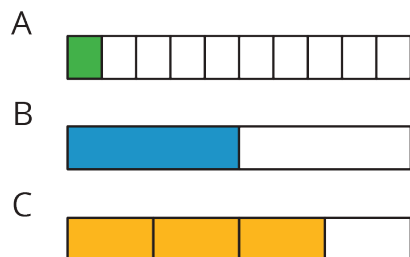# Lesson 22: Benchmark Percentages

Let's contrast percentages and fractions.

22.1: What Percentage Is Shaded?

What percentage of each diagram is shaded?

A

B

C

22.2: Liters, Meters, and Hours

1. a. How much is 50% of 10 liters of milk?

   b. How far is 50% of a 2,000-kilometer trip?

   c. How long is 50% of a 24-hour day?

   d. How can you find 50% of any number?

10

2,000

   | ? | |

   50%

2. a. How far is 10% of a 2,000-kilometer trip?

   b. How much is 10% of 10 liters of milk?

   c. How long is 10% of a 24-hour day?

   d. How can you find 10% of any number?

3. a. How long is 75% of a 24-hour day?

   b. How far is 75% of a 2,000-kilometer trip?

   c. How much is 75% of 10 liters of milk?

   d. How can you find 75% of any number?
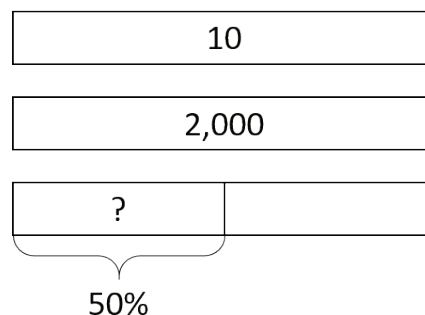
22.3: Nine is . . .

Explain how you can calculate each value mentally.
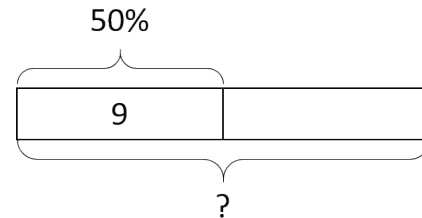
1. 9 is 50% of what number?

2. 9 is 25% of what number?

3. 9 is 10% of what number?

4. 9 is 75% of what number?

5. 9 is 150% of what number?

22.4: Matching the Percentage

Match the percentage that describes the relationship between each pair of numbers. One percentage will be left over. Be prepared to explain your reasoning.

1. 7 is what percentage of 14?   • 4%

2. 5 is what percentage of 20?   • 10%

3. 3 is what percentage of 30?   • 25%

4. 6 is what percentage of 8?   • 50%

5. 20 is what percentage of 5?   • 75%

• 400%

Accelerated 6 Unit 2
Lesson 22

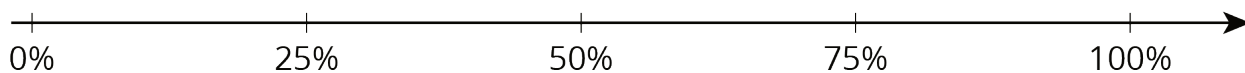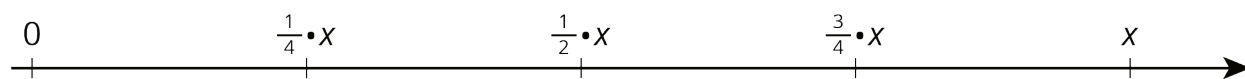CC BY Open Up Resources. Adaptations CC BY IM.

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Are you ready for more?

1. What percentage of the world's current population is under the age of 14?

2. How many people is that?

3. How many people are 14 or older?

Lesson 22 Summary

Certain percentages are easy to think about in terms of fractions.

$$0 \qquad \frac{1}{4} \cdot x \qquad \frac{1}{2} \cdot x \qquad \frac{3}{4} \cdot x \qquad x$$

0% 25% 50% 75% 100%

- 25% of a number is always $\frac{1}{4}$ of that number.
  For example, 25% of 40 liters is $\frac{1}{4} \cdot 40$ or 10 liters.

- 50% of a number is always $\frac{1}{2}$ of that number.
  For example, 50% of 82 kilometers $\frac{1}{2} \cdot 82$ or 41 kilometers.

- 75% of a number is always $\frac{3}{4}$ of that number.
  For example, 75% of 1 pound is $\frac{3}{4}$ pound.

- 10% of a number is always $\frac{1}{10}$ of that number.
  For example, 10% of 95 meters is 9.5 meters.

- We can also find multiples of 10% using tenths.
  For example, 70% of a number is always $\frac{7}{10}$ of that number, so 70% of 30 days is $\frac{7}{10} \cdot 30$ or 21 days.

$$0 \quad \frac{1}{10} \cdot x \qquad\qquad\qquad \frac{7}{10} \cdot x \qquad x$$

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

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Lesson 22

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