

FOCUSED REVIEW

Focused Review — Position, Displacement, and Velocity — Foundational

Review the most important ideas, reinforce the essential skills, and confirm you're ready to move on.

 TIME 15–20 minutes	 BEST FOR Focused review	 FINISH WITH Greater confidence
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After this focused review, you'll be able to...

recognize the key concepts, reinforce your problem-solving skills, and continue with greater confidence.

HOW TO USE THIS GUIDE

Work through the stages in order. Write directly in the spaces provided, check your work in the Solutions 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 if needed • Approximately 15–20 minutes

FR-02 • COURSE ALIGNMENT

Course Alignment

This Physics Sensei Topic Review is an independent learning resource. Use it to reinforce key concepts, prepare for homework, or review before a quiz or exam.

Related Unit Review: If you need to review the complete unit material, review [Motion in One Dimension here →](#)

RESOURCE: Physics Sensei Topic Review TOPIC ID: MEC-U03-T01 TOPIC: Position, Displacement, and Velocity PARENT UNIT: MEC-U03 — Motion in One Dimension COURSE LEVEL: Foundational introductory physics	BEST USED ✓ After learning the topic ✓ Before starting homework ✓ Before a quiz or exam
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FR-03 • YOUR REVIEW PLAN

Your Review Plan

Complete these six focused stages in order. Each stage reinforces your understanding and prepares you for a final confidence check.

6 stages • Approximately 15–20 minutes

1 Warm-Up Check Refresh key ideas.	2 Core Concepts Reinforce the essentials.	3 Guided Practice Strengthen key skills.
4 Confidence Check Confirm your understanding.	5 Summary Remember the essentials.	6 Next Step Choose your next step.

PRINTING TIP

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

FR-04 • STAGE 1 OF 6

Warm-Up Check

Before you begin, take a minute to reactivate what you already know. This quick warm-up will help you focus on the most important ideas before moving on.

WARM-UP 1**Key Ideas**

Choose the reference first.

What two choices define signed position on a one-dimensional axis?

WARM-UP 2**Common Mistakes**

Separate displacement from distance.

A runner leaves $x = +3$ m, completes a loop, and returns to $x = +3$ m. Is displacement zero? Is distance traveled zero?

FR-04 • WARM-UP CHECK CONTINUED

WARM-UP 3

Quick Application

Use the sign to read direction.

A cart moves from $x = -2\text{ m}$ to $x = +5\text{ m}$. Is its displacement positive, negative, or zero?

Ready to strengthen your understanding?

You've refreshed the most important ideas. Now reinforce the concepts you'll use most often.

Continue to Core Concepts →

FR-05 • STAGE 2 OF 6

Core Concepts

Let's reinforce the most important concepts you'll need to solve problems with confidence. Focus on the ideas that appear most often in homework, quizzes, and exams.

KEY CONCEPT 1**Position and displacement use the same axis**

Position says where an object is. Displacement compares two positions and records the signed net change from start to finish.

$$\Delta x = x_2 - x_1$$

EXAMPLE Moving from $x_1 = -3$ m to $x_2 = +4$ m gives $\Delta x = +7$ m.

SENSEI NOTE Do not replace displacement with distance traveled when the path includes reversals.

KEY CONCEPT 2**Average velocity includes direction**

Average velocity tells how quickly position changes over an interval. Its sign follows the sign of displacement because elapsed time is positive.

$$\text{average velocity} = \text{displacement} \div \text{elapsed time}$$

EXAMPLE A +12 m displacement in 4 s gives an average velocity of +3 m/s.

SENSEI NOTE Speed is not the same as velocity: speed has no direction sign.

Ready to apply these ideas?

You've reinforced the essential concepts. Now strengthen your problem-solving skills by working through a few guided examples.

Continue to Guided Practice →

FR-06 • STAGE 3 OF 6

Guided Practice

Now apply the key concepts you've just reviewed. Work through these focused practice activities to reinforce your problem-solving skills before the final confidence check.

PRACTICE 1**Guided Example**

Find both quantities.

