



Royal Rangers

Merit Requirements: Silver-Bordered Merit

MOUNTAIN BIKING MERIT

Note: Demonstrate safety and skill at all times as you complete this merit. A helmet and elbow guards are required.

1. Calculate your appropriate bike frame size (Effective Top Tube Length AND center of bottom bracket to top tube measurement along the seat tube), bottom bracket to saddle extension length, stem length, handlebar width, crank length, and saddle placement (forward or back). Record these measurements in your notebook.
2. Tune your front and/or rear suspension for preload according to your weight, and compression and rebound damping according to the type of trail and personal preference. Record these settings in your notebook. If your bike does not have suspension, research the products available and select a low-cost stem, headset, and fork that will fit your bike. www.mtbr.com will direct you to several discount web retailers. Write down your description of these products and what effect they might have on your riding.
3. Ride at least an hour each on the following kinds of trails:
 - a. Technical
 - b. Fire road
 - c. Dingle track

Write one paragraph for each trail you rode, describing the specific challenges it presented. If there was a “crux,” or a very difficult point, describe it in detail.

4. Explain the effects of suspension length (front and rear) on how a bike handles in rough and smooth terrain and how it responds to a rider’s input. Describe in one written page, the similarities and difference of these styles of full-suspension bicycles: Downhill; Free Ride; Cross Country.
5. Assemble an off-road repair kit that includes the following:
 - a. Multi-tool or 4, 5, 6 millimeter Allen wrenches; standard and Phillips screwdrivers; spoke wrench
 - b. Reliable air pump
 - c. Extra inner tube
 - d. Patch kit with glue
 - e. 2 tire levers
 - f. Small adjustable wrench (might be included with the multitool)
 - g. Pocketknife
 - h. Sidewall patch (a dollar bill will work)
 - i. Extra derailleur cable
 - j. Chain-breaker tool with extra chain pins or links
 - k. Extra shoe cleat bolt (if needed)
 - l. Any other tool or accessory specifically needed to adjust your particular bike.
6. Set up a mountain bike obstacle course at or near your outpost. Demonstrate the following mountain biking skills to your outpost:
 - a. Bunny-Hop over a small obstacle.
 - b. Ride off of at least a 12-inch high drop-off.
 - c. Ride up onto a 12-inch high ledge (can be the same obstacle).
 - d. Weave through a series of obstacles spaced no more than four feet apart from each other.
 - e. On a surface that will not be harmed, ride at a high speed and at a predetermined point stop the bike as quickly as possible with little to no skidding, using primarily your front brake.
 - f. Set up a steep inclined surface and ride down it from a height of at least three feet, stretching your arms fully and placing your stomach on or close to the saddle and your bottom over the back tire for balance (You could ride out of a pickup truck down a wide board.) (In all of this, demonstrate skill and safety, not recklessness, and be sure to wear a helmet and elbow guards if you have them).
7. Explain proper nutrition and hydration for both a 1 1/2 hour ride and a 4 hour ride in one written page in your notebook.

8. Participate in ONE of the following three types of rides
 - 1) Group ride sponsored by a local bike shop
 - 2) Mountain Bike Race
 - 3) As a team member of an endurance event (usually twelve hours of riding divided among 4 riders).
9. Plan a ride that utilizes various trails to form a large loop of at least twenty miles. Use a topographical map that shows trails through a wilderness area. Ride this loop with an experienced mountain biker. Write down your plotted trip in your notebook.
10. Do all the following:
 - a. True (straighten) a wheel using just a spoke wrench and bike frame (use an old wheel or one you're not worried about damaging).
 - b. Thoroughly clean your drive train (crankset, chain, and cassette (rear sprockets) using an environmentally safe degreaser such as "Simple Green." Re-lube only the inside of the chain, placing a drop at every link pivot. Wipe off any excess.
 - c. Fix a flat without patching by using emergency techniques: tie a knot in the tire, twist a stick across the flat, use a shoelace to tie the two ends, etc.
 - d. Using a "chain breaker" detach the chain from your bike, and reattach it for use as a single-speed bicycle, placing the chain across the front middle chain-ring and one of the larger middle rear cogs. This simulates the repair you would use if your rear derailleur were broken while riding. Now reattach the chain as normal.
11. Participate in a trail-repair or maintenance event sponsored by a local bike shop or community service group. Write a one-page description in your notebook of the techniques used to prevent trail erosion. If the event is not sponsored locally, volunteer for at least two hours of trail maintenance at a local park or wilderness area that permits mountain biking.