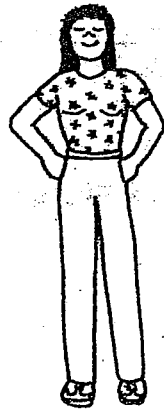


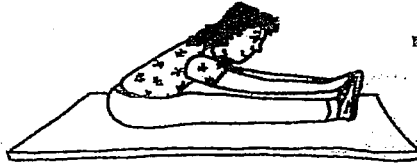
Name _____

CALCULATING ENERGY NEEDS



BASAL METABOLISM

+



PHYSICAL ACTIVITY

+



FOOD DIGESTION

BASAL METABOLISM CALORIES:

Your height = _____

Your weight = _____ pounds

Your surface area (from Sheet 2-1) = _____ square meters

1. _____ × _____ = _____
 (your surface area) (calories/square meter/hour for your age & sex from Sheet 2-2) (calories/hour)

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

_____ × 24 (hours/day) = _____
 (calories/hour from #1 above) (basal metabolism calories/day)

PHYSICAL ACTIVITY CALORIES:

Sedentary:	20%
Light:	30%
Moderate:	40%
Very Active:	50%

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

_____ × _____ % = _____
 (basal metabolism calories) (physical activity calories)

FOOD DIGESTION CALORIES:

4. Add your: basal metabolism calories to your physical activity calories + _____

Multiply the total × 10% Total: _____ × 10% = _____
 (food digestion calories)

TOTAL ENERGY NEEDS:

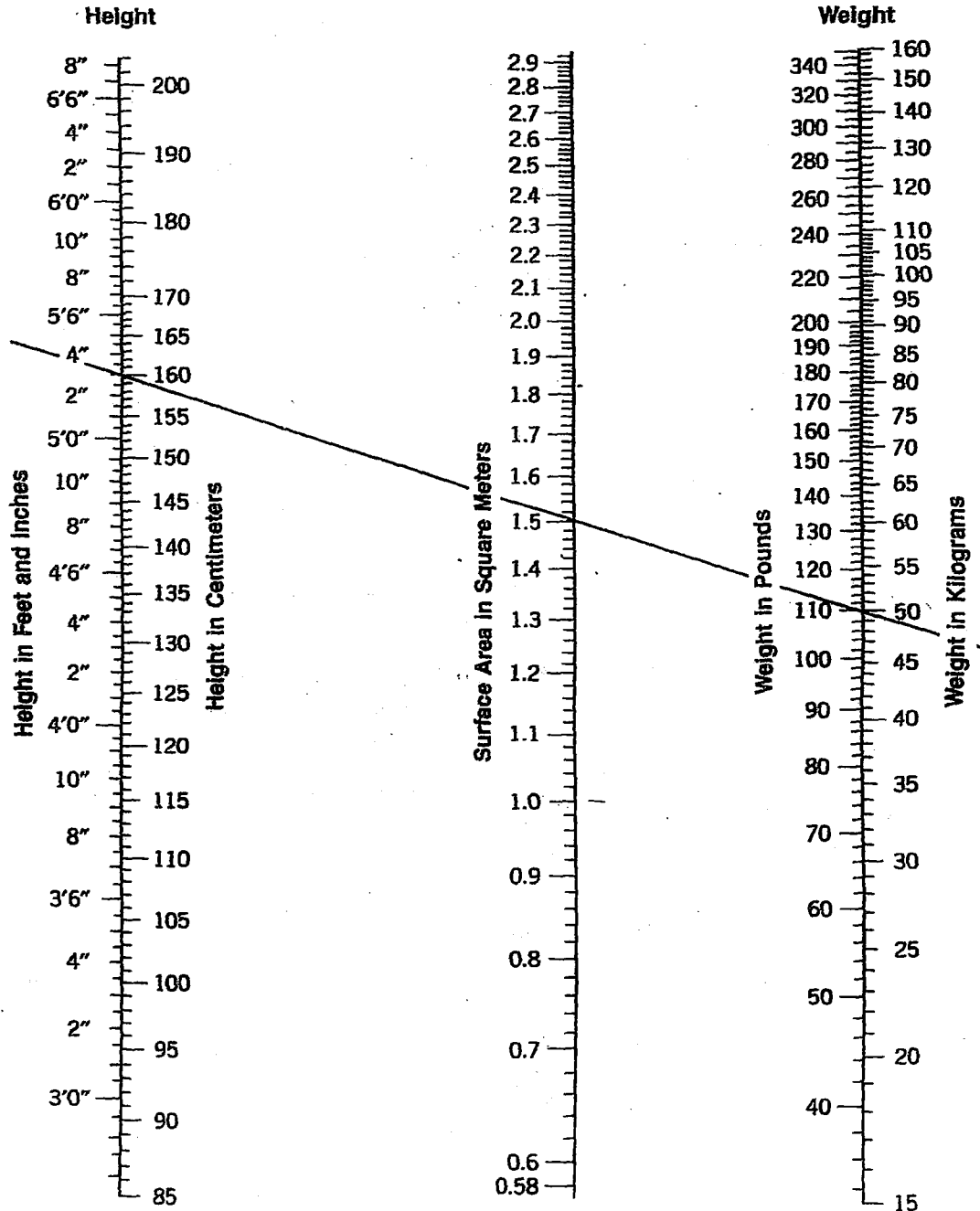
5. _____ + _____ + _____ = _____
 (basal metabolism calories) (physical activity calories) (food digestion calories) (total calories needed each day)

