1. A hammer thrower swings his 7kg hammer. At one point in the swing, when the hammer is directly parallel to the thrower on the left and the string is totally horizontal, its velocity is 15ms-1 forwards. The tension in the 121cm string is 1301N. Will the hammer move in a circle?
2. A 1500kg car is driving around a flat, circular track with a radius of 34m with a velocity of 11ms-1 forwards. The friction force provided by the tires as it rounds the bend is 4200N inward toward the centre of the bend. Will the car move in a circle?
3. A 2T roller coaster is at the top of a vertical loop moving forward at 17ms-1. The radius of the loop is 16m and the support force supplied by the track is 16525N. Will the roller coaster move in a circle?
4. Two People are playing swingball. One person hits the 50g ball sideways so it is travelling at 2ms-1. The string makes an angle of 30° with the pole. The tension in the 70cm string is 0.57N.
a) verify that Ty = Fg.
b) Will the ball move in a circle?
5. The same roller coaster as in Q3 is at the bottom of the loop, travelling at 35ms-1. The Support force supplied by the track is now 91659N. Will the roller coaster move in a circle?
6. Another roller coaster has a loop of radius 22m, and travels 11ms-1 at the top. The cars have a mass of 3000kg. Will the roller coaster move in a circle?
7. A hammer thrower swings his 7kg hammer. At one point in the swing, when the hammer is directly parallel to the thrower on the left and the string is totally horizontal, its velocity is 15ms-1 forwards. The tension in the 121cm string is 1301N. Will the hammer move in a circle?
8. A 1500kg car is driving around a flat, circular track with a radius of 34m with a velocity of 11ms-1 forwards. The friction force provided by the tires as it rounds the bend is 4200N inward toward the centre of the bend. Will the car move in a circle?
9. A 2T roller coaster is at the top of a vertical loop moving forward at 17ms-1. The radius of the loop is 16m and the support force supplied by the track is 16525N. Will the roller coaster move in a circle?
10. Two People are playing swingball. One person hits the 50g ball sideways so it is travelling at 2ms-1. The string makes an angle of 30° with the pole. The tension in the 70cm string is 0.57N.
a) verify that Ty = Fg.
b) Will the ball move in a circle?
11. The same roller coaster as in Q3 is at the bottom of the loop, travelling at 35ms-1. The Support force supplied by the track is now 91659N. Will the roller coaster move in a circle?
12. Another roller coaster has a loop of radius 22m, and travels 11ms-1 at the top. The cars have a mass of 3000kg. Will the roller coaster move in a circle?