

QUICK REVIEW

Quick Review: Rotational Motion — Foundational

5-minute foundational review of rotational motion, emphasizing concept-first reasoning about angular motion, torque, rotational energy, and angular momentum.

 TIME 5 minutes	 BEST FOR Quick Review	 FINISH WITH Greater confidence
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After this review, you'll be able to...

explain angular motion, connect radius to tangential motion, reason about torque and rotational inertia, and recognize when angular momentum is conserved.

HOW TO USE THIS GUIDE

Work through the four stages in order. Write directly in the spaces provided, check your work in the Quick Answers section, and finish by choosing the next resource that matches your confidence.

Choose how you want to review: work through this guide, follow the online review, or watch the video review.

[Start the Review Online →](#)

[Watch the Video Review →](#)

YOU WILL NEED

Pencil or pen • Calculator optional • Approximately 5 minutes

QR-02 • UNIT ALIGNMENT

Unit Alignment

This Physics Sensei Unit Review covers MEC-U08 — Rotational Motion using the Foundational treatment. Use it to reinforce the unit, prepare for homework, or review before a quiz or exam.

UNIT ID: MEC-U08 UNIT: Rotational Motion TREATMENT: Foundational RESOURCE: Unit Review	BEST USED ✓ After reading the chapter ✓ Before starting homework ✓ Before a quiz or exam
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[Explore Rotational Motion Online →](#)

Physics Sensei Unit Reviews use independent organization, wording, examples, and explanations.

FR-03 • YOUR REVIEW PLAN

Your Review Plan

Complete these four stages to quickly refresh the essential ideas and confirm you're ready to continue.

4 stages • Approximately 5 minutes

1 Quick Recall — page 4 Refresh what you already know.	2 Essential Idea — page 5 Review the most important concept.
3 Confidence Check — page 6 Confirm you're ready to move on.	4 Next Step — page 8 Continue your learning.

PRINTING TIP

For student copies, print double-sided and keep the Quick Answers section after the student activities so learners attempt each activity before checking their work.

FR-04 • STAGE 1 OF 4

Quick Recall

Let's quickly refresh what you already know. This short recall activity will bring the most important ideas back to mind before you review them.

QUICK RECALL

Recall Activity

Complete these statements from memory before revealing the answer.

1) *Points on one rigid object share the same angular velocity at an instant.* 2) *Tangential speed increases with distance from the axis.* 3) *Torque depends on the perpendicular lever arm, not just force magnitude.*

Ready to refresh the essentials?

Great! Now review the most important idea you'll want to remember.

Continue to Essential Idea — page 5 →

FR-05 • STAGE 2 OF 4

Essential Idea

Take one last look at the most important concept from this topic. If you remember this idea, the rest will come back much more easily.

ESSENTIAL IDEA

Choose the axis and sign convention first

For rotation, direction and axis choice control the setup. Use radians when connecting angular and linear quantities. A rigid body shares θ , ω , and α across all points, but tangential speed and acceleration depend on radius. Torque changes rotational motion, and moving mass farther from the axis increases rotational inertia.

$$\mathbf{v}_t = r\boldsymbol{\omega}; \mathbf{a}_t = r\boldsymbol{\alpha}; \boldsymbol{\tau} = \mathbf{r}_\perp \mathbf{F}; \Sigma \boldsymbol{\tau} = I\boldsymbol{\alpha}; K_{\text{rot}} = \frac{1}{2}I\omega^2.$$

EXAMPLE Two points on the same rotating disk have the same ω . The point twice as far from the axis has twice the tangential speed.

SENSEI NOTE Do not call every negative α “slowing.” Speed decreases only when ω and α have opposite signs.

Ready to check your memory?

You’ve refreshed the essential idea. Now see how much you remember before moving on.

Continue to Confidence Check — page 6 →

FR-06 • STAGE 3 OF 4

Confidence Check

You've refreshed the essential idea. Now answer this quick confidence check to confirm you're ready to move on.

CONFIDENCE CHECK

Five-Minute Readiness Check

Answer without notes.

(1) If two points lie on the same rigid disk, which has the larger ω ? (2) A force acts through the axis. What torque does it produce about that axis? (3) If net external torque is negligible, what rotational quantity can remain conserved?

Ready for your next step?

Great work! You've refreshed the essential idea. Now choose the resource that best matches what you'd like to do next.

Continue to Next Step — page 8 →

QUICK ANSWERS • CHECK AFTER ATTEMPTING

Quick Answers and Explanations

Use these concise answers to check your recall and confidence—not only your final response.

QUICK RECALL

Recall Activity

1) Points on one rigid object share the same angular velocity at an instant. 2) Tangential speed increases with distance from the axis. 3) Torque depends on the perpendicular lever arm, not just force magnitude.

WHY IT WORKS The recall targets axis choice, angular-versus-tangential quantities, torque, and conservation conditions.

CONFIDENCE CHECK

CONFIDENCE CHECK

Five-Minute Readiness Check

(1) They have the same ω . (2) Zero torque. (3) Angular momentum.

WHY IT WORKS These checks test rigid-body angular quantities, lever arm, and external torque.

READINESS GUIDE

3 correct: You're ready to continue. • 2 correct: Review the missed idea. • 0–1 correct: Revisit the Essential Idea or choose more practice.

FR-07 • STAGE 4 OF 4

Next Step: Continue Learning

Great work! You've completed this quick review. Choose the next resource that best matches how confident you feel.

? I'm Still Unsure Review the essential idea again. Review again: return to Essential Idea on page 5.	🕒 I Need More Practice Continue with additional practice for this topic. Go to Practice →	✓ I'm Ready Continue to the next recommended resource. Continue →
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RECOMMENDED LINKS

Review again: return to Essential Idea on page 5.

Find additional practice →

Choose another type of physics help →

Continue reviewing with these companion resources.

Start the Review Online →

Watch the Video Review →

PHYSICS HELP THAT MAKES SENSE

A Physics Sensei review never ends at the last question. It always guides you toward the next useful step.

PhysicsSensei.com