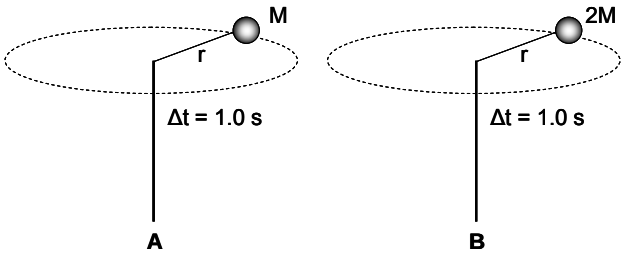
UCM Test Review

Per _____ Name _____

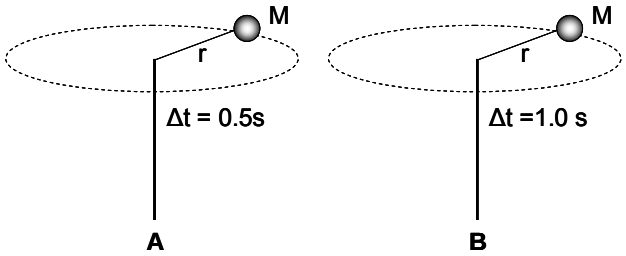
Comparisons of Uniform Circular Motion

1



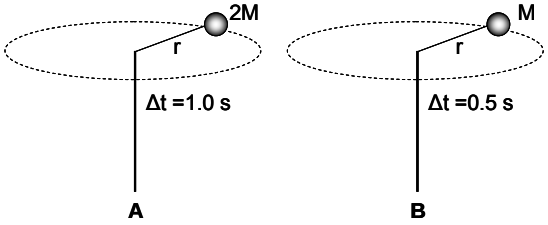
1. Which has the greater:
   a) Linear velocity?
   b) Angular velocity?
   c) Centripetal acceleration?
   d) Centripetal force?

2



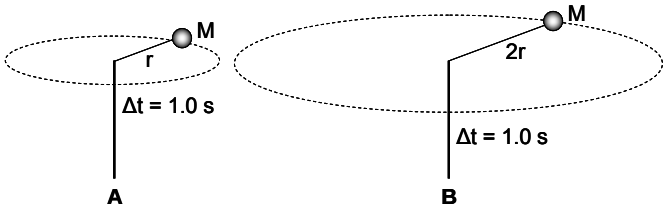
2. Which has the greater:
   a) Linear velocity?
   b) Angular velocity?
   c) Centripetal acceleration?
   d) Centripetal force?

3



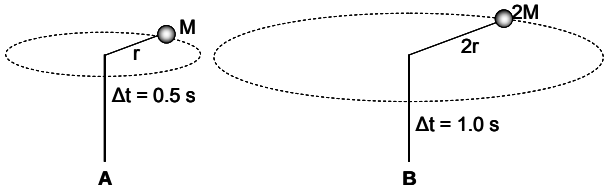
3. Which has the greater:
   a) Linear velocity?
   b) Angular velocity?
   c) Centripetal acceleration?
   d) Centripetal force?

4



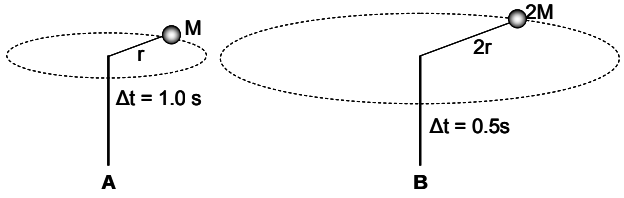
4. Which has the greater:
   a) Linear velocity?
   b) Angular velocity?
   c) Centripetal acceleration?
   d) Centripetal force?

5



5. Which has the greater:
   a) Linear velocity?
   b) Angular velocity?
   c) Centripetal acceleration?
   d) Centripetal force?

6



6. Which has the greater:
   a) Linear velocity?
   b) Angular velocity?
   c) Centripetal acceleration?
   d) Centripetal force?

7. A 200 kg roller coaster maintains contact with the track as it travels at a constant speed of 5 m/s over a circular hill that has a radius of 25 meters, as illustrated below.

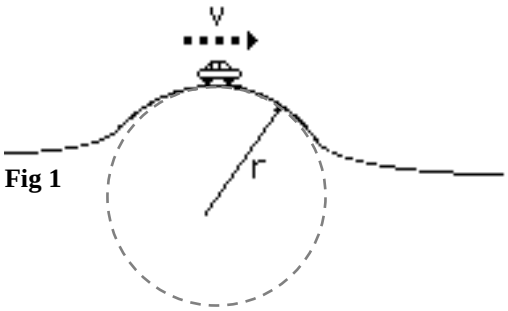
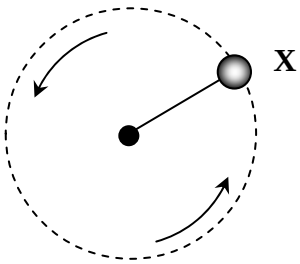


Fig 1

a) Draw and label the total force vector on the diagram.
b) Calculate the car's centripetal acceleration in m/s^2.
c) Calculate the centripetal force acting on the car.
d) Calculate the normal force acting on the car.

8.

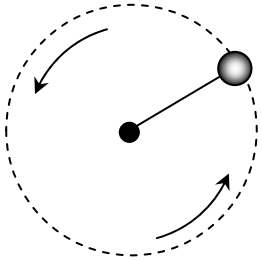


Above is an overhead view of a ball in uniform circular motion moving in the direction indicated by the arrows. The string breaks when the ball is at the point labeled "**X**".
--Sketch the path that the ball will follow.

9. Define centripetal force and give the formula how to calculate it.

10. Define centripetal acceleration and give the formula how to calculate it.

11.



The ball above is traveling in uniform circular motion.
Label:
a) velocity vector
b) acceleration vector
c) Total force vector