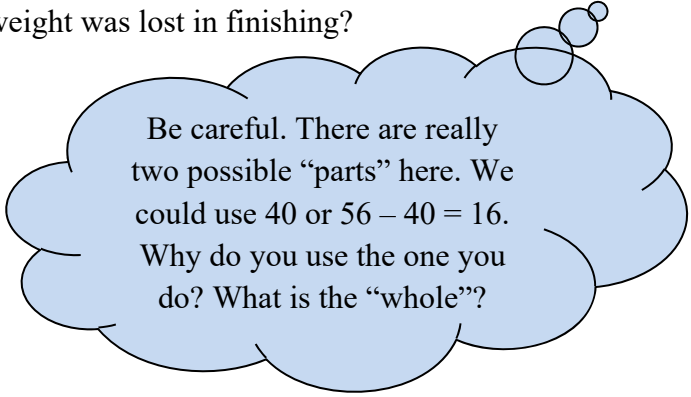
Some percents are more easily understood as fractions. You can put that to use if you want.

expl 4: So, $\frac{1}{2}$ is what percent of 50?



Once calculated, does the answer make sense? Can you break 50 into 100 pieces?

expl 5: A casting weighed 56 pounds out of the mold. It was then finished and had a finished weight of 40 pounds. What percent of the weight was lost in finishing?



Be careful. There are really two possible “parts” here. We could use 40 or $56 - 40 = 16$. Why do you use the one you do? What is the “whole”?

expl 6: A store needs to reduce its sales force by 7%. The store has 27,300 employees but 324 employees are taking an early retirement. How many *more* people will need to be laid off?

Worksheet: Percent Applications:

On this worksheet, we practice a few problems.