Caloric Values and Nutrient Calculations: Fall 2016

Mifflin-St Joer Formula for calculating caloric needs:

Male: REE = (10xweight) + (6.25xheight) - (5xage) + 5 (then add PA)
Female: REE = (10xweight) + (6.25xheight) - (5xage) - 161 (then add PA)
weight in kilograms (**divide pounds by 2.2**), the height in centimeters (**multiply inch by 2.54**), and the age in years.

Human energy is measured in heat units called kilocalories or calories, but typically abbrev kcal.

- Carbs yield 4 kcal/g
- Protein yield 4 kcal/g
- Fats yield 9 kcal/g

If a meal plan has 2200 calories, where do these come from?
Must be carb, protein or fat or any combination.

Composition of a healthy, well-balanced diet in percent of total daily kcals
Carb: 45 – 65%
Protein: 10% - 35%
Fat: 20% - 35%

Example:
2200 cal meal plan: 50% Carb 20% Protein 30% fat (optimal distribution)

How many grams of carb, protein and fat does this work out to be so you can actually plan what to eat?

Calculate number of grams of carb = 50% of the calories

2200 cal * 50% of the calories from carb = 1100 calories from carb
1100 cal of carb = how many grams? Take 1100 cal ÷ 4 cal/g = 275 g carb

Calculate number of grams of protein = 20% of the calories

2200 cal * 20% of the calories from protein = 440 calories from protein
440 cal of protein = how many grams? Take 440 cal ÷ 4 cal/g = 110 g protein

Calculate number of grams fat = 30% of the calories

2200 cal * 30% of the calories from fat = 660 calories from fat
660 cal of fat = how many grams? Take 660 cal ÷ 9 cal/g = 73 g fat

So a 2200 cal meal plan that contains 50% carb, 20% protein and 30% fat would be made up of 275 g carb, 110g protein and 73 g fat.

Nutrition Label:
% nutrients based on a 2000 cal diet

To calculate the % DV of a nutrient: Must have DV chart values
If a product provides 7 % Vit C, look on chart for DV: The DV for Vit C is 60mg. So one serving of that product provides 7% of 60mg which is 4.2 mg of Vit C

CONVERT POUNDS TO KG
1 kg = 2.2 lbs
100lbs/2.2 = 45kg

COVERT INCHES TO CM
1 in = 2.54 cm
62 in x 2.54 = 157.5 cm (or 1.57 meters)
(one meter is a little longer than 1 yd)

Calculate Protein Needs:
Use a % of calories OR based on weight in KG

For weight based: 0.8g to 1.0g/kg body wt**
Example: 0.8g x 65kg = 52g protein per day. More is not necessarily better

Rules for meal planning for adults

1. Never less than 1200 calories per day for women and 1500 cal per day for men due to not meeting the RDA and risk of lowering BMR
2. Never less than 45 g protein per day
3. Never less than 130g – 150g carb for women and 150 – 180g carb for men to spare protein.
4. At least 20 g fiber per day (best 20 - 35g)
5. No more than 90g Fat per day unless your cal needs are > 3000 cal/day. Best to figure 30% of calories OR LESS (down to 10% of calories at the lowest).

Calculate Fluid Needs:

Method 1

Body Weight	Water Requirement
1st 10 kg	100 mL/kg
2nd 10 kg	50 mL/kg
Each additional kg	20 mL/kg (≤50 yrs) 15 mL/kg (>50 yrs)

Method 2

Age	Water Requirement
Young athletic adult	40 mL/kg
Most adults	35 mL/kg
Elderly adults	30 mL/kg

Method 3

1 mL/kcal energy expenditure