

QUESTION 1

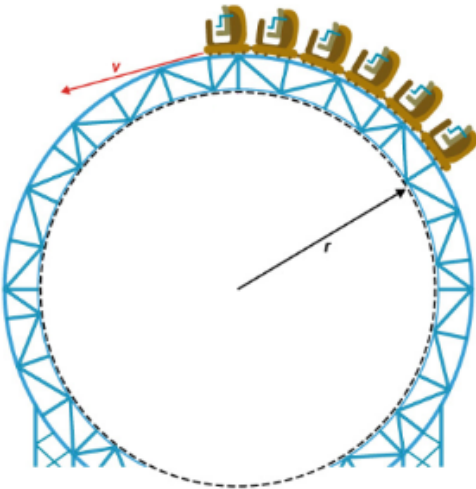
▶

Select the correct answer from the drop-down menu.

A roller coaster experiences a change of angular velocity of 2.4 rad/s in 0.64 seconds. Its average angular acceleration is

3.8 ✓ ▼

 rad/s².



QUESTION 2

▶

Drag and drop the correct answer in the space provided.

Drag the terms into the correct place in the table comparing displacement, velocity and acceleration.

Quantity	Linear Version	Angular Version	Relationship
Displacement	x (m)	θ (rad)	
Velocity	v (m/ s)		$v = r\omega$
Acceleration	a (m/ s ²)		

QUESTION 3

▶

Select the correct answer.

A toy car traveling around a circular track with a linear acceleration of 25 m/s². The radius of the track is 0.76 m. What is the angular acceleration in revolutions per second squared?

☐

 3.8 rev/s²

☐

 1.5 rev/s²



5.2 rev/s²



7.9 rev/s²

QUESTION 4



Select the correct answer.

You were requested to calculate the angular acceleration of a wheel but were only given the radius of 38 cm, the change in linear velocity of 25 m/s, and the duration of the change in velocity which was 11 seconds. What is the angular acceleration of the wheel?



4.6 rad/s²



6.0 rad/s²



2.8 rad/s²



7.9 rad/s²

QUESTION 5



Select the correct answer.

A motor had an increase in its angular velocity of 26 rad/s in 9.0 seconds. What is its angular acceleration?



230 rad/s²



1.5 rad/s²



2.9 rad/s²



3.8 rad/s²

QUESTION 6



Select the correct answer.

The angular acceleration can be calculated by

$$\alpha = \frac{\Delta \omega}{\Delta t}$$

, what is the unit for angular acceleration?

☒ rad / s²



☐ rad/s

☐ rad

☐ m / s²

QUESTION 7



Select the correct answer.

Salem measured the angular acceleration and linear acceleration of a circular object. His teacher asked him to calculate its diameter in cm.

Salem had the following readings:

$$\alpha = 68 \text{ rad / s}^2$$

$$a = 14 \text{ m / s}$$

Help Salem in finding the diameter of the circular object.

☐ 15 cm

☐ 0.21 cm

☒ 41 cm



☐ 4.8 cm

QUESTION 8



Select the correct answer.

Which of these is the correct relationship between angular acceleration and linear acceleration?

☐ $\alpha = ar$

☐ $a = \frac{\alpha}{r}$

☒ $a = \alpha r$ ✓

☐ $\alpha = \omega r$

QUESTION 9



Select the correct answer.

To calculate the instantaneous acceleration, you need to follow two steps. Which of the below steps are the correct ones?

- ☐ 1. Draw a tangent to the angular velocity curve at the time you want the angular acceleration.
2. Trace the y -axis intersection of this tangent.

- ☐ 1. Draw a tangent to the linear velocity curve at the time you want the linear acceleration.
2. Calculate the gradient of this tangent.

- ☒ 1. Draw a tangent to the angular velocity curve at the time you want the angular acceleration.
2. Calculate the gradient of this tangent. ✓

- ☐ 1. Draw a tangent to the angular acceleration curve at the time you want the angular velocity.
2. Calculate the gradient of this tangent.

QUESTION 10



Select the correct answer.

You are given the radius of a circular object (25.0 cm) rotating with a linear acceleration of 3.60 km/s^2 , and you are asked to find the angular acceleration in radians per second squared. What is the angular acceleration of the object?

☐ $1,230 \text{ rad/s}^2$

☒ $14,400 \text{ rad/s}^2$ ✓

☐ 12,300 rad/s²

☐ 1,450 rad/s²

QUESTION 11



Select the correct answer from the drop-down menu.

The angular acceleration is the change in angular velocity over time, and it is measured in rad/s². It is represented by the Greek letter

✓ ▼ .

QUESTION 12



Select the correct answer.

A wheel in a mechanic's shop is being tested, its angular velocity was increased from 450 rad/min to 2500 rad/s in half a minute. What is the average angular acceleration?

☐ 250 rad/s²

☐ 25 rad/s²

☐ 68 rad/s²

☒ 83 rad/s² ✓

QUESTION 13



Select the correct answer.

What is the correct equation for calculating average angular acceleration?

☐ $\alpha = \frac{\Delta x}{\Delta t}$

☐ $\alpha = \frac{\Delta v}{\Delta t}$

☒ $\alpha = \frac{\Delta \omega}{\Delta t}$ ✓

☐ $\alpha = \frac{\Delta t}{\Delta \omega}$

QUESTION 14



Select the best answer.

Identify the best description of instantaneous angular acceleration.

☐ a sudden change in angular velocity

☐ a sudden change of direction

☐ the angular velocity over a given time

☒ the angular acceleration at a given time ✓

QUESTION 15



Select the correct answer.

A car accelerates at 9.0 m/s^2 . The wheels have a radius of 40 cm. What is the angular acceleration of the wheels?

☐ 44 rad/s^2

☒ 23 rad/s^2 ✓

☐ 0.23 rad/s^2

☐ 0.44 rad/s^2