Circular Motion

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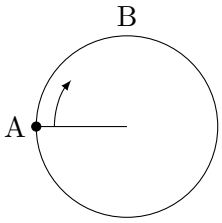
1. Explain carefully how it is possible for something to accelerate but its speed not change.

2. The diagram shows a ball attached to a string going around in a circle.



   (a) Copy the diagram and mark the direction of the force on the ball at A.

   (b) When the ball gets to B, the string breaks. In which direction does the ball move?

3. A car goes around a corner following a circular path.

   (a) What provides the centripetal force?

   (b) How is this force different if

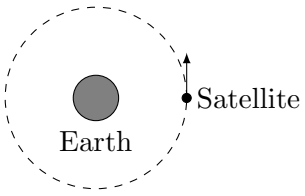
      i. the car has less mass,

      ii. the car travels more slowly,

      iii. the car goes around a tighter curve.

4. Two plumbers are discussing a spin dryer.
   Plumber A: A spin dryer turns round very quickly to get the water out of the clothes. It works because when something goes round in a circle, there is a force pushing outwards, so the water is forced out through the holes.
   Plumber B: When something moves in a circle, there is a force towards the centre. The drier makes the washing move in a circle, but the water moves in a straight line through the holes.
   Which plumber gives the better explanation and why?

5. The satellite in the diagram below is orbiting the Earth.



   (a) If the satellite moved to a higher orbit, does its speed need to be more or less than before?

   (b) Would it have a greater or less centripetal force?