A cart moves from $x = +4$ m to $x = -2$ m in 3 s. Find its displacement and average velocity.

PRACTICE 2**Independent Check**

Keep endpoints separate from path length.

A walker starts at $x = -5$ m and ends at $x = +1$ m after 4 s. Find displacement and average velocity.

Ready for a confidence check?

You've reinforced the essential skills through focused practice. Now confirm your understanding with two short questions.

Continue to Confidence Check →

FR-07 • STAGE 4 OF 6

Confidence Check

You've reinforced the key concepts and practiced the essential skills. Now confirm you're ready to move forward by completing these short confidence checks.

CONFIDENCE CHECK 1

Back to the same position

Decide before calculating.

An object starts at $x = 2 \text{ m}$ and ends at $x = 2 \text{ m}$ after 10 s . What are its displacement and average velocity?

CONFIDENCE CHECK 2

Negative direction

Use the sign of the displacement.

An object goes from $x = +7 \text{ m}$ to $x = +1 \text{ m}$ in 2 s . Is its average velocity positive, negative, or zero?

HOW DID IT GO?

I answered ____ of 2 questions correctly.

Use the Solutions section to check your reasoning, then take one final look at the essential ideas.

You've confirmed your understanding.

Take one final look at the essential ideas before choosing your next step.

Continue to Summary →

FR-08 • STAGE 5 OF 6

Summary

Before moving on, take one final look at the essential ideas you'll want to remember.

KEY TAKEAWAY 1**Endpoints determine displacement**

Position is a location; displacement is final position minus initial position.

KEY TAKEAWAY 2**Velocity is signed**

Average velocity uses displacement, so it carries direction; distance and speed do not.

MY ONE-SENTENCE SUMMARY

In my own words, the most important idea is:

Ready for your next step?

You've reviewed the essential ideas one last time. Now choose the resource that best matches how confident you feel.

Continue to Next Step →

ANSWER KEY • CHECK AFTER ATTEMPTING

Solutions and Explanations

Use these solutions to check your reasoning—not only your final answer. Use each answer and explanation to check both the setup and the physical interpretation.

WARM-UP • ACTIVITY 1

Key Ideas

Choose an origin and a positive direction.

WHY IT WORKS Without a reference, “positive” and “negative” positions have no physical meaning.

WARM-UP • ACTIVITY 2

Common Mistakes

Displacement is zero; distance traveled is not zero.

WHY IT WORKS Displacement depends only on endpoints, while distance counts the path traveled.

WARM-UP • ACTIVITY 3

Quick Application

Positive.

WHY IT WORKS The final position is greater than the initial position on the chosen axis.

SOLUTIONS • GUIDED PRACTICE

PRACTICE 1**Guided Example**

$\Delta x = -6 \text{ m}$; average velocity = -2 m/s .

WHY IT WORKS Subtract final minus initial, then divide the signed displacement by the elapsed time.

PRACTICE 2**Independent Check**

$\Delta x = +6 \text{ m}$; average velocity = $+1.5 \text{ m/s}$.

WHY IT WORKS Only the initial and final positions are needed for displacement and average velocity.

SOLUTIONS • CONFIDENCE CHECK

CONFIDENCE CHECK 1

Back to the same position

Displacement = 0 m; average velocity = 0 m/s.

WHY IT WORKS Equal initial and final positions give zero net change regardless of the path taken.

CONFIDENCE CHECK 2

Negative direction

Negative.

WHY IT WORKS The displacement is -6 m, and dividing by a positive time keeps the velocity negative.

READINESS GUIDE

2 correct: You're ready to continue. • 1 correct: Review the missed idea, then continue. • 0 correct: Revisit Core Concepts or choose more practice.

FR-09 • STAGE 6 OF 6

Next Step: Continue Learning

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

? I'm Still Unsure Review the focused review again to strengthen the essential concepts. Review Again →	🎯 I Need More Practice Build confidence with additional practice problems. Go to Practice →	✓ I'm Ready Continue to the next topic or learning resource. Continue →
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RECOMMENDED LINKS

[Review this topic again →](#)

[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