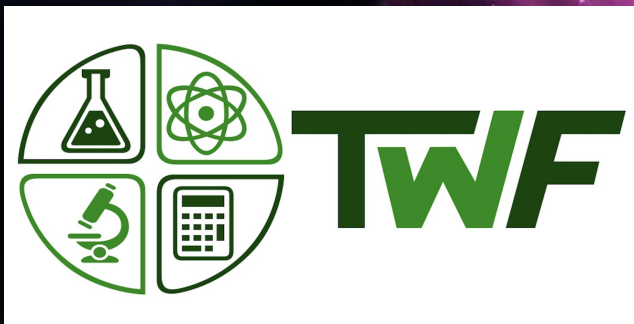


Calculating Average Speed, Velocity, and Displacement

5E Lesson – Grade 7-10

The 5E model is a scientifically proven method to improve student engagement and learning in your classroom

- ✓ Engagement
- ✓ Exploration
- ✓ Explanation
- ✓ Elaborate
- ✓ Evaluate



Complete Teacher Instructions

Calculating Average Speed, Velocity, and Displacement 5E Lesson

Grades 7-10	Calculating Average Speed, Velocity, and Displacement	Ongoing Lesson
Lesson Objective: Students will learn about: • Motion terms • Scalar quantities • Vector quantities • Average and instantaneous speed • $v = d/t$ • Linear motion • Velocity • Distance vs displacement • Position-time and velocity-time graphs • Speedometers		
Possible Student Misconceptions: • Speed and velocity are the same thing • The location of an object can be described by stating its distance from a (regardless of direction) • Distance and displacement are the same thing • There are only two types of motion: moving and not moving		
Materials: • 1 device (smartphone, Chromebook, laptop, tablet, or computer) per 3 stu • A means of projecting a PowerPoint presentation • Internet access • General classroom objects • A small ball • A meter stick, ruler, or tape measure		
Teacher Notes: ➢ All videos can be accessed directly from the PowerPoint. To retrieve them icon while in slideshow mode and it will automatically open for you. If it do reason, right-click on the image and click Edit Hyperlink or something sin ➢ I've created a video walkthrough if needed. It can be accessed here - https://youtu.be/oCIKIP9SaDQ ➢ I don't believe in long lessons. If you feel your students are losing their foc Stop the PowerPoint and give them a 5-minute break. If you'd like to show recommend my video collection here - http://www.teachwithferay.com/scie are tons of brain-break videos to choose from all grouped by category.		

Calculating Average Speed, Velocity, and Displacement Lesson

Engagement Phase Your students will watch the video 'Gridiron Physics' and complete the following. 1. Watch the video and answer the questions. The video can be found here - https://www.youtube.com/watch?v=nF5S0FLp19Y Teacher Notes: - The video is about 5 minutes long - You may need to show the video more than once or pause when an answer is given to one of the questions.	
Exploration Phase Exploration - Lab Station Activity • In groups of 2-3, have your students complete <i>Exploration - Lab Station Activity</i>. Once they're done, they will submit their passport to you. Teacher Notes: • The complete instructions for my Lab Station activity can be found in the <i>START HERE - Instructions</i> file.	
Explanation Phase PowerPoint Lessons • The lesson is found in the folder - <i>Explanation - Lesson</i> • This lesson is designed to be completed over one day • There is one embedded video, and plenty of opportunity to engage, interact and check for your students' understanding throughout the lesson • The lesson covers the following topics: ➢ Motion terms ➢ Scalar quantities ➢ Average and instantaneous speed ➢ $v = d/t$ ➢ Linear motion ➢ Velocity ➢ Displacement ➢ Position-time and velocity-time graphs Teacher Notes: • All videos can be accessed directly from the PowerPoint. To retrieve them, click on the video icon while in slideshow mode and it will automatically open for you. If they don't open, right-click the image and select Edit Hyperlink or something similar. • I've created a video walkthrough if needed. It can be accessed here - https://youtu.be/oCIKIP9SaDQ	

• I have also enclosed a .PDF version of both the teacher and student versions.	
Elaborate Phase Elaborate - Scavenger Hunt Your students will complete - <i>Elaborate - Scavenger Hunt</i> . This activity will require your students to move beyond what was covered directly in the lesson and allow them to further develop their understanding.	Duration: 1 hour Teacher Role - Facilitate learning and keep students focused Goal ☐ Students use their newly obtained knowledge to propose solutions and extend their learning to new situations
Evaluate Phase Quiz Have your students complete - <i>Evaluate - Calculating Average Speed, Velocity, and Displacement Quiz</i> Teacher Notes: ➢ It's sometimes best to have the students peer evaluate ➢ Placing students in small groups and having them exchange papers to mark will accomplish two things 1) Provide immediate feedback on the questions they just completed 2) Significantly reduce your marking time ➢ Peer evaluation is not needed, only suggested when appropriate	Duration: 30 min Teacher Role - Distribute and collect evaluation Goal ☐ Students are given the opportunity to demonstrate their understanding and evaluate their own progress

Each phase is clearly described

A Complete Lesson

Motion Terms

- The study of motion is called kinematics.
- Uniform motion is a movement at a constant speed in a straight line.
- Nonuniform motion means movement which changes in speed or direction or both.

← Make sure your students are on track

Student copies with blanks
Videos embedded right into
your slideshow

Scalar Quantity

- _____
- i.e. km/h, m/s, kg
- Vector quantities have both magnitude and direction
- i.e. km/h [west], m/s² [N 23° W]



Velocity and Other Vector Quantities

- A vector quantity is a quantity with a magnitude and direction.
- The direction is given in [square brackets].
 - i.e. Displacement, and velocity
 - i.e. 20 km/h [E]



Interactive and Engaging Activities

Device-Based Scavenger Hunt Calculating Average Speed, Velocity, and Displacement

Includes



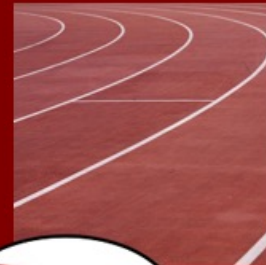
- 5 Unique Locations
- Online form submission
- Answer Key

Works on all smartphones, tablets, Chromebooks, and laptops

- **100% Digital**
- Simulations
- Quizzes
- Videos
- Games
- and more



Calculating Average Speed, Velocity, and Displacement Lab Station Activity



7 Lab Station Activities to get your kids
out of their seats and engaged in their
learning

Get away from tired practices and unengaged students



Provide a Scientifically-Proven means of instruction



Incorporate Technology and Increase Collaboration

