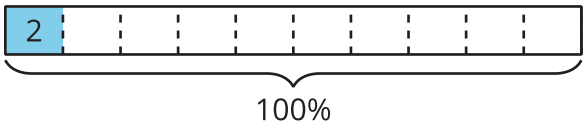
Benchmark Percentages

Let's contrast percentages and fractions.

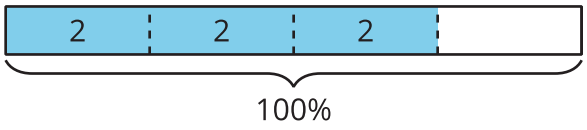
23.1 Which Three Go Together: Shaded Diagram

Which three go together? Why do they go together?

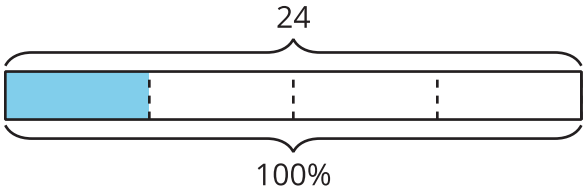
A



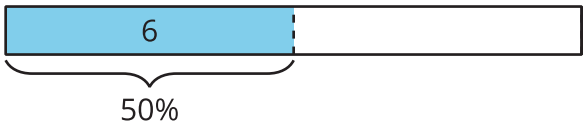
B



C



D



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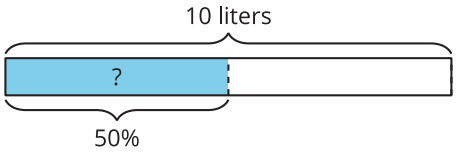
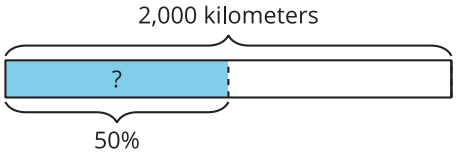
23.2 Liters, Meters, and Hours

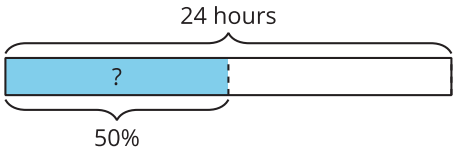
1. a. How much is 50% of 10 liters of milk?



   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?

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?

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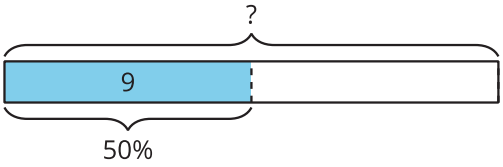
23.3 Nine Is . . .

Calculate each value mentally. Be prepared to explain your reasoning.

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?

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23.4 Shopping with Coupons

Han and Clare go shopping, and they each have a coupon.

1. Han buys an item with a normal price of $15, and uses a 10% off coupon. How much does he save by using the coupon? Show your reasoning.

2. Clare buys an item with a normal price of $24, but saves $6 by using a coupon. For what percentage off is this coupon? Show your reasoning.

Are you ready for more?

Clare paid full price for an item. Han bought the same item for 80% of the full price. Clare said, “I can’t believe I paid 125% of what you paid, Han!” Is what she said true? Explain your reasoning.

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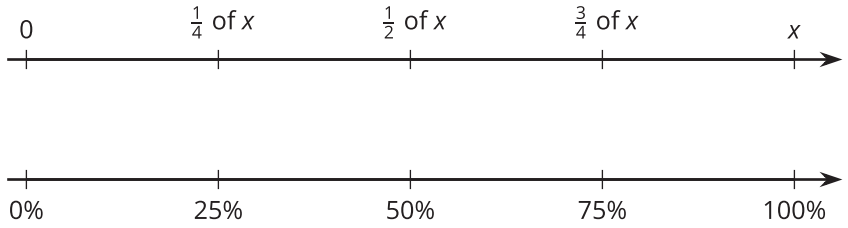
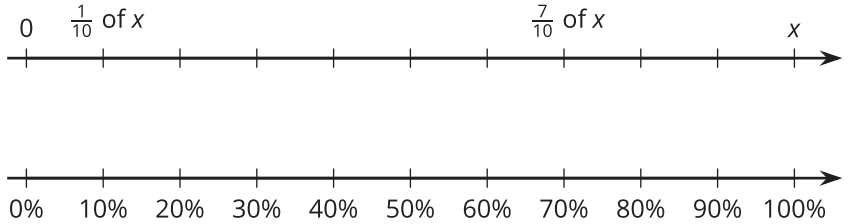
Lesson 23 Summary

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



- 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 is $\frac{1}{2} \cdot 82$, 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.



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