How many degrees in 1 radian?

A) 1 rad = 2°
B) 1 rad = 180°
C) 1 rad = 98.2°
D) 1 rad = 57.3°
E) Radian is not a measure of angle, so the question makes no sense.

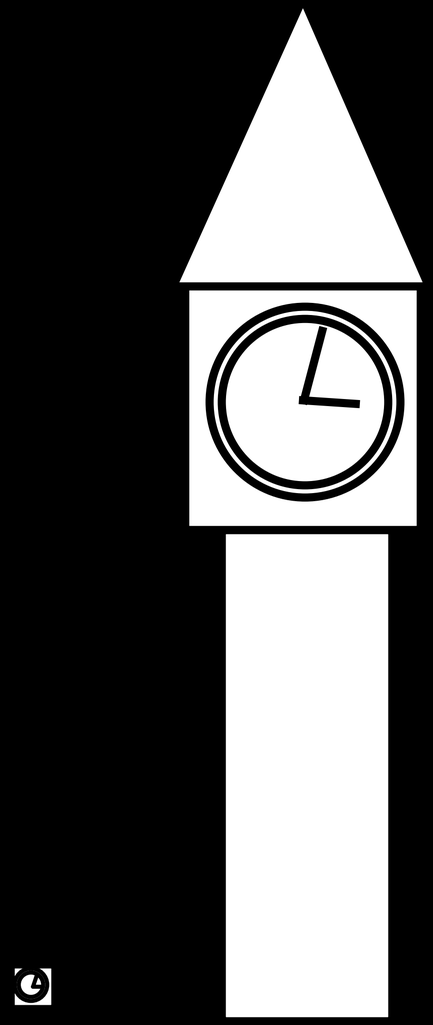
What is the frequency of a second hand on a mechanical clock?

A) 2π radians
B) 60 seconds
C) 1/60 Hz

What's its period?

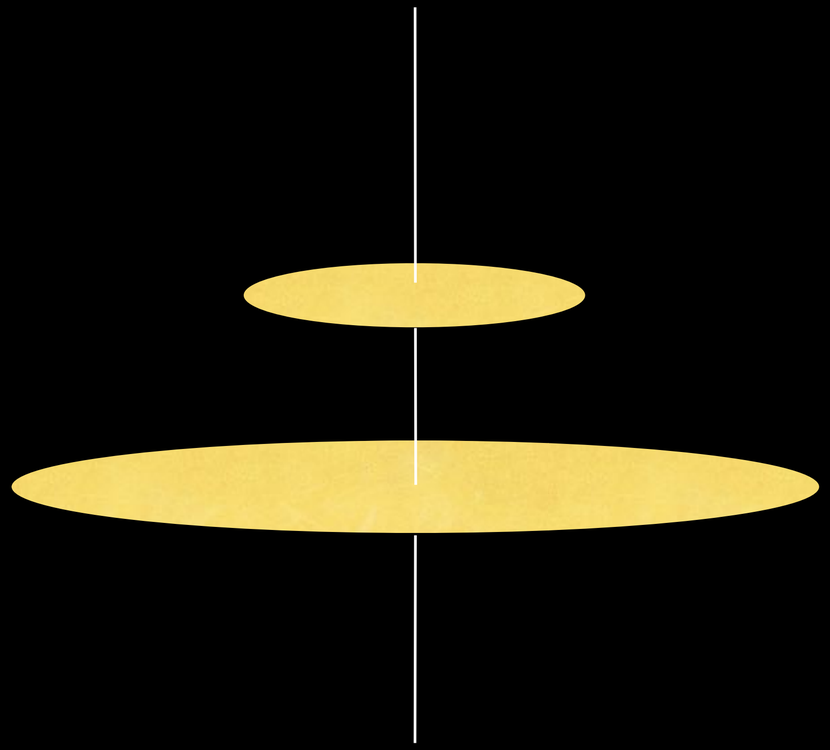
A) 2π radians
B) 60 seconds
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BIG BEN and a little alarm clock both keep perfect time. Which minute hand has the bigger angular velocity ω?



