

# Part of a Percent

Let's explore percentages smaller than 1%.

**7.1**

## Math Talk: Dividing by 100

Find the value of each expression mentally.

- $14 \div 100$
- $7 \div 100$
- $3.5 \div 100$
- $103.5 \div 100$

## 7.2 Fractions of a Percent

1. Find each percentage of 60. What do you notice about your answers?

30% of 60

3% of 60

0.3% of 60

0.03% of 60

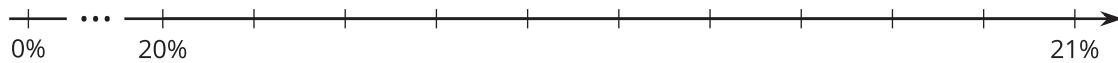
2. 20% of 5,000 is 1,000, and 21% of 5,000 is 1,050. Find each percentage of 5,000, and be prepared to explain your reasoning. If you get stuck, consider using the double number line diagram.

a. 1% of 5,000

b. 0.1% of 5,000

c. 20.1% of 5,000

d. 20.4% of 5,000



3. 15% of 80 is 12, and 16% of 80 is 12.8. Find each percentage of 80, and explain your reasoning.

a. 15.1% of 80

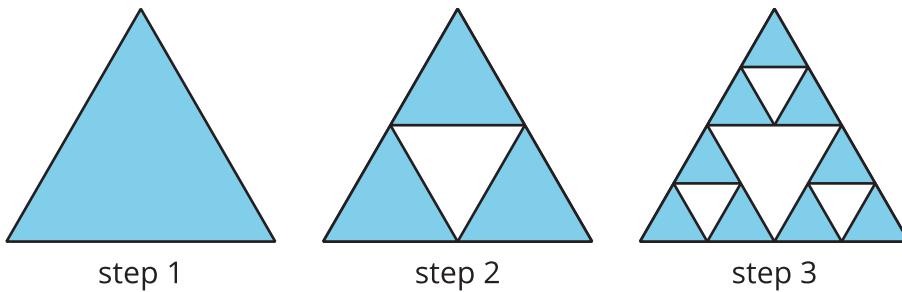
b. 15.7% of 80



### Are you ready for more?

To make Sierpinski's triangle,

- Start with an equilateral triangle. This is step 1.
- Connect the midpoints of every side, and remove the middle triangle, leaving three smaller triangles. This is step 2.
- Do the same to each of the remaining triangles. This is step 3.
- Keep repeating this process.



1. What percentage of the area of the original triangle is left after step 2? Step 3? Step 10?
2. At which step does the percentage first fall below 1%?

## 7.3 Population Growth

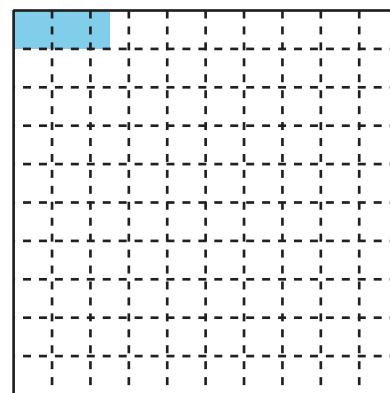
1. The population of City A was approximately 243,000 people. It increased by 8% in one year. What was the new population?
2. The population of City B was approximately 7,150,000. It increased by 0.8% in one year. What was the new population?
3. Lin says that City A grew by more. Andre says that City B grew by more. Do you agree with either of them? Explain your reasoning.

### Lesson 7 Summary

A percentage, such as 30%, is a rate per 100. To find 30% of a quantity, we multiply it by  $30 \div 100$ , or 0.3.

The same method works for percentages that are not whole numbers, like 7.8% or 2.5%. In the square, 2.5% of the area is shaded.

To find 2.5% of a quantity, we multiply it by  $2.5 \div 100$ , or 0.025. For example, to calculate 2.5% interest on a bank balance of \$80, we multiply  $(0.025) \cdot 80 = 2$ , so the interest is \$2.



We can sometimes find percentages like 2.5% mentally by using convenient whole-number percentages. For example, 25% of 80 is one fourth of 80, which is 20. Since 2.5 is one tenth of 25, we know that 2.5% of 80 is one tenth of 20, which is 2.

