QUICK REVIEW

Quick Review — Drawing and Solving Free-Body Diagrams — Calculus-Based

Refresh the most important ideas, formulas, and problem-solving strategies for Drawing and Solving Free-Body Diagrams in just a few minutes.

TIME	BEST FOR	FINISH WITH
5–10 minutes	A rapid refresh	Key ideas refreshed

After this quick review, you'll be able to…
quickly recall the essential concepts, formulas, and problem-solving strategies needed to move forward with confidence.

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 if needed • Approximately 5–10 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 Newton's Laws and Free-Body Diagrams here →

RESOURCE: Physics Sensei Topic Review TOPIC ID: MEC-U05-T02 TOPIC: Drawing and Solving Free-Body Diagrams PARENT UNIT: MEC-U05 — Newton's Laws and Free-Body Diagrams COURSE LEVEL: Calculus-Based	BEST USED ✓ After learning the topic ✓ Before starting homework ✓ Before a quiz or exam

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 5–10 minutes

1 **Quick Recall** Refresh what you already know.	2 **Essential Idea** Review the most important concept.
3 **Confidence Check** Confirm you're ready to move on.	4 **Next Step** 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

Sketch an FBD for a box on a horizontal floor that is pushed to the right. Name every force acting on the box.

Ready to refresh the essentials?

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

Review the Essential Idea →

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

Model the System Before Writing Equations

An FBD is a force model of one selected body. Include every external force on that body and exclude forces the body exerts on other objects. Distinguish contact forces (normal, friction, tension) from long-range forces such as weight.

$$\Sigma F = ma$$

EXAMPLE For a crate pulled across a floor, the FBD can include weight, normal force, applied force, and friction.

SENSEI NOTE Newton's third-law partner of a force acts on another body, so it does not belong on the same FBD.

Ready to check your memory?

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

Start the Confidence Check →

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

From Diagram to Equation

Use the FBD information to find the requested quantity.

A 5.0 kg box has a 20 N force to the right and 8 N of friction to the left. What is its horizontal acceleration?

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.

Choose Your Next Step →

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

Weight downward, normal force upward, applied force right, and friction left.

WHY IT WORKS The FBD contains forces acting on the chosen box only.

CONFIDENCE CHECK

CONFIDENCE CHECK

From Diagram to Equation

$\Sigma F_x = 20 - 8 = 12$ N; $a_x = 12/5.0 = 2.4$ m/s² to the right.

WHY IT WORKS Sum signed force components along the chosen x-axis before applying Newton's second law.

READINESS GUIDE

1 correct: You're ready to continue. • 0 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	**I Need More Practice**	**I'm Ready**
Review the essential idea again.	Continue with additional practice for this topic.	Continue to the next recommended resource.
Review Again →	**Go to Practice →**	**Continue →**

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 →

Online review page URL: https://physicssensei.com/quick-topic-review-drawing-and-solving-free-body-diagrams-calculus-based/

Video review URL: PhysicsSensei.com

PDF download URL: PhysicsSensei.com

Practice bundle URL: PhysicsSensei.com

Next recommended resource URL: PhysicsSensei.com

Another type of physics help URL: PhysicsSensei.com

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