



Backpacking

Name _____

Do all of the following requirements (1-3):

- _____1. Review and explain or demonstrate the following material from Camping, Outdoor Cooking, and Trail Skills Trail badges:
 - _____a. Good stewardship and the Low Impact Camping method as it applies to backpacking
 - _____b. Wilderness sanitation
 - _____c. Water purification
 - _____d. Washing dishes and personal hygiene
 - _____e. Food storage and protection from animals
 - _____f. Lightweight stove safety and use
 - _____g. Trail ethics
 - _____h. Trail safety
- _____2. For the area(s) and climates in which you will hike and backpack, do the following:
 - _____a. List any animal hazards where you plan to hike (venomous snakes, bears, insects, etc.) and for each one either show a picture or point out the animal hazard in nature. Explain how to avoid the listed animals and what to do if you come in contact with them.
 - _____b. List any poisonous plants where you plan to hike (poison ivy, poison oak, poison sumac, stinging nettle, sticky nama, etc.) and for each one either show a picture or point out the plant in nature. Explain how to avoid the listed poisonous plants and what to do if you touch them.
 - _____c. Using your personal equipment list(s) developed as part of Camping Trail badge, make an individual equipment list and a group equipment list for backpacking.
 - _____d. Make a list of the key safety precautions for backpacking in your area(s).

- _____e. Restock your personal first aid kit made for First Aid Trail badge.
- _____3. Complete backpacking experience that includes:
 - _____a. At least 4 nights backcountry camping on backpack trips. Includes nights in tent, improvised shelter, permanent trail shelter open on one side, or under the stars while in the backcountry on a backpack trip. These nights may also count towards the 15 nights camping required for Camping Trail Badge and the 40 nights for the Outdoor Life Trail Badge Camping Trail requirements, but not for the Outdoor Life Trail Badge Backpacking Trail backcountry nights camping requirement.
 - _____b. At least 5 days of backpacking
 - _____c. A total BTM experience total of at least 20 hours (40 miles on level ground)

Note: See the *Backpacking Metrics* section below for the metric definitions.

Backpacking Metrics

Metrics are used in the route and camp planning process to lay out reasonable-effort days of hiking and interesting places to camp. Guidebooks for your hiking area are also helpful for planning a trip. In order to use the metrics, you will need to read off the topographic map distances along the trail and the high and low point elevations of each up and down along the trail. The total elevation gain increases the hiking time and the aerobic effort involved in the hike whereas the total elevation loss increases the leg strain and the hiking time for steep descents.

The Backpack Time Metric (BTM) is computed as the sum of ½ hour for each mile and 1 hour for each 1,000 feet of total elevation gain and is used to estimate backpacking time to complete a particular segment of the trip.

$$BTM = \frac{1}{2} \left(\frac{\text{hour}}{\text{mile}} \right) \times \text{Distance}(\text{miles}) + 1(\text{hour}) \frac{\text{Total Elevation Gain}(\text{feet})}{1,000(\text{feet})}$$

The Backpack Effort Metric (BEM) is computed as the sum of the BTM and ½ hour for each 1,000 feet of total elevation loss and is used to estimate the overall effort or impact to the body to complete a particular segment of the trip. This metric is primarily used for trips longer than a week to ramp up and equalize effort over the duration of the trip.

$$BEM = BTM + \frac{1}{2} \left(\text{hour} \right) \frac{\text{Total Elevation Descent}(\text{feet})}{1,000(\text{feet})}$$

Example: Overnight in and out backpack trip that does the following over 5 miles (1-way) and then returns the same way (where the descents become the climbs and vice versa)

1.1 miles - gain 600'
 0.5 miles - loss 300'
 1.9 miles - gain 1,000'
 0.9 miles - loss 700'
 0.6 miles - gain 400'

The total elevation gain for day 1 is (600 + 1,000 + 400) = 2,000 feet and the total elevation gain for day 2 is (300 + 700) = 1,000 feet. Using the equation for BTM:

$$BTM = \frac{1}{2} \left(\frac{\text{hour}}{\text{mile}} \right) \times \text{Distance}(\text{miles}) + 1(\text{hour}) \frac{\text{Total Elevation Gain}(\text{feet})}{1,000(\text{feet})}$$

The BTM for day 1 is calculated as follows:

$$BTM(\text{day 1}) = (0.5) \times (5) + (1) \times (2,000/1,000) = 4.5 \text{ hours}$$

And the BTM for day 2 is calculated as follows:

$$BTM(\text{day 2}) = (0.5) \times (5) + (1) \times (1,000/1,000) = 3.5 \text{ hours}$$

The total elevation descent for day 1 is (300 + 700) = 1,000 feet and the total elevation descent for day 2 is (600 + 1,000 + 400) = 2,000 feet. Using the equation for BEM:

$$BEM = BTM + \frac{1}{2} \left(\frac{\text{hour}}{\text{mile}} \right) \frac{\text{Total Elevation Descent}(\text{feet})}{1,000(\text{feet})}$$

$$BEM(\text{day 1}) = 4.5 + (0.5) \times (1,000/1,000) = 5.0 \text{ hours}$$

$$BEM(\text{day 2}) = 3.5 + (0.5) \times (2,000/1,000) = 4.5 \text{ hours}$$

Trail Badge Mentor Signature

Date

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