Reality Math
Dot Sulock, University of North Carolina at Asheville

Exercise and Nutrition Labels

1. Calories Per Hour Used in Exercise

Activity	Calories Burned Per Hour (140-150 lb person)	(170-180 lb person)
Aerobic dancing	416-442	501-533
Backpacking	448-476	539-574
Badminton	288-306	347-369
Bicycling (outdoor)	512-544	616-656
Bicycling (stationary)	448-476	539-574
Bowling	192-204	231-246
Canoeing	224-238	270-287
Dancing	288-306	347-369
Gardening	256-272	308-328
Golfing (carrying bag)	288-306	347-369
Hiking	384-408	462-492
Jogging, 5 mph	512-544	616-656
Racquetball	448-476	539-574
Rope jumping	640-680	770-820
Running, 8 mph	864-918	1,040-1,107
Skating (ice- or roller-)	448-476	539-574
Skiing (cross-country)	512-544	616-656
Skiing (downhill)	384-408	462-492
Stair climbing	576-612	693-738
Swimming	384-408	462-492
Tennis	448-476	539-574
Volleyball	192-204	231-246
Walking, 2 mph	160-170	193-205
Walking, 3.5 mph	243-258	293-312

http://www.mayoclinic.com/health/exercise/SM00109

1. According to this table, how many calories would you use playing tennis for an hour if you weigh 150 lbs?

These are average figures and must be taken with "a grain of salt." Other such tables will have similar, but not exactly the same figures.

2. If you play casually and take a lot of breaks, how will that affect your calories used?

The heavier you are, the more calories you use for the same activity.

3. Use the table to estimate the calories used by a 160 lb person playing tennis for 1 hour.

To find how many calories a 250 lb person would use playing tennis for 1 hour, start with the closest weight of 180 lbs. 250 is how many times 180? 250/180 = 1.39 times. So the person weighing 1.39 times as much will use about 1.39 times as many calories

(250 / 180) x 574 = 797 calories or about 800 calories.

All of these calorie figures are much more approximate than they look, depending on the way the person is playing tennis. Although the numbers look precise, common sense tells us they are an example of **pseudoprecision** (see Appendix B).

It is important to round off approximate numbers!

4. How many calories would a 230 lb person use playing tennis for 1 hour?

5. How many calories would a 120 lb person use playing tennis for 1 hour?

2. Calories Per Mile

For running or walking, sometimes people are interested in calories per mile instead of calories per hour. Distance, time, and speed are always related in a way that you can reason about rather than memorize.

6. How many minutes would it take you to travel one mile if you
   (a) walked at 2 mph?
   (b) jogged at 5 mph?
   (c) rode a horse at 30 mph?
   (d) drove a car at 60 mph?

   How many seconds would it take you to travel one mile if you
   (e) drove a racing car at Bill Elliott's record breaking 212.809 MPH lap rate at Talladega in 1987?

Calories per mile = $\frac{calories}{miles}$ since **per** means divided by.

If you know calories per hour, just divide those calories by the miles traveled in 1 hour.

For example, an 180-lb jogger going 5 mph is using 656 / 5 = 131 calories per mile.

7. How many **calories per mile** would each use walking at 3.5 mph?
   (a) 140 lb person
   (b) 115 lb person
   (c) 180 lb person
   (d) 210 lb person

3. Daily Calorie Requirement

Thinking about calories burned up raises some questions. How many calories do people need each day anyway? If you put "daily calorie requirements" or something like it into Google, you get a lot of websites to consider!

Stopping at the first site when I did it, www.thelifestylecompany.com, I was given the number 1997 calories per day. At the second site, the well-known Mayo Clinic, the number was 1950 calories per day. So I am about an average 2000 calorie person.

8. Recently from the Way to Health program I learned that the calories an average person needs to maintain his or her weight is roughly 12 times that weight. Obviously the calories would be higher for a very active person and lower for an inactive person. Estimate your required calories for weight maintenance and remember them.

4. Calories in Fast Foods

Nutritional Info - Angus Cheddar Bacon Onion Sandwich

Calories - 790 (from Fat - 370)
Fat - 41g (Saturated Fat - 18g)
Sodium - 1830mg
Carbs - 62g (Sugar - 11g)
Protein - 45g

9. For an Angus Cheddar Bacon Onion Sandwich
   (a) How many calories?
   (b) How many calories from fat?
   (c) What percent of calories are from fat?
   (d) One of these would provide what percent of **your** daily calorie needs? Show how you determined this percent.

10. Reflect. About how many miles would a 140-lb person walking 2 mph have to walk to use up the calories in a CBO sandwich that wasn't part of her daily calorie needs?