Name _____

NOMOGRAM*

Directions: To use the Nomogram, place a dot on the left graph for your height. Then place a dot on the right graph for your weight. Using a straight edge, draw a line from the left dot to the right one. The point where your ruled line crosses the middle graph indicates your "Surface Area" in square meters. Be sure to use the precise place where the line crosses the graph in your computations.

EXAMPLE: A female 5'3" tall and weighing 110 pounds has a Surface Area of 1.5 square meters.



*From Boothby, W. M., Berkson, J., and Dunn, H. L. "Studies of the energy of normal individuals: A standard for basal metabolism, with nomogram for clinical application." *American Journal of Physiology* 116:468.

(p2)

Name _____

BASAL METABOLISM CALORIES*

Directions: To find your basal metabolism calories for a day, locate your age on this chart and find the number of calories per square meter per hour for your sex. Multiply this figure by your body Surface Area in square meters (from Sheet 2-1) and then multiply by 24 (hours in a day).

Age (yr)	Males (cal/sq m/hr)	Females (cal/sq m/hr)	Age (yr)	Males (cal/sq m/hr)	Females (cal/sq m/hr)
3	60.1	54.5	26	38.2	35.0
4	57.9	53.9	27	38.0	35.0
5	56.3	53.0			
6	54.0	51.2	28	37.8	35.0
7	52.3	49.7	29	37.7	35.0
			30	37.6	35.0
8	50.8	48.0	31	37.4	35.0
9	49.5	46.2	32	37.2	34.9
10	47.7	44.9			
11	46.5	43.5	33	37.1	34.9
12	45.3	42.0	34	37.0	34.9
			35	36.9	34.8
13	44.5	40.5	36	36.8	34.7
14	43.8	39.2	37	36.7	34.6
15	42.9	38.3			
16	42.0	37.2	38	36.7	34.5
17	41.5	36.4	39	36.6	34.4
			40-44	36.4	34.1
18	40.8	35.8	45-49	36.2	33.8
19	40.5	35.4	50-54	35.8	33.1
20	39.9	35.3			
21	39.5	35.2	55-59	35.1	32.8
22	39.2	35.2	60-64	34.5	32.0
			65-69	33.5	31.6
23	39.0	35.2	70-74	32.7	31.1
24	38.7	35.1	75+	31.8	
25	38.4	35.1			

*From *Handbook of Biological Data*, Boothby, W. M. W. B. Saunders Company, Philadelphia, PA.

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Metabolism: Balancing Energy Input and Energy Output

Personal Life Style. Sedentary individuals expend fewer calories than active individuals, and this is true for both basal metabolism and for activity. Athletes tend to maintain a higher BMR than nonathletes; athletes also require more calories for their strenuous activities.

The total calories expended for physical activity in one day can be estimated by first determining the basic activity level most typical of the individual. This table lists physical activities in four classifications. [Display the table.]

Classification of Activities			
SEDENTARY	LIGHT	MODERATE	VERY ACTIVE
Doing homework	Activities done while standing	Carpentry work	Basketball
Eating	Dishwashing	Gardening	Bicycling (13 mph)
Listening to the radio	Making beds	Heavy housework	Cheerleading
Other sitting types of activity that are not strenuous	Mopping	Walking moderately fast	Cross-country skiing
Playing cards	Personal care	Window washing	Dancing, fast
Reading	Preparing food		Football
Sewing	Sweeping		Running (7 mph)
Sitting in class	Walking slowly		Skiing
Typing			Swimming
Watching T.V.			Tennis
Writing			

When an individual's activity level is determined, the following formulas may be used, along with the basal metabolism requirement, to estimate the total calories expended for physical activity in one day:

<u>For "sedentary" individuals:</u>			
calories for basal metabolism	×	20%	= calories for physical activity
<u>For "light activity" individuals:</u>			
calories for basal metabolism	×	30%	= calories for physical activity
<u>For "moderate activity" individuals:</u>			
calories for basal metabolism	×	40%	= calories for physical activity
<u>For "very active" individuals:</u>			
calories for basal metabolism	×	50%	= calories for physical activity