Watch. Practice. Understand. | Lesson 055

The Secret of Central Angle, Intercepted Arc and Arc Length of a circle

Watch the matching video: https://www.youtube.com/watch?v=nwKCufUcEFs

Practice focus: Arc length, sectors and angular speed

Original extra practice matched to the listed lesson topic.

Name: _____ Date: _____ Show your reasoning and check units.

01 Find the arc length in a radius-6 circle subtended by angle 2π/3 radians.

02 Find the area of that sector.

03 A wheel turns 30 revolutions per minute. Find angular speed in radians per second.

04 A radius-0.4-m wheel rotates at 5 rad/s. Find its rim's linear speed.

Watch. Practice. Understand. | Lesson 055

The Secret of Central Angle, Intercepted Arc and Arc Length of a circle

Watch the matching video: https://www.youtube.com/watch?v=nwKCufUcEFs

Practice focus: Circles, chords and equations

Original extra practice matched to the listed lesson topic.

Name: _____ Date: _____ Show your reasoning and check units.

05 Write the circle with center (2, -3) and radius 5.

06 Find the center and radius of $x^2 + y^2 - 6x + 4y - 12 = 0$.

07 A chord of a radius-5 circle is 3 units from the center. Find its length.

08 An inscribed angle intercepts an arc measuring 100°. Find the angle.

Worked answers | Lesson 055

The Secret of Central Angle, Intercepted Arc and Arc Length of a circle

Watch the matching video: https://www.youtube.com/watch?v=nwKCufUcEFs

Practice focus: Arc length, sectors and angular speed

Original extra practice matched to the listed lesson topic.

01 Find the arc length in a radius-6 circle subtended by angle $2\pi/3$ radians.

$s = r\theta = 6(2\pi/3) = 4\pi$.

02 Find the area of that sector.

$A = r^2\theta/2 = 36(2\pi/3)/2 = 12\pi$ square units.

03 A wheel turns 30 revolutions per minute. Find angular speed in radians per second.

$30(2\pi)/60 = \pi$ rad/s.

04 A radius-0.4-m wheel rotates at 5 rad/s. Find its rim's linear speed.

$v = r\omega = 0.4(5) = 2$ m/s.

Worked answers | Lesson 055

The Secret of Central Angle, Intercepted Arc and Arc Length of a circle

Watch the matching video: https://www.youtube.com/watch?v=nwKCufUcEFs

Practice focus: Circles, chords and equations

Original extra practice matched to the listed lesson topic.

05 Write the circle with center (2, -3) and radius 5.

$(x - 2)^2 + (y + 3)^2 = 25$.

06 Find the center and radius of $x^2 + y^2 - 6x + 4y - 12 = 0$.

Complete squares: $(x - 3)^2 + (y + 2)^2 = 25$. Center (3, -2), radius 5.

07 A chord of a radius-5 circle is 3 units from the center. Find its length.

The perpendicular from center bisects the chord. Half-chord = $\sqrt{(25 - 9)} = 4$; whole chord 8.

08 An inscribed angle intercepts an arc measuring 100°. Find the angle.

An inscribed angle is half its intercepted arc: 50°.