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## Finding the Percent of a Number Middle and Upper Level

LESSON GOAL: Quickly solve word problems and quantitative comparisons that involve finding the percent of a number.

ISEE Quantitative Comparison:
Column A
Column B
$40 \%$ of 80
$90 \%$ of 30

Solution: There are a few ways to find the percent of a number, so you can choose the one that's easiest and fastest for you.

## The Decimal Method

Convert your percentage into a decimal by moving the decimal point two places to the left. Then, multiply the number by that decimal.
Column A: $40 \%=0.4 \rightarrow 0.4 \times 80=32$
Column B: $90 \%=0.9 \rightarrow 0.9 \times 30=27$

## The Ratio Method

Convert your percentage into a ratio over 100, and then multiply the ratio by the number. Reduce and cross-cancel to make the math easier.

## Column A:

$40 \%=\frac{40}{100} \times \frac{80}{1}=\frac{2}{5} \times \frac{80}{1}=\frac{2}{1} \times \frac{16}{1}=32$

Helpful Tip: Estimate the percentage using a close fraction to make sure your answer is reasonable and ensure against decimal point errors. $40 \%$ is a little less than $50 \%$ (half), so column A should be a little less than half of 80. $90 \%$ is a little less than $100 \%$ (one whole), so your answer should be a little less than 30 .

Helpful Tip: The ratio method works best for ratios that are easily reduced to simple fractions and numbers that can cross-cancel with those fractions.

## The 10\% Shortcut

STEP 1: Find $10 \%$ of your number by moving the decimal point to the left once. If your number ends in 0 , remove the zero. Column A: $10 \%$ of $80=8 \quad$ Column B: $10 \%$ of $30=3$

STEP 2: Divide your percent by 10. Column A: $40 \% \div 10=4 \quad$ Column B: $90 \% \div 10=9$
STEP 3: Multiply your 10\% value by the percent's multiple of 10 . Column A: $8 \times 4=32$ Column B: $9 \times 3=27$
Helpful tip: Use the $10 \%$ shortcut to mentally calculate percentages that are multiples of 10 (30\%, 70\%, etc). You can also use it with multiples of 5 , as $5 \%$ is half of $10 \%$.

No matter which method you use, column A is greater.

