Name: _____

Class: _____

Due Date: _____

Physics Topic 14C – Applying Newton's Second Law of Motion to Cars and Banked Roads in Circular Motion

Answer the following questions. The solutions to this worksheet can be found on the YouTube channel Go Physics Go.
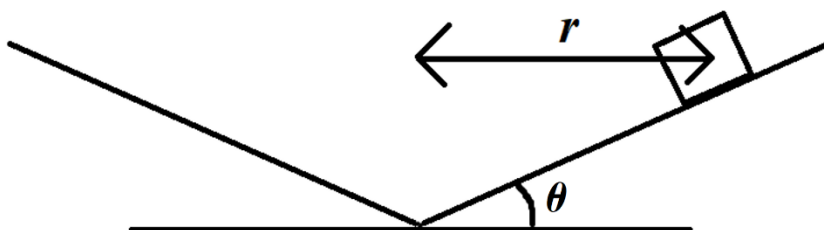
1. E: Use Newton's second law of motion to obtain an equation for the <u>speed</u> of a car moving in circular motion on a horizontal road with surface friction. Your answer should be in terms of the radius of the track r, the coefficient of friction μ, and the acceleration from gravity g.
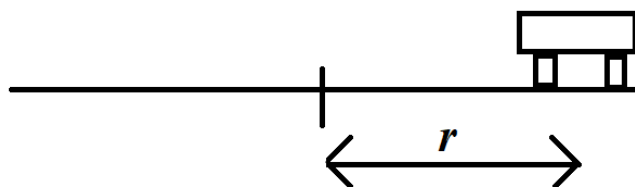
2. E: Use Newton's second law of motion to obtain an equation for the <u>speed</u> of a car moving at an angle θ to the horizontal in circular motion on a banked/angled road with **no friction**. Your answer should be in terms of the radius of the track r, the angle of the banked road θ, and the acceleration from gravity g.
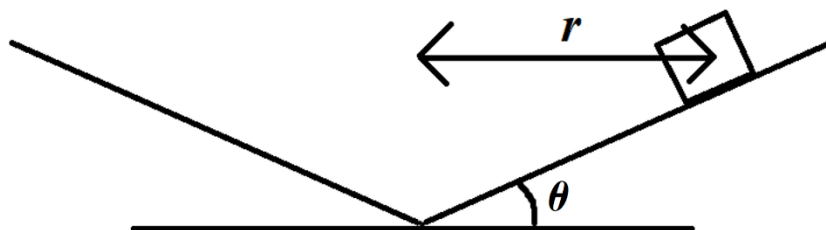
3. E: Use Newton's second law of motion to obtain an equation for the <u>speed</u> of a <u>**slow moving car**</u> moving at an angle θ to the horizontal in circular motion on a banked/angled road with surface friction. Your answer should be in terms of the radius of the track r, the angle of the banked road θ, the coefficient of friction μ, and the acceleration from gravity g.

4. E: Use Newton's second law of motion to obtain an equation for the <u>speed</u> of a **fast moving car** moving at an angle θ to the horizontal in circular motion on a banked/angled road with surface friction. Your answer should be in terms of the radius of the track r, the angle of the banked road θ, the coefficient of friction μ, and the acceleration from gravity g.