HOW TO SOLVE DYNAMICS PROBLEMS

1. Sketch the diagram.

2. Label all forces acting on the object (objects) of interest. If there objects connected with the
   string (rope etc.) there will be 2 same tension forces along the string directed away from
   each object.

3. Choose axis. If incline plane involved, choose one axis along the plain, one perpendicular to
   plane. There is one exclusion – for problems involving circular motion on the banked road
   choose one axis horizontally, another vertically. Feel free to choose positive direction of the
   axis: up, down, left, right, whatever is more convenient. Usually better choice will be in the
   direction of the acceleration.

4. Write down second Newton's law in resolution into chosen axis.

   $$\sum \vec{F} = m\vec{a}$$

   Make sure that you will include all forces. If resolution of the force is in the positive direction
   of the axis it will be positive in your equation, if in the opposite direction then negative. Same
   for the acceleration on the right hand sign. Make sure that you apply trigonometry properly,
   if resolving into the adjacent axis use cos, if into opposite, use sin.

   If problem involves connected objects, write 2nd Newton's law for each object separately.

   If problem involves circular motion with the constant speed, acceleration will be always
   directed towards centre of the circle.

5. Do math to find unknown quantities.