

Objectives:

- Write word equations as mathematical equations
 - Solve linear equations with integral coefficients
 - Use the strategies & techniques of linear equations to solve motion problems involving rates
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(A) Lesson Context

Mr Santowski likes to travel in cars, planes and of course on his mountain bike (if my racing bike is broken down!!!). So when dealing with the mathematics of motion, we need to remember one formula and remember it in 3 forms:

Speed = distance/time distance = speed x time time = distance/speed

(B) Working With Rates:

Speed	Distance	Time
80 km/h		2.5 hours
25 m/h		36 minutes
120 km/h	540 km	
	320 km	3 hours
	500 miles	8 hours & 45 minutes
16 m/s		35 minutes
40 m/s		2 hours
50 m/s	2.5 km	
	3km	18 minutes
	21.1 km	1 hour & 48 minutes

(C) Examples (Showing Problem Solving Strategies)

Ex 1. An aircraft carrier made a trip to Guam and back. The trip there took three hours and the trip back took four hours. It averaged 6 km/h on the return trip. Find the average speed of the trip there.

SOLUTION (Use TABLE to organize info) → **NOTE: (Speed)=(Distance)/(Time)**

Trip	Distance	Time	Speed
Trip to Guