Module 1: Thinking Proportionally

TOPIC 4: PROPORTIONAL RELATIONSHIPS

In this topic, students use their knowledge of proportionality to solve real-world problems about money and scale drawings. They solve a wide variety of multistep ratio and percent problems, including problems about tax, markups and markdowns, gratuities, simple interest, commissions, and scale factors and drawings. Students use percent models, proportions, and the constant of proportionality to solve markup and markdown problems. In addition to considering scenarios involving money, students calculate percent increase and decrease using geometric objects.
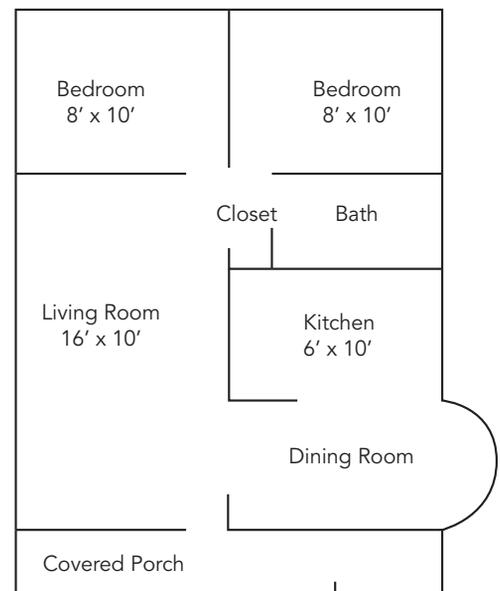
Where have we been?

In grade 6, students used ratio strategies, including models and forming equivalent ratios, to solve percent problems involving determining the whole given a part and the percent. In previous lessons in this course, students learned and practiced solving proportions using means and extremes.
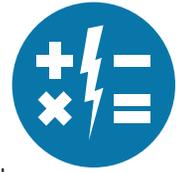
Where are we going?

Students learn financial literacy skills related to taxes and fees, commissions, markups and markdowns, tips, simple interest, and percent increase and decrease, including depreciation. They learn how to use proportional reasoning to estimate, calculate, and judge the reasonableness of results of everyday percent problems they will encounter throughout their lives.

Using a Scale Drawing to Solve Problems

The scale drawing is a blueprint for one floor of a new house. Knowing that the scale is the ratio 3 cm : 10 ft can help you determine the actual dimensions of objects in the scale drawing.

Bedroom
8' x 10'

Bedroom
8' x 10'

Closet   Bath

Living Room
16' x 10'

Kitchen
6' x 10'

Dining Room

Covered Porch

Myth: There is one right way to do math problems.

Employing multiple strategies to arrive at a single, correct solution is important in life. Suppose you are driving in a crowded downtown area. If one road is backed up, then you can always take a different route. If you know only one route, then you're out of luck.

Learning mathematics is no different. There may only be one right answer, but there are often multiple strategies to arrive at that solution. Everyone should get in the habit of saying: Well, that's one way to do it. Is there another way? What are the pros and cons? That way, you avoid falling into the trap of thinking there is only one right way because that strategy might not always work or there might be a more efficient strategy.

Teaching students multiple strategies is important. This helps students understand the benefits of the more efficient method. In addition, everyone has different experiences and preferences. What works for you might not work for someone else.

#mathmythbusted

Talking Points

You can further support your student's learning by asking them to take a step back and think about a different strategy when they are stuck.

Questions to Ask

- What strategy are you using?
- What is another way to solve the problem?
- Can you draw a model?
- Can you come back to this problem after doing some other problems?

Key Terms

percent increase
A percent increase is the ratio of the amount of increase to the original amount, written as a percent.

percent decrease
A percent decrease is the ratio of the amount of decrease to the original amount, written as a percent.

depreciation
Depreciation is decrease in price or value. A car's value depreciates over time.

similar figures
Figures that are proportional in size, or that have proportional dimensions, are called similar figures.