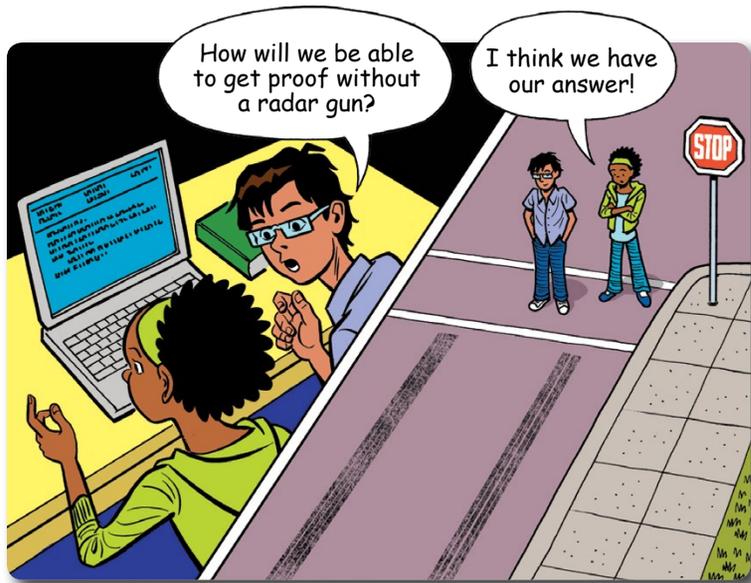


The Case of the Screeching Tires

“SCREECH—help!” is the subject line of an e-mail Rick and Athena receive from their principal, who suspects that drivers are exceeding the 15 mph speed limit along the road leading to the school. The principal has urged the city to install speed bumps but wants to provide proof that cars are speeding. Rick thinks a speed radar gun is the only way, but Athena suggests they first inspect the scene. The pair discover different sets of tire tracks where cars had slammed on their brakes before a stop sign. “I think our answer is right here!” Athena declares.



WORK THE MATH

Athena’s first step is to assemble the key facts. She connects with police investigators and discovers that the formula used to analyze tire tracks is $s = \sqrt{24 \cdot d}$ where $s =$ speed in miles per hour and $d =$ length of the tire tracks in feet. She then takes measurements of different tire tracks.

Show your work—use separate paper as needed.

- 1** For each set of measurements below, calculate each vehicle’s speed:

TIRE TRACKS	VEHICLE SPEED
#1: 9.375 feet	
#2: 6 feet	
#3: 37.5 feet	
#4: 24 feet	
#5: 150 feet	

- 2** What should Rick and Athena report to the principal about speeding cars?

NOW TRY THIS:

A principal in another school submits different tire track data to analyze possible speeding on a road near her school:

Tire Tracks #1: 16 $\frac{2}{3}$ feet

Tire Tracks #2: 66 $\frac{2}{3}$ feet

Tire Tracks #3: 104 $\frac{1}{6}$ feet

The speed limit is 20 mph. For each measurement above, calculate each vehicle’s speed to determine whether or not there is a speeding issue.

Take It Further: Suppose the formula to analyze tire tracks is $s = \sqrt{25 \times d}$. Write a scenario and three problems to correspond with this tire-tracks formula.