

GED 2002 Teachers' Handbook of Lesson Plans

Area/Skill - Mathematics	Cognitive Skill Level - Application	Correlation to Framework - 05.04/05.12/05.16	Lesson Number - 15
<p>Activity Title - Speed Trap</p> <p>Goal/Objective Students will learn to apply formulas to real-life situations and understand the usefulness of algebra.</p> <p>Lesson Outline</p> <p>Introduction Estimating the speed of an approaching motor vehicle is a valuable skill for any driver or pedestrian. Everyday people base life and death decisions on their ability to accurately estimate speed. This activity puts a scientific spin on this skill.</p> <p>Activity Measure two points (A & B) on a nearby street 53 feet apart. Student(s) at point A will be given a flag; student(s) at point B will be given a stopwatch. As vehicles pass point A, students will signal with the flag and students at point B will start the stopwatch. When the vehicle passes point B, the stopwatch will be stopped and the number of seconds noted.</p> <p>To determine speed, it is necessary to perform several calculations. Today, we will use the formula - distance divided by time to compute feet per second. After that figure is calculated, we will use multiplication to compute miles per second and division to compute miles per hour. As a vehicle passes Point A, a student waves a flag and Student B and point B starts the stopwatch. When the vehicle passes point B, student B stops the watch and records the time in seconds. We know that the distance from A to B is 100 feet.</p> <p>Example: If a vehicle were timed at 2 seconds from point A to point B, the following steps would be followed:</p> <ul style="list-style-type: none"> • 100 ft. / 2 seconds = 50 ft per second • 50 fps X 60 seconds in a minute = 300 feet per minute • 300 X 60 minutes in an hour = 180000 feet per hour • 180000 / 5280 feet in mile = 34.1 miles per hour <p>Debriefing/Evaluation Activity Discuss the use of the formula - distance = rate x time. Talk about the accuracy of utilizing this type of mathematical formula. Is there a correlation between this activity and real life situations?</p> <p>Have students practice teaching the lesson to demonstrate understanding.</p>			<p>Materials/Texts/Realia/Handouts</p> <ul style="list-style-type: none"> • Stopwatch • Flag(s) • Clipboard/paper/pencil • Calculator • Measuring tape • Appropriate street • Traffic
<p>Real-Life Connection</p> <p>Invite a law enforcement officer to visit the class and demonstrate how speed laws are enforced. Ask the officer to discuss the concept of "Bear in the Air" and how officers use the same basic method of speed limit enforcement whether by timing from the air or radar.</p>			<p>Extension Activity</p> <p>Assign the class a street or intersection in the community that has a high concentration of traffic. Set up and complete the activity on this street and report the results to an appropriate governmental agency. Students may want to write letters to local news media to document their findings.</p>
			<p>ESE/ESOL Accommodations</p> <ul style="list-style-type: none"> • Cooperative learning group • Provide pre-written information • Calculator • Allow for hands-on activity

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Activity Title - Speed Trap

Introduction

Say: To determine speed, it is necessary to perform several calculations. Today, we will use the formula - distance divided by time to compute feet per second. After that figure is found, we will use multiplication to compute miles per second and division to compute miles per hour. We will begin by measuring a distance of 100 feet by using the street. This will give us **D** or distance. One student will stand at the beginning point of the 100 feet, we will call it Point A, and one student will stand at the end of the 100 feet, we will call that Point B. As a vehicle passes Point A, the student will wave a flag. The student standing at Point B will immediately start the stopwatch. When the vehicle passes Point B, the student stops the watch and records the time in seconds.

Main Activity

Say: Let's work this example before we go outdoors. If a vehicle is timed at 2 seconds from point A to point B, the following steps would be followed:

- $100 \text{ ft.} / 2 \text{ seconds} = 50 \text{ ft per second}$
- $50 \text{ fps (feet per second)} \times 60 \text{ seconds in a minute} = 300 \text{ feet per minute}$
- $300 \times 60 \text{ minutes in an hour} = 180,000 \text{ feet per hour}$
- $180,000 / 5,280 \text{ feet in mile} = 34.1 \text{ miles per hour}$

The formula would be as follows:

- $100 \text{ divided by seconds to complete marked course} = X$
- $X \text{ is multiplied by } 60 \text{ to compute feet per minute} = Y$
- $Y \text{ is multiple by } 60 \text{ to compute feet per hour} = Z$
- $Z \text{ is divided by } 5280 \text{ to compute miles per hour}$

Take the class to the predetermined area and time several vehicles. After collecting data, return to the classroom and utilize the formula to compute the speed of the vehicles that were measured.

Closure/Conclusion

Complete the computation of the vehicle's speed. *Ask:* Does this information have any value for your own community? Suggest that the class make a project and utilize this method to be proactive in the community and help curb unnecessary speeding.

Follow-Up Lessons/Activities

Say: After you have completed the activity, you may want to take the results of your survey to local officials (i.e. city council, local law enforce, local government) to help them enforce the safe driving laws.