

PLANNING A TRIP

-Using the Naismith and Backpacker Rules-
(Or the who, what, when and where of cross country travel)

NAISMUTH RULE (for hiking)

Time in hours = $\frac{1}{3}$ Distance + $\frac{1}{2}$ total elevation gain in thousands of feet
($t = \frac{1}{3} d + \frac{1}{2} h$)

BACKPACKERS RULE (for backpacking)

Time in hours = $\frac{1}{2}$ Distance + total elevation gain in thousands of feet
($t = \frac{1}{2} d + h$)

OTHER CONSIDERATIONS:

- Add 5 minutes per hour for breaks
- Add 54 minutes for lunch
- Add 3-5 minutes per person for stream crossings
- Add 1% per person for the size of the group

TRIP TABLE:

- Pick prominent points along the route (trailhead, high points, low points, campsites, etc.)
- Scale linear distances between points with a ruler. Calculate mileage.
- Determine elevation for each point.
- Record mileage and elevation of each route point on the trip table.
- Calculate point elevation gain and cumulative route elevation gain.
- Calculate cumulative route mileage.
- Determine and record travel time(s):
 - For hiking (Naismith rule): $1/3 \text{ (miles)} + 1/2 \text{ (elevation gain in feet)} = \text{time in hours}$.
 - Example: $1/3 \text{ (12 mi)} + 1/2 \text{ (2400')} = 5.2 \text{ hours}$
 - For backpacking: $1/2 \text{ (miles)} + \text{(elevation gain in feet)} = \text{time in hours}$
 - Example: $1/2 \text{ (12 mi)} + \text{(2400')} = 8.4 \text{ hours}$
- Record rest and lunch intervals (5 minutes per hour, 4 minutes for lunch)
- Calculate cumulative time required for the route.

TRIP PROFILE:

- Label vertical (elevation) axis so that all route points can be recorded.
 - Example: If all route points are between 6200' and 8600', label the vertical axis 6000' to 9000'.
- Label horizontal (mileage) axis starting from zero and ending to contain maximum route distance.
 - Example: If the route is 14.2 miles long, label the horizontal axis from 0 to 15 miles.
- Using mileage and elevation information from the trip table, mark each route point on the graph. Draw a line connecting all of the route points.

Condor Peak Conditioning Hike Example

- Using the Naismith Rule -

With this rule, you allow one hour for every three miles hiked, plus half an hour for each 1000 feet of elevation gain. The expectation is that for this estimate to be accurate, you must be well conditioned, and hiking with a light day pack on good trails – otherwise, allow more time.

$$(T = 1/3 d + 1/2 h)$$

Where d = distance in miles; h = elevation in feet

$$= 1/3 (14 \text{ miles}) + 1/2 (4300 \text{ ft. gain})$$

$$= 4.7 \text{ hours} + 2.5 \text{ hours} = 6.85 \text{ hours}$$

$$\text{Breaks @ 5 min/hour} = 0.58 \text{ hours}$$

$$\text{Lunch 45 mins} = 0.75 \text{ hours}$$

$$\begin{aligned} \text{Stream Crossings} &= 2.00 \text{ hours} \\ (5 \text{ min. each for 35 ppl}) \end{aligned}$$

$$\begin{aligned} \text{Group Size} &= 1.00 \text{ hours} \\ (1\%/person, 35 \text{ people}) \end{aligned}$$

$$\text{TOTAL} = 11.18 \text{ hours}$$

SQUIGGLE

FACTOR

Y30

DUE ONLY TO GRADE

ADD

0-10%-20%

MULTIPLY

1.0-1.1-1.2

45° SWITCHBACK



40%

1.4

FULL S TURNS



(BRUSH MAX)

57%

1.57

60° SWITCHBACK



100%

2.0

75° SWITCHBACK



300%

4.0

[illegible]

Trip Location: _____

