

Chapter 9: Circular Motion

Text:Chapter 9

Think and Explain: 1-5, 7-9, 11

Think and Solve: ---

Vocabulary:

rotation, revolution, axis, centripetal, centrifugal, tangential speed, Hertz, rpm, rotational speed, linear speed

Equations:

$$f = \frac{1}{T} \quad v = \frac{2\pi r}{T} \quad a_c = \frac{v^2}{r} \quad F_c = \frac{mv^2}{r}$$

Key Objectives:*Concepts*

- determine the directions of the velocity, acceleration and net force as an object travels in a circle.
- compare and contrast the terms rotation and revolution.
- identify the individual forces that are actually causing circular motion.
- explain what is meant by the term centripetal.

Problem Solving

- convert between frequency and period
- convert between rpm and Hz and between minutes and seconds
- calculate the missing variable between speed, radius and time.
- calculate the missing variable between centripetal acceleration, speed and radius.
- calculate the missing variable between centripetal force, mass, speed and radius.
- determine the net force and the individual forces acting on an object going in a circle with a constant speed and constant radius.
- determine the net force and the individual forces acting on an object going in a vertical circle with a constant speed and constant radius.
- calculate the minimum speed needed for an object to just make a loop-the-loop