

a) ...

2-A pilot of an airplane executes a "loop-the-loop" maneuver in a vertical circle of diameter 5 km at a constant speed of 200 m/s. If he has true weight 150 N, what is the force exerted by the seat on the pilot at the highest point?

a) 94.9 N

b) 150 N

c) 50.6 N

d) 120.4 N

e) 70.5 N

☀Circle the right answer for the questions from 1 to 14 ☀

1- A pilot flying in a vertical circle is weightless at the top of the circle. If his speed at the top is 200 m/s, the radius of the circle is

a) 3200 m

b) 4082 m

c) 5100 m

d) 2450 m

e) 6534 m

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5- A pilot flying in a vertical circle is weightless at the top of the circle. If his speed at the top of the circle is 200 m/s, the radius of the circle is

a) 5122.5 m

b) 2385.2 m

c) 4081.6 m

d) 6000.1 m

e) 1585.4 m

(1) A 0.50-kg mass attached to the end of a string swings in a vertical circle (radius = 2.0 m). When the mass is at the lowest point on the circle, the speed of the mass is 12 m/s. What is the magnitude of the force of the string on the mass at this position?

a) 23 N

b) 46 N

c) 36 N

d) 41 N

e) 31 N

3- A 1500 kg car moving on a flat, horizontal road negotiates a curve whose radius is 35 m. If the coefficient of static friction between the tires and the dry pavement is 0.5, what is the maximum speed the car can have in order to make the turn successfully?

a) 17.71 m/s

b) 9.33 m/s

c) 13.23 m/s

d) 21.92 m/s

e) 3.87 m/s

6- A coin placed 50.0 cm from the center of a rotating, horizontal turntable. The coin slips when its speed is 50.0 cm/s. What is the coefficient of static friction between the coin and the turntable?

a) 0.56

b) 0.21

c) 0.05

d) 0.02

e) 0.78

6 8- At what maximum speed can a car safely negotiate a horizontal unbanked turn (radius = 51 m) in dry weather (coefficient of static friction = 0.95)

a) 15 m/s

b) 5 m/s

c) 22 m/s

d) 27 m/s

e) 19 m/s

1- A toy car moving at constant speed (8 m/s) completes one round around a circular track of radius 31.83 m. If the mass of the car is 1.5 kg, what is the magnitude of the central force that keeps it in a circle?

a) 3.02 N

b) 1.11 N

c) 5.04 N

d) 10.02 N

e) 15.32 N

6- A car goes around a curved road. If the radius of the curve is 35 m and the coefficient of static friction between the tires and the ground is 0.5, find the maximum speed of the car to make the turn successfully

a) 13.2 m/s

b) 8.9 m/s

c) 2.2 m/s

d) 16.9 m/s

e) 19.3 m/s

7- An airplane is travelling at 80 m/s as it makes a horizontal circular turn which has a 0.8 km radius. What is the magnitude of the resultant force on the 75 kg pilot of this airplane?

a) 150 N

b) 282 N

c) 650 N

d) 450 N

e) 600 N