

The Mountain Climber

Solution

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Use a short rope to hold a loop halfway to the ledge, and double the long rope through that loop.

Cut the rope into pieces of 50 feet and 100 feet. Tie one end of the 50-foot piece to the top ring. Make a loop at its other end, which hangs 50 feet below the top. Ignore the small amount of rope used in knots, as the puzzle specifies.

Thread the 100-foot piece through that loop until its two ends hang together. Each hanging half is 50 feet long, so both ends reach the ledge, 100 feet below the top.

Descend the short piece to its loop, then descend the doubled long piece to the ledge. Once on the ledge, pull on just one end of the long piece. The other end rises through the loop, and you recover all 100 feet.

Tie that 100-foot piece to the ledge's ring and descend the remaining 100 feet to the ground. You leave only the 50-foot piece attached above.

This is an idealized rope puzzle, not real climbing advice. Real anchors, rope lengths, knots, transfers, and descents require appropriate equipment and training; the mathematical description deliberately ignores those practical requirements.

History and sources: [companion history PDF](#).