

Ch 5 #3

Even if you use the tables on the inside front cover of your book, you won't know the speed of the Earth around the Sun. But since you do know the radius of the Earth's "circular" path from those tables, and since you also know the period of Earth's orbit around the Sun (which you would convert to S.I. units), you should be able to solve.

Ch 5 #5

The only tricks are to make sure you actually use the radius of the circular path, not just the distance from Earth's surface, and to also convert your final answer into g's by dividing your acceleration by 9.8m/s^2 .

Ch 5 #6

Start by converting revolutions per minute into meters per second. Then it should be easy.

Ch 5 #7

Before doing anything with $a=v^2/r$, you should start with a $\Sigma F=ma$ setup, where you must be very careful about the direction of the acceleration and how each force either helps or hinders that acceleration.

Ch 5 #13

To find this minimum speed, picture that the coaster is going just a tiny bit slower than the minimum. This means that the passengers wouldn't be held in their seats and that F_N would disappear. Solve it this way, and the speed you find is the cutoff speed you're looking for.

Ch 5 #24

Since you're looking for the height at which he must begin his circular motion, you're actually looking for the radius of his circular path.

Ch 5 #30

Set it up as $mg = Gmm/r^2$, and then don't get hung up by the fact that you don't know mass of the object. Just cancel that mass from each side.

Ch 5 #46

Start by using gravity and circular motion ideas to find the speed of this satellite. (7906.8m/s)
Then use this speed to find the period of the satellite's orbit.

Ch 5 #48

This one's actually very similar to #46, but using the Moon's info instead. (Plus the command module is 100km above the Moon's surface.)

Ch 5 #66

Repeat of advice from #7: Before doing anything with $a=v^2/r$, you should start with a $\Sigma F=ma$ setup, where you must be very careful about the direction of the acceleration and how each force either helps or hinders that acceleration.