Unit 42 Word Problems Using Percentages
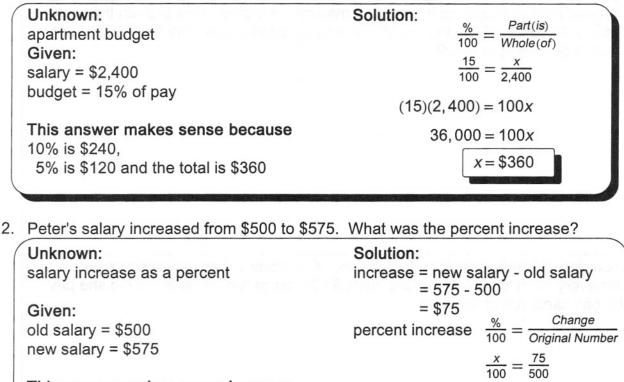
1) Judy wants to spend 15% of her $2,400 monthly take-home pay on an apartment. How much should she budget for an apartment?

Unknown:
apartment budget
Given:
salary = $2,400
budget = 15% of pay

This answer makes sense because
10% is $240,
  5% is $120 and the total is $360

Solution:

$$\frac{\%}{100} = \frac{Part(is)}{Whole(of)}$$

$$\frac{15}{100} = \frac{x}{2,400}$$

$$(15)(2,400) = 100x$$

$$36,000 = 100x$$

$$\boxed{x = \$360}$$

2. Peter's salary increased from $500 to $575. What was the percent increase?

Unknown:
salary increase as a percent

Given:
old salary = $500
new salary = $575

This answer makes sense because
a 10% increase is $50
  5% increase is $25
    so a 15% is $75.

Solution:
increase = new salary - old salary
       = 575 - 500
       = $75
percent increase $\frac{\%}{100} = \frac{Change}{Original\ Number}$

$$\frac{x}{100} = \frac{75}{500}$$

$$500x = (100)(75)$$

$$500x = 7,500$$

$$\boxed{x = 15\%}$$

3. Paul, who earns $5.50 per hour, received an 8% raise. He works 40 hours and must pay federal income taxes of 20%. What are his taxes?

Unknown:
taxes paid

Given:
old rate = $5.50
raise = 8%
tax = 20%
worked 40 hours

This answer makes sense because
1) 10% would be $.55
2) $5.94 - $.44 = $5.50
3) ($6)(40) = $240 ≈ $237.60
4) (.2)($250) = $50 ≈ $47.52

Solution:
1) raise: $\frac{\%}{100} = \frac{Part(is)}{Whole(of)}$ and $\frac{8}{100} = \frac{x}{5.50}$

$$44 = 100x$$
$$x = \$.44$$

2) new rate = old rate + raise
          = 5.50 + .44 = $5.94
3) new salary = (new rate)(hours)

$$= (5.94)(40) = \$237.60$$

4) taxes: $\frac{\%}{100} = \frac{Part(is)}{Whole(of)}$ and $\frac{20}{100} = \frac{x}{237.60}$

$$(20)(237.60) = 100x$$

$$\boxed{x = \$47.52}$$