**Percent Unit – Cheat sheet covering most of the problem types**

1. Converting a percent into a decimal. Divide by 100. In other words, move the decimal point two places to the left.
   - 55% = .55  8% = .08

2. To find the percent of a number. Change the percent to a decimal and then multiply by the value
   - What is 40% of 150?
   - .4 X 150 = 60

3. Determine the percent value of a ratio or fraction. There are multiple methods.
   - Ashley's test score was 25 out of 30. What is her percent score?
     - 25 / 30 X 100% = 83.3%
   - If the fraction or ratio allows it, use the "go backward to go forward trick." Create an equivalent fraction that easily converts to x /100. What is 32/40 as a percent.?
     - 32/40
     - "go backward" by reducing to 8/10
     - "go forward" to 80/100 which is 80%

4. Find the discount of price in dollars. The same as #2. Remember to round to the nearest cent.
   - What is the discount/savings if a pair of shoes, regularly 129.99 are on sale for 20% off?
   - 129.99 X .2 = 19.4985
     - Round to $$.¢¢
     - $19.50
     - Final price 129.99 – 19.50 = $110.49

5. Solve discount and tax combination questions. **First**, calculate the discount and subtract it from the regular price. **Second**, multiply the discounted price by the tax rate. This gives the amount of tax paid. **Third**, add the sale price and tax paid to get the final price.
   - A bicycle is normally $400. It is on sale for 12% off. The tax rate is 10%. What is the final price?
     - Calculate the discount. $400 X .12 = $48.
     - Subtract the discount from the regular price. $400 - $48 = $352
     - Multiply the sale price by the tax rate to get the taxed owed. $352 X .12 = $42.24
     - Add the sale price and tax to determine the final price. $352 + $42.24 = $394.24

6. Estimate. Use reasonable benchmark numbers. Good benchmarks are easy to convert to 100.
   - What is a reasonable estimate of 28% of 59?
     - Both values are problematic. Round them and calculate.
     - 30% of 60
     - .3 X 60
     - 18
   - What is a reasonable estimate of 14% of 206
     - 15% of 200
     - .15 X 200 (**or** use a mental math technique of 10% (20) + 5% (10))
     - 30

7.

| Percent | Fraction (simplified) | Decimal |
|---|---|---|
| | **3/20** | |
| **64%** | | |
| | | **.07** |

| Percent | Fraction (simplified) | Decimal |
|---|---|---|
| 15% | **3/20** | .15 |
| **64%** | 16/25 | .64 |
| 7% | 7/100 | **.07** |

8. During an after-school badminton activity at school, 32 girls and 30 boys from the senior end participated. Out of the 130 total senior students, what percent participated in badminton?
   - Add the two groups together to get the total. 32 + 30 = 52
   - Method 1: divide the participants (the partial value) by the total number of students.
     - 52 / 130 = .4 Convert to a percent 40%
   - Create fractions and cross multiply
     - 52/130 = x/100