Solve ABC.

1. α = 41°, γ = 77°, a = 10.5 2. β = 20°, γ = 31°, b = 210

3. α = 27°40', β = 52°10', a = 32.4 4. β = 50°50', γ = 70°30', c = 537

5. α = 42°10', γ = 61°20', b = 19.7 6. γ = 81°, c = 11, b = 12

7. A course for a skateboard race consists of a 200-meter downhill run and a 150-meter level portion. The angle of elevation of the starting point of the race from the finish line is 27.4°. What angle does the hill make with the horizontal?

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| 8. A surveyor is trying to determine the distance from his current location to the smaller tree so that he can build a rope bridge for walking traffic. The angle from where he is at to the two trees that are 100 m apart is 28 and the distance across the river to the big tree from where he is 85 m. What is the distance from his location to the small tree (round to the nearest meter)? |  |

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| 9. Two ft people are 150 apart and are on either sides of the church. Jeff sees the top of the steeple at 42 and Samantha sees it at 33. How much closer is Jeff than Samantha to the steeple (round to the nearest foot)? |  |

10.  **Jack and Jill are tying decorative string from the top of the Christmas Tree to the ground. They will do this many times in many different colors creating a very unique celebration of color and pattern. What is the length of Jill’s string based on the measurements provided? (round to the nearest foot)**

11. The angles of elevation of a balloon from two points A and B on level ground are 24°10' and 47°40', respectively. Points A and B are 8.4 miles apart and the balloon is between the points. Approximate the height of the balloon above the ground.

12. To determine the distance between two points A and B, a surveyor chooses a point C that is 375 yards from A and 530 yards from B. If ∠BAC has a measure of 49°30', approximate the distance between A and B.