15.3 The Percent Proportion

Essential Question How can you use models to estimate percent questions?
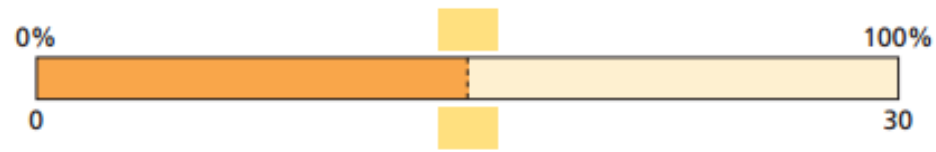
With the person next to you, complete Activity #1,2 & 4 in your workbook

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1 **ACTIVITY: Estimating a Part**

Work with a partner. Use a model to estimate the answer to each question.

a. What number is 50% of 30?

0%   100%

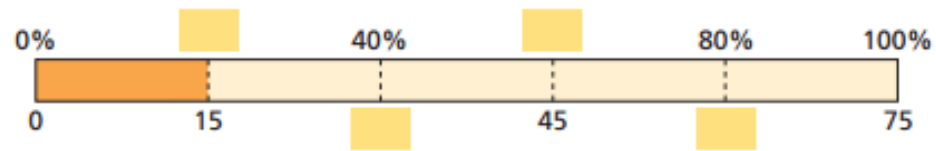0   30

∴ So, from the model, ☐ is 50% of 30.

b. What number is 75% of 30?   c. What number is 40% of 30?

d. What number is 6% of 30?   e. What number is 65% of 30?

2 ACTIVITY: Estimating a Percent

Work with a partner. Use a model to estimate the answer to each question.

a. 15 is what percent of 75?

0%		40%		80%	100%

0	15		45		75

∴ So, from the model, 15 is ☐ of 75.

b. 5 is what percent of 20?   **c.** 18 is what percent of 40?

d. 50 is what percent of 80?   **e.** 75 is what percent of 50?

4 **ACTIVITY: Using Ratio Tables**

Work with a partner. Use a ratio table to answer each question. Then compare your answer to the estimate you found using the model.

1d **a.** What number is 6% of 30?

Part	6		
Whole	100		30

1e **b.** What number is 65% of 30?

Part	65		
Whole	100		30

2c **c.** 18 is what percent of 40?

Part	18		
Whole	40		100

3e **d.** 81 is 45% of what number?

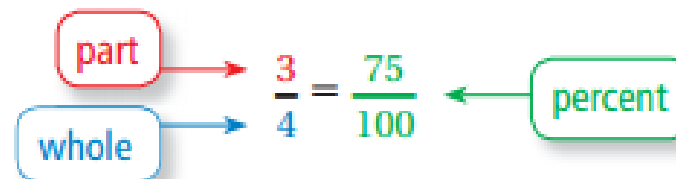| Part	45		81
Whole	100		

🔑 Key Idea

The Percent Proportion

Words You can represent "*a* is *p* percent of *w*" with the proportion

$$\frac{a}{w} = \frac{p}{100}$$

where *a* is part of the whole *w*, and *p*%, or $\frac{p}{100}$, is the percent.

Numbers   3 out of 4 is 75%.

part →

$$\frac{3}{4} = \frac{75}{100}$$ ← percent

whole →

EXAMPLE 1 **Finding a Percent**

What percent of 15 is 12?

$$\frac{a}{w} = \frac{p}{100}$$ Write the percent proportion.

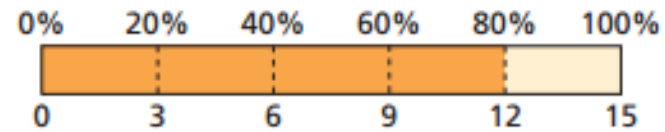$$\frac{12}{15} = \frac{p}{100}$$ Substitute 12 for a and 15 for w.

$$100 \cdot \frac{12}{15} = 100 \cdot \frac{p}{100}$$ Multiplication Property of Equality

$$80 = p$$ Simplify.

∴ So, 80% of 15 is 12.

0%	20%	40%	60%	80%	100%
0	3	6	9	12	15

EXAMPLE ② Finding a Part

What number is 36% of 50?

$$\frac{a}{w} = \frac{p}{100}$$　　　　Write the percent proportion.

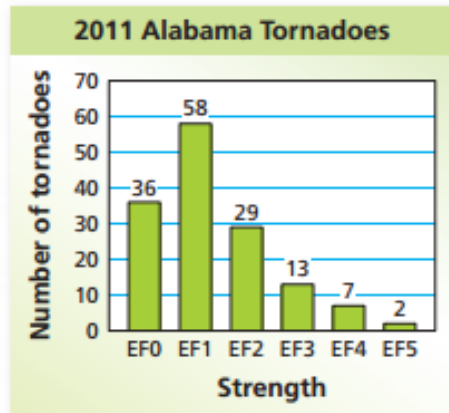$$\frac{a}{50} = \frac{36}{100}$$　　　　Substitute 50 for w and 36 for p.

$$50 \cdot \frac{a}{50} = 50 \cdot \frac{36}{100}$$　　　　Multiplication Property of Equality

$$a = 18$$　　　　Simplify.

So, 18 is 36% of 50.

EXAMPLE 4 — Real-Life Application

2011 Alabama Tornadoes

The bar graph shows the strengths of tornadoes that occurred in Alabama in 2011. What percent of the tornadoes were EF1s?

The total number of tornadoes, 145, is the *whole*, and the number of EF1 tornadoes, 58, is the *part*.

$$\frac{a}{w} = \frac{p}{100}$$ Write the percent proportion.

$$\frac{58}{145} = \frac{p}{100}$$ Substitute 58 for a and 145 for w.

$$100 \cdot \frac{58}{145} = 100 \cdot \frac{p}{100}$$ Multiplication Property of Equality

$$40 = p$$ Simplify.

⋮ So, 40% of the tornadoes were EF1s.

Classwork

Complete Page 666
#6,8,10,12,14,16,18,20

Homework

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