15.3 Record and Practice Journal

Write and solve a proportion to answer the question.

1. 40% of 60 is what number?

   $a = 0.4 \cdot 60; 24$

2. 17 is what percent of 50?

   $17 = p \cdot 50; 34\%$

3. 38% of what number is 57?

   $57 = 0.38 \cdot w; 150$

4. 44% of 25 is what number?

   $a \cdot 0.44 \cdot 25; 11$

5. 52 is what percent of 50?

   $52 = p \cdot 50; 104\%$

6. 150% of what number is 18?

   $18 = 1.5 \cdot w; 12$

7. You put 60% of your paycheck into your savings account. Your paycheck is $235. How much money do you put in your savings account?
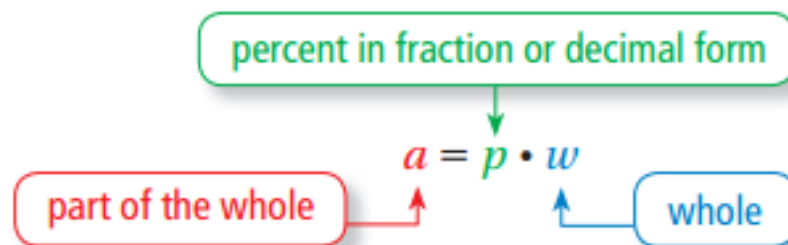
   $141

Do Now

Write and solve a proportion to answer the que

1. **11.** What percent of 25 is 12?
2. **13.** 25% of what number is 9?
3. **15.** 75% of 124 is what number?

17. What number is 0.4% of 40?

Essential Question How can you use an equivalent form of the percent proportion to solve a percent problem?

Key Idea

The Percent Equation

Words   To represent "*a* is *p* percent of *w*," use an equation.

percent in fraction or decimal form

$$a = p \cdot w$$

part of the whole   whole

Numbers $15 = 0.5 \cdot 30$
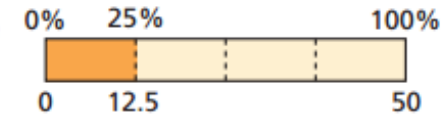
Numbers $15 = 0.5 \cdot 30$

EXAMPLE 1 — Finding a Part of a Number

What number is 24% of 50?   **Estimate**

0%   25%   100%

0   12.5   50

Common Error ⚠️

Remember to convert a percent to a fraction or a decimal before using the percent equation. For Example 1, write 24% as $\dfrac{24}{100}$.

$a = p \cdot w$ Write percent equation.

$= \dfrac{24}{100} \cdot 50$ Substitute $\dfrac{24}{100}$ for p and 50 for w.
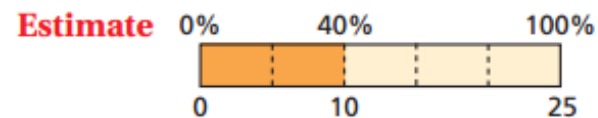
$= 12$ Simplify.

⋮ So, 12 is 24% of 50.   **Reasonable?** $12 \approx 12.5$ ✓

EXAMPLE ② **Finding a Percent**

9.5 is what percent of 25?   **Estimate** 0%   40%   100%

| 0 | 10 | 25 |

$a = p \cdot w$ Write percent equation.

$9.5 = p \cdot 25$ Substitute 9.5 for a and 25 for w.

$\dfrac{9.5}{25} = \dfrac{p \cdot 25}{25}$ Division Property of Equality

$0.38 = p$ Simplify.

∴ Because 0.38 equals 38%,   **Reasonable?** $38\% \approx 40\%$ ✓
9.5 is 38% of 25.

EXAMPLE **3** **Finding a Whole**

39 is 52% of what number?   **Estimate** 0%   50%   100%

0   39   78

$a = p \cdot w$ Write percent equation.

$39 = 0.52 \cdot w$ Substitute 39 for a and 0.52 for p.

$75 = w$ Divide each side by 0.52.

So, 39 is 52% of 75.   **Reasonable?** $75 \approx 78$ ✓

🔴 **On Your Own**

Write and solve an equation to answer the question.

1. What number is 10% of 20?   2. What number is 150% of 40?

3. 3 is what percent of 600?   4. 18 is what percent of 20?

5. 8 is 80% of what number?   6. 90 is 18% of what number?

EXAMPLE 4 Real-Life Application

8th Street Cafe

DATE: MAY04'13 05:45PM
TABLE: 29
SERVER: JANE

Food Total   27.50
Tax   1.65
                  ─────
Subtotal   29.15

TIP: _____

TOTAL: _____

Thank You

a. Find the percent of sales tax on the food total.

Answer the question: $1.65 is what percent of $27.50?

$a = p \cdot w$ Write percent equation.

$1.65 = p \cdot 27.50$ Substitute 1.65 for a and 27.50 for w.

$0.06 = p$ Divide each side by 27.50.

∴ Because 0.06 equals 6%, the percent of sales tax is 6%.

b. Find the amount of a 16% tip on the food total.

Answer the question: What tip amount is 16% of $27.50?

$a = p \cdot w$ Write percent equation.

$= 0.16 \cdot 27.50$ Substitute 0.16 for p and 27.50 for w.

$= 4.40$ Multiply.

∴ So, the amount of the tip is $4.40.

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Complete Page 672
#4,6,8,10,12,14,16,18,22

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