Name: _____

Class: _____

Due Date: _____

Physics Topic 14A – Free Body Diagrams for Circular Motion

Answer the following questions. The solutions to this worksheet can be found on the YouTube channel Go Physics Go.

1. C: Define *centripetal.*

2. C: Define *centrifugal.*

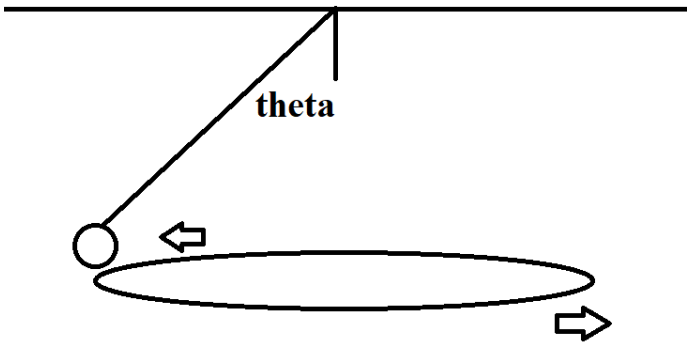
3. C: Are there *centripetal forces*?

4. C: Are there *centrifugal forces*?

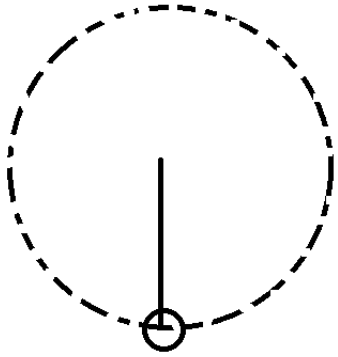
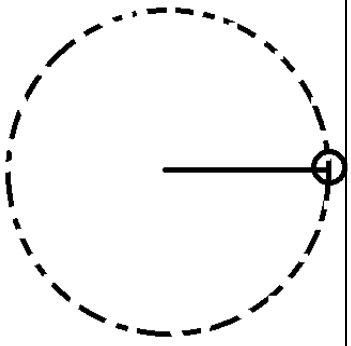
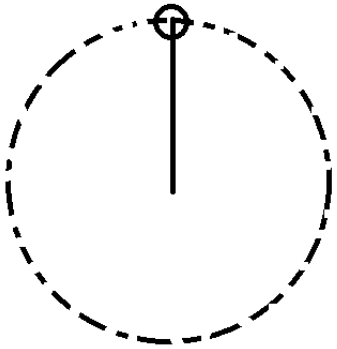
5. C: Imagine driving in a straight line with a constant speed of 60 km/h. You then quickly make a right turn. Do you feel a force? In which direction? Is it a centripetal force or a centrifugal force? Is it a real force? Why?

6. C: Label the forces on the following diagrams.

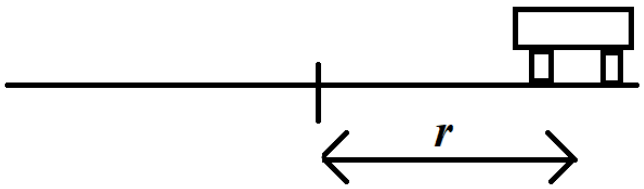
   a. An object is attached to a string. The object moves in a horizontal circle at an angle θ from the vertical.



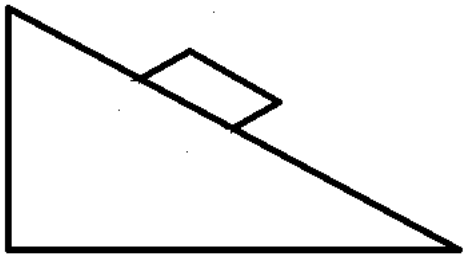
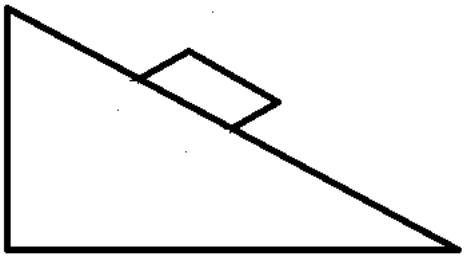
   b. An object is attached to a string. The object moves in a vertical loop. Draw a free body diagram when the object is

at the bottom.	halfway to the top.	at the top.
		

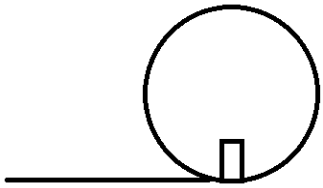
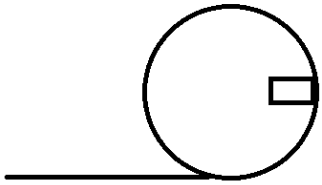
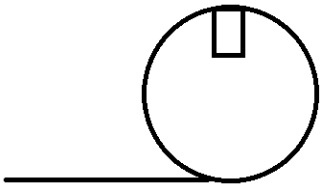
   c. A car moves in a horizontal circle at a constant speed with a radius *r*.



d. A car moves in a circle on a banked road (cone) with a constant radius r. There is force of friction.

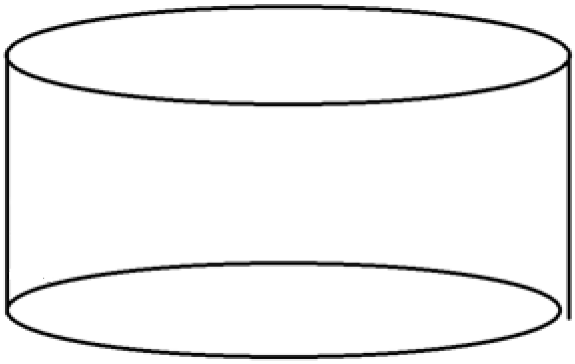
a. The car is moving slow.	b. The car is moving fast.
	

e. A cart is moving up on a vertically circular roller coaster with a radius r. There is no force of friction.

The cart is at the bottom.	The cart is at a height r.	The cart is at the top.
		

f. A fast motorcycle moves around a nonmoving cylindrical wall.

"Mauth Ka Kua" (The Well Of Death): Basic physics at its best!
Swastik Ghosh
https://www.youtube.com/watch?v=cFLNknvi7QE



g. A man is on the edge of a moving cylindrical wall.

CENTRIFUGEUSE - ROTOR @ FOIRE DU TRONE (GoPro)
josselinz86
https://www.youtube.com/watch?v=GspwbZSjABA