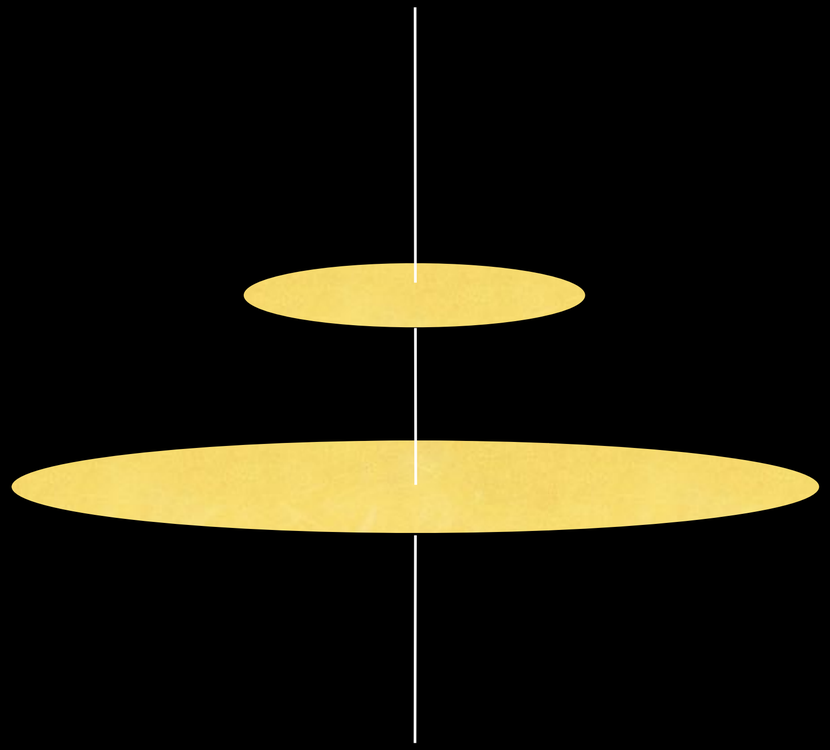
A) Big Ben
B) alarm clock
C) both are the same

Two disks are affixed to a rotating axis. Which of the disks have a larger angular velocity (ω)?



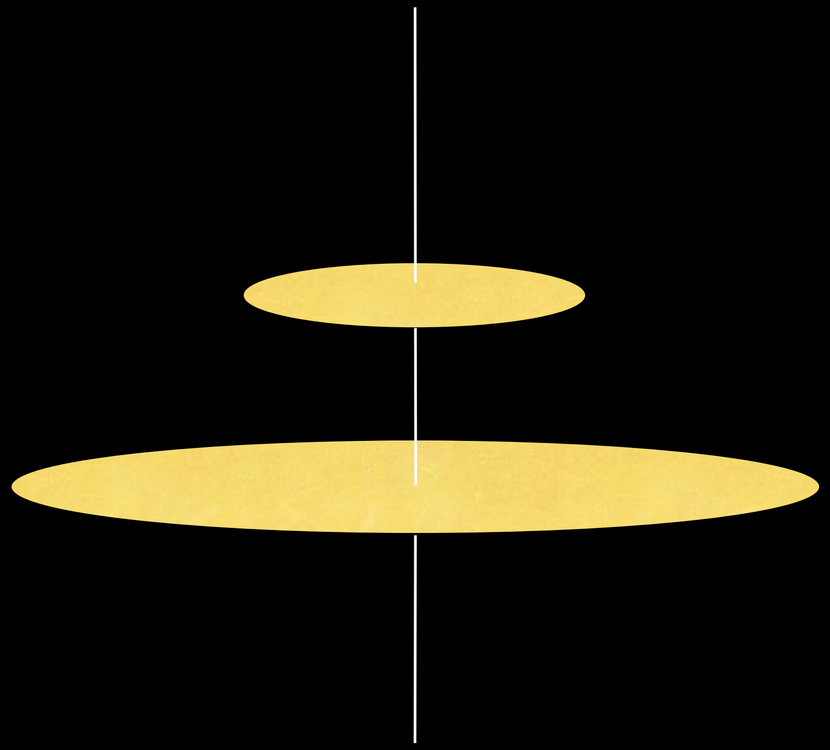
A) The larger one
B) The smaller one
C) Both are the same
D) Not enough information

Two disks are affixed to a rotating axis. Which of the disks have a larger *linear* velocity (v)?



A) The larger one
B) The smaller one
C) Both are the same
D) Not enough information

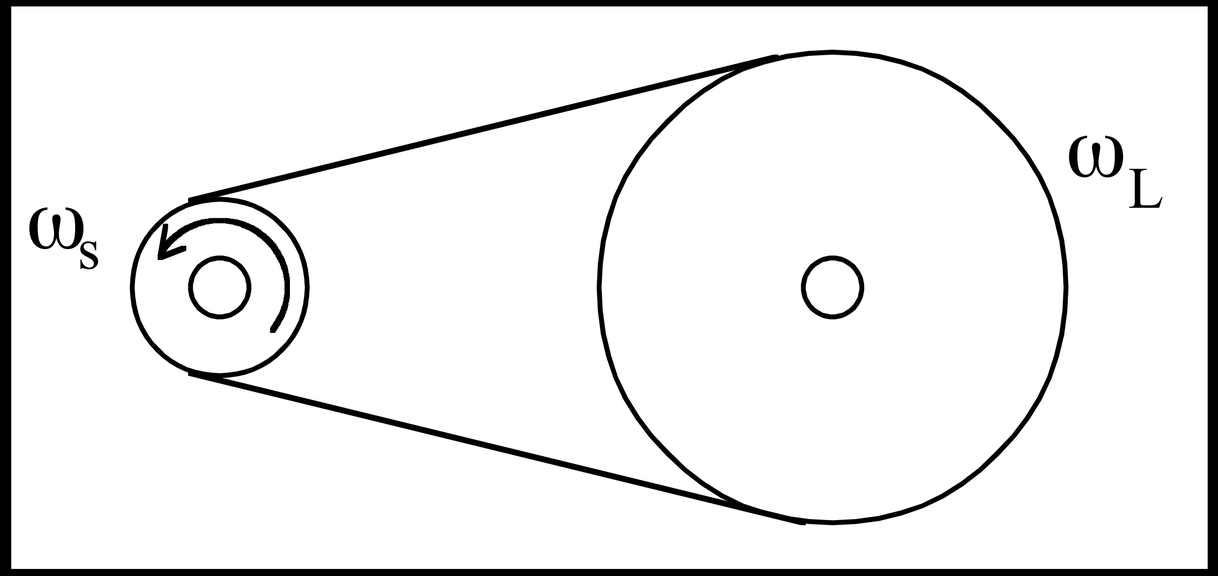
Two disks are affixed to a rotating axis. *The edge of* which disk has a larger *linear* velocity (v)?



A) The larger one
B) The smaller one
C) Both are the same
D) Not enough information

A small wheel and a large wheel are connected by a belt. The small wheel is turned at a constant angular velocity ω_s. How does the magnitude of the angular velocity of the large wheel ω_L compare to that of the small wheel?

Caution: Think carefully

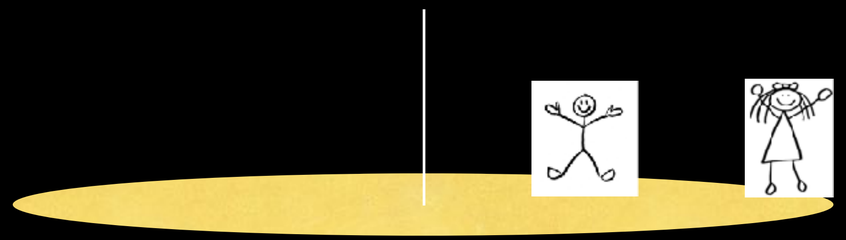


A) $\omega_L < \omega_s$

B) $\omega_L = \omega_s$

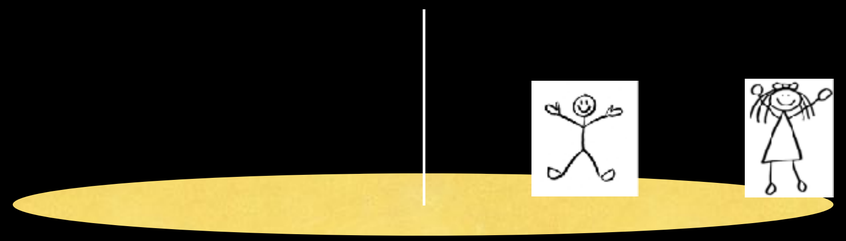
C) $\omega_L > \omega_s$

Alice and Bob are on a merry-go-round. Alice is twice as far out as Bob. When the merry-go-round is rotating, Alice's angular speed (ω) is:



A: One fourth of Bob's
B: One half of Bob's
C: The same as Bob's
D: Twice Bob's
E: Four times Bob's

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Two cyclists racing in a velodrome approach a turn at 45 MPH riding side-by-side. During the turn, which cyclist has the greatest angular speed?

A) Inside lane
B) Outside lane
C) Same
D) not enough information

Now that its winter (and because you've decided to fulfill your lifelong fantasy of being a rapper) you decide to replace the 17" stock tires on your new Prius to 22" snow tires. How does this upgrade affect your speedometer reading?

A) Your actual speed will be less than the speed presented in the speedometer.
B) Your actual speed will be more than the speed presented in the speedometer.
C) Your actual speed and the speed presented on the speedometer will be equal.
D) You need more information to answer the question.

A record player spins at 40 RPM. A song on the record is 3 minutes long when played at its correct speed - 80 RPM. What is the $\Delta\theta$ of the song when played in slow motion - at 40 RPM?

A) 120 π radians
B) 240 π radians
C) 480 π radians
D) 960 π radians
E) not enough information

A student sees the following question on an exam:

A flywheel with mass 120 kg, and radius 0.6 m, starting at rest, has an angular acceleration of 0.1 rad/s^2. How many revolutions has the wheel undergone after 10 s?

Which formula should the student use to answer the question?

A) $\omega = \omega_0 + \alpha t$
B) $\omega^2 = \omega_0{}^2 + 2\alpha\Delta\theta$
C) $\theta = \theta_0 + \omega_0 t + (1/2)\,\alpha\, t^2$