



3.7 Solve Percent Problems

Key

JOG your memory...remember that middle school math:

Write $\frac{1}{2}$ as a percent: **50%**

Write .5 as a percent: **50%**

.50

Write $\frac{1}{4}$ as a percent: **25%**

Write 1.28 as a percent: **128%**

Write $\frac{1}{12}$ as a percent: **.08 $\bar{3}$ 8. $\bar{3}$ %**

Write .178 as a percent: **17.8%**

STOP....In the name of **MATH!**
We use **percents** ALL the time in real life. EVERY TIME we shop or go out to eat, or check taxes, or..... I could keep going.



If you can do the problem in your head OR quickly with a calculator, there is NO NEED for a formal set up!!!



Think about it/Talk about it with your partner: Write down only the final answer. (NO CALCULATOR)

1. You go out to mini golf with a big group of friends, and the total bill is \$75. You have a coupon to save 10%. How much money do you save on your total?

75.00 \$7.50



2. You go out to dinner with your parents, and the total bill is \$90. The service was great, and your parents want to tip 20%. How much money should they add to the bill?

90.00 + 9.00 9 * 2 = \$18.00

3. You keep your eye out at the clearance racks at the mall - your favorite shirt is currently 25% off! Yay! How much money will you pay for a shirt that was originally \$32.00.

32 / 4 = 8 32 - 8 = \$24



Can you find the following percents? You may use your calc

4. What is 35% of 70?

**part = % * total
.35 * 70
24.5**

5. 18 is what percent of 96?

**method 1 $\frac{18}{96} = \frac{x}{100}$
method 2 $\frac{18}{96} = .1875$
**96x = 1800
x = 18.75%****

6. You need a new pair of shoes for basketball. They are \$79.99 with 35% off. (Take out your cell phone)

a. What is the price of the shoes (before taxes).

**.35 * 79.99 = 28.00
discount**

79.99 - 28 = \$51.99

b. If tax is 8%, how much will you pay in taxes?

51.99 * .08 = \$4.16



If you aren't sure ... then what!?! Sometimes a formal set up may help you – although NOT always necessary.



You can represent "a is p percent of b" using a **proportion**:

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

You can represent "a is p percent of b" using the **equation**:

$$p \cdot b = a$$

decimal → needs to be changed to %

Let's try BOTH ways, then YOU decide which you like better.

Ex. 1: What percent of 25 is 17?

Proportion method:

$$\frac{17}{25} = \frac{p}{100}$$

Labels: $\frac{a}{b} = \frac{p}{100}$ where $a=17$, $b=25$, p is unknown.

Calculation: $\frac{17}{25} \times \frac{4}{4} = \frac{68}{100}$ (multiplying numerator and denominator by 4)

Result: $p = 68\%$

Equation method:

$$17 = p \cdot 25$$

$$\frac{17}{25} = p$$

$$.68 = p$$

Result: 68%

Ex. 2: What number is 45% of 92?

Proportion method:

$$\frac{a}{92} = \frac{45}{100}$$

Labels: $\frac{a}{b} = \frac{p}{100}$ where a is unknown, $b=92$, $p=45$.

Calculation: $100a = 45 \cdot 92$
 $100a = 4140$
 $a = 41.4$

Equation method:

$$a = .45 \cdot 92$$

Result: $a = 41.4$

Ex. 3: 50 is 125% of what number?
 (You try – with whichever method you prefer)

Proportion method:

$$\frac{50}{b} = \frac{125}{100}$$

Labels: $\frac{a}{b} = \frac{p}{100}$ where $a=50$, b is unknown, $p=125$.

Calculation: $125b = 5000$
 $b = 40$

Equation method:

$$50 = 1.25 \cdot b$$

Result: $40 = b$

Ex. 4: You went to the grocery store and paid \$2.79 for a box of your favorite cereal. You know that the cereal is regularly \$3.99. What percentage did you save on this purchase?

Proportion method:

$$\frac{2.79}{3.99} = \frac{p}{100}$$

Labels: $\frac{a}{b} = \frac{p}{100}$ where $a=2.79$, $b=3.99$, p is unknown.

Calculation: $279 = 3.99p$
 $70 = p$

you PAID 70% ... which means you **SAVED** 30%!

