Honors Biology Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
NDHS Per: \_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Caloric Value of Food**

“Calorie”: CALOR = heat  
 - calorie = amount of heat produced when food is burned

Calorie vs. calorie:

calorie = heat required to raise the temperature of 1 gram of water 1 degree Celsius

Calorie = Food Calorie or a Kilocalorie  
 - 1 Cal = 1 Kcal = 1000 calories

**Calories in Biological Molecules**

Carbohydrates = 4 Cal/gram

Proteins = 4 Cal/gram

Fats = 9 Cal/gram

**Calories and Weight: 3500 Calories = 1 pound**

**Calculating Calories in Food**:

Multiply the number of grams of the type of molecule by the Calories per gram.

If there are more than one type, add them together.

SPECIAL NOTE for Carbs:  
 A food label will list all of the carbohydrates together and then list the FIBER separately.   
 Humans can NOT digest fiber so this quantity must be SUBSTACTED from the total carbohydrates before calculating the calories in the food.

Examples:

A certain food has 10 grams of Carbs, 5 grams of Fat, and 2 grams of Protein with 2 grams of Fiber.

Solution:

(Total Carbs – Fiber) x 4 Cal/gram = (10 grams – 2 grams) x 4 Cal/gram = 32 Cal from Carbs

Grams of Fat X 9 Cal/gram = 5 grams of fat x 9 Cal/gram = 45 Cal from Fat

Grams of Protein X 4 Cal/gram = 2 grams of Protein X 4 Cal/gram = 8 Cal from Protein

Total Calories = Calories from Carbs + Calories from Fat + Calories from Protein = 85 Calories

**Caloric Percentages**:

To find the percentage of one type of Calorie in a food take the Calories from that type divided by the Total Calories and multiply by 100.

Percent Carbohydrates:

(Cal From Carbs/Total Calories) x 100 = (32 Cal/85 Cal) x 100 = 37.6 % from Carbs

**Practice Problems:**

Honors Biology Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
NDHS Per: \_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Caloric Value of Food**

Choose two food labels, calculate the number of Calories from each type of biological molecule and its percent Caloric Value.

|  |  |  |
| --- | --- | --- |
| Food: | Calories | Percent Composition |
| Carbohydrates |  |  |
| Proteins |  |  |
| Fats |  |  |
| Total |  | XXXXXXXXXXX |

|  |  |  |
| --- | --- | --- |
| Food: | Calories | Percent Composition |
| Carbohydrates |  |  |
| Proteins |  |  |
| Fats |  |  |
| Total |  | XXXXXXXXXXX |

How does the Percent Daily value on the Food Nutrition Label differ from the Percent Calories of each biological molecule? What information does each tell you?

**Bonus**: Using the percent daily values on the package, calculate how many grams of carbohydrates, protein, and fat you should have in your daily diet.