

## Estimating Energy Expenditure

### **Basal Metabolism:**

Your height = \_\_\_\_\_ cm

Your weight = \_\_\_\_\_ kg

Your surface area (from Nomogram on following page)

= \_\_\_\_\_ sq metres

1. 
$$\frac{\text{_____}}{\text{(your surface area)}} \times \frac{\text{_____}}{\text{(kJ/square metre/hour for your age and sex from Table 1)}} = \frac{\text{_____}}{\text{(kJ/hour)}}$$

2. For one day, your basal metabolism kJ are:

$$\frac{\text{_____}}{\text{(kJ/hour from #1 above)}} \times 24 \text{ (hours/day)} = \frac{\text{_____}}{\text{(Basal Metabolism kJ/day)}}$$

### **Physical Activity:**

Sedentary:	0.20	}	See Table 2 for which physical activity level you fit into (percentage).
Light:	0.30		
Moderate:	0.40		
Very Active:	0.50		

3. Multiply your basal metabolism kJ from step #2 by the percentage that best describes your overall activity level.

$$\frac{\text{_____}}{\text{(basal metabolism kJ)}} \times \text{_____ \%} = \frac{\text{_____}}{\text{(Physical Activity kJ/day)}}$$

### **Food Digestion:**

4. Add your:  
Basal Metabolism kJ to your Physical Activity kJ. Then multiply the result by 10% (0.10)

$$\text{_____} + \text{_____} \times 0.10 = \frac{\text{_____}}{\text{(Food Digestion kJ/day)}}$$

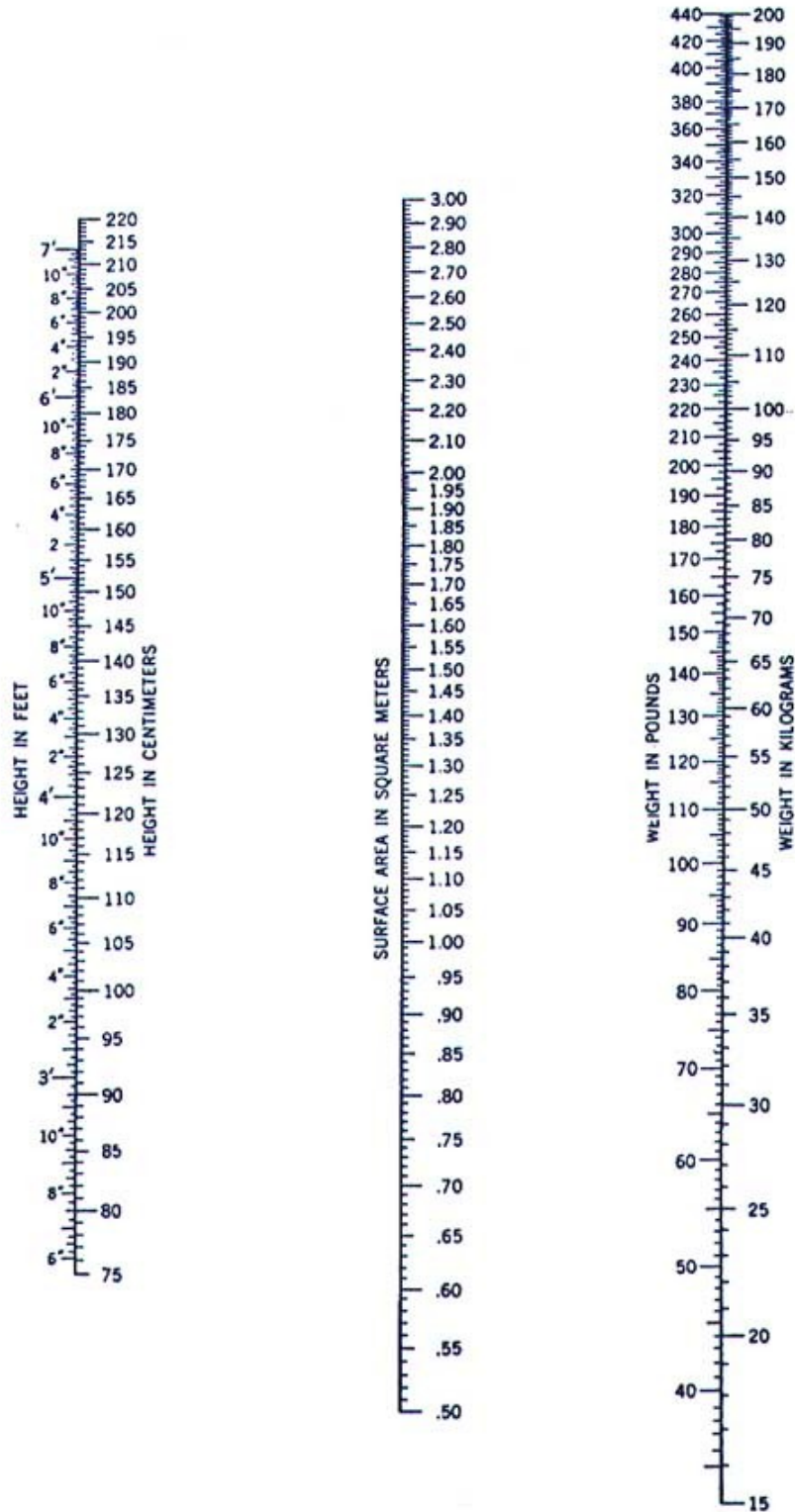
### **Total Energy Needs:**

5. 
$$\frac{\text{_____}}{\text{(Basal Metabolism)}} + \frac{\text{_____}}{\text{(Physical Activity)}} + \frac{\text{_____}}{\text{(Food Digestion)}}$$

$$= \frac{\text{_____}}{\text{(Total kJ needed / day)}}$$

## Nomogram

This is used to estimate body surface area from your height and weight. Place a dot on the left graph – this is your height. Then place a dot on the right graph – this is your weight. Draw a straight line between your two dots – where this crosses the middle graph indicates your surface area in square metres.



**Table 1. Basal Metabolism Energy**

Age (years)	Males (kJ/m <sup>2</sup> /hr)	Females (kJ/m <sup>2</sup> /hr)	Age (years)	Males (kJ/m <sup>2</sup> /hr)	Females (kJ/m <sup>2</sup> /hr)
3	252	228	26	160	147
4	242	226	27	159	147
5	236	222			
6	226	215	28	158	147
7	219	208	29	158	147
			30	158	147
8	213	201	31	157	147
9	207	194	32	156	146
10	200	188			
11	195	182	33	156	146
12	190	176	34	155	146
			35	155	145
13	187	170	36	154	145
14	184	164	37	154	145
15	180	161			
16	176	156	38	154	145
17	174	153	39	153	142
			40-44	153	142
18	171	150	45-49	152	142
19	170	148	50-54	150	139
20	167	148			
21	166	148	55-59	147	137
22	164	148	60-64	145	134
			65-69	140	132
23	163	148	70-74	137	130
24	162	147	75+	133	
25	161	147			

**Table 2 Classification of Activities**

Sedentary	Light	Moderate	Very Active
Doing housework	Activities done while standing	Carpentry work	Basketball
Eating	Dishwashing	Gardening	Bicycling (13mph)
Listening to the radio	Making beds	Heavy house work	Cheerleading
Other sitting types of activity that are not strenuous	Mopping	Waking moderately fast	Cross country skiing
Playing cards	Personal care	Window washing	Dancing, fast
Reading	Preparing food		Football
Sewing	Sweeping		Running (7mph)
Sitting in class	Walking slowly		Skiing
Typing			Swimming
Watching TV			Tennis
Writing			