

cq6-14

1. CJ6 8.CQ.002. [311031] A pair of scissors is being used to cut a string. Does each blade of the scissors have the same angular velocity (both magnitude and direction) at a given instant?

- yes
 no

Give your reasoning.

2. CJ6 8.CQ.003. [310950] An electric clock is hanging on the wall in the living room. The clock is unplugged, and the second hand comes to a halt over a brief period of time. During this period, what is the direction of the angular acceleration of the second hand?

- clockwise
 counterclockwise

Why?

3. CJ6 8.CQ.004. [311062] The earth rotates once per day about its axis. Where on the earth's surface should you stand in order to have the smallest possible tangential speed?

- equator
 north or south pole

Justify your answer.

4. CJ6 8.CQ.008. [310888] A building is located on the earth's equator. Which has the greatest tangential speed due to the earth's rotation, the top floor, the bottom floor, or neither?

- top floor
 neither
 bottom floor

Justify your answer.

5. CJ6 8.CQ.009. [310991] Section 5.6 discusses how the uniform circular motion of a space station can be used to create "artificial" gravity for the astronauts. This can be done by adjusting the angular speed of the space station, so the centripetal acceleration at the astronaut's feet equals g , the magnitude of the acceleration due to gravity (see Figure 5.19). If such an adjustment is made, will the acceleration due to the "artificial" gravity be greater than, equal to, or less than g at the astronaut's head?

- less than
- equal to
- greater than

Account for your answer.

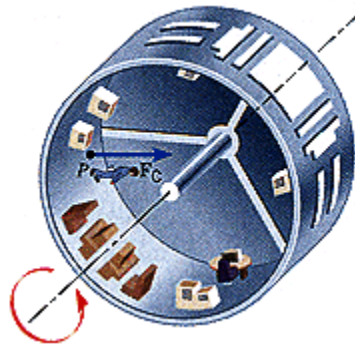


Figure 5.19

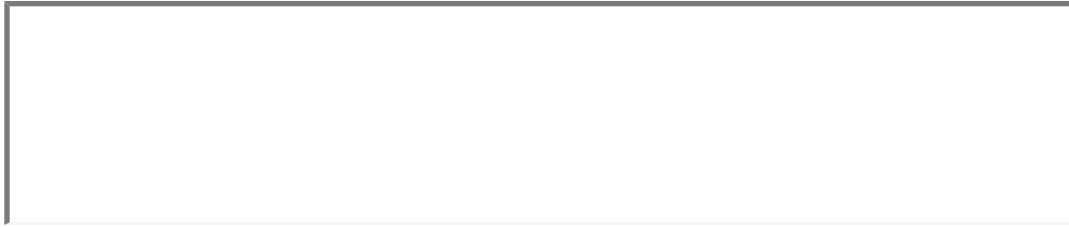
6. CJ6 8.CQ.013. [310910] Suppose that the speedometer of a truck is set to read the linear speed of the truck, but uses a device that actually measures the angular speed of the tires. If larger diameter tires are mounted on the truck, will the reading on the speedometer be correct?

- yes
- no

If not, will the reading be greater than or less than the true linear speed of the truck?

- greater than
- less than
- the same

Why?



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