

## Learning Skills, Room 120

### Math Study Guide: Percents, Fractions & Ratios

#### Converting Fractions and Percents

##### 1. To convert from a percent to a fraction:

- Write the number without a percent sign
- Multiply by  $1/100$  to turn it into a fraction
- Reduce the resulting fraction to lowest terms

Example:

*Convert 15% to a fraction.*

15% becomes 15

$15 \times 1/100 = 15/100$

$15/100 = 3/20$

$15\% = 3/20$

##### 2. To convert from a fraction to a percent

- Multiply the fraction by  $1/100$
- Divide the numerator (top #) by the denominator (bottom #)
- Add the % sign to the result

Example:

*Convert  $3/20$  to a percent.*

$3/20 \times 1/100 = 300/20$  (remember to  
"cross multiply")

$300 \div 20 = 15$

$3/20 = 15\%$

#### Solving Percent Problems using Proportions

- $\text{part}/\text{total} = \text{percent}/100$   
(use x to indicate the unknown)

##### 1. Find the part when the percent and total are known

*25% of 16 is what number?*

The percent is known, the total is known, the part is unknown (x) so

$x/16 = 25/100$  now, cross-multiply

$100x = 16 \times 25$

$100x = 400$  solve for x by dividing

$x = 400/100$

$x = 4$       *25% of 16 is 4*

##### 2. Find the total when the part and percent are known

*25% of what number is 10?*

The percent is known, the part is known, the total is unknown (x) so

$10/x = 25/100$  now, cross-multiply

$25x = 1000$

$x = 1000/25$  solve for x by  
dividing

$x = 40$       *25% of 40 is 10*

##### 3. Find the percent when the part and total are known

*What percent of 200 is 50?*

The total is known, the part is known, the percent is unknown (x) so

$x/100 = 50/200$  now, cross multiply

$200x = 5000$

$x = 5000/200$  solve for x by  
dividing

$x = 25$       *25% of 200 is 50*

- $\text{part}/\text{total} = \text{percent}/100$  (use x to indicate the unknown)

### **Practice Solving Percent Problems using Proportions**

#### **Find the part when the percent and the total are known**

1. 20% of 40 is what number?
2. 5% of 75 is what number?
3. 25% of 800 is what number?
4. What is 12% of 55?
5. What is  $12\frac{1}{2}\%$  of 55?
6. What is  $43\frac{1}{2}\%$  of 950?
7. Ed got 65% on a test out of 80. What mark did he get?
8. 75% of the solution is water. How much water is there is in 500 ml of solution?

#### **Find the total when the part and percent are known**

9. 25 is 50% of what number?
10. 72 is 20% of what number?
11. 8 is 75% of what number?
12. Ed received \$5,000, which was 25% of the total winnings. What was the total amount of winnings?
13. Ed got 62% of the total votes. He got 740

votes. How many votes were cast?

14. Jan phoned 12% of the people on the voters' list. She phoned 100 people. How many names were on the list?

#### **Find the percent when the part and the total are known**

15. 16 of the 920 ballots were spoiled. What percentage of the ballots were spoiled?
16. 3 of the 24 flowers in the bouquet are red. What percentage of flowers are red? What percentage of flowers were not red?
17. 2 of the 24 children in the class were not present. What percent was present?
18. Of the 28 homes on the street, 2 were not lit up for Christmas. What percentage of homes had lights?
19. The following deductions were made from Ed's gross earnings of \$1,245.75. What is the percentage of each deduction? Round your answers to one decimal place.
  - a. Income tax = \$249.34
  - b. CPP = 24.45
  - c. Employment Insurance = \$19.72
  - d. Union dues = 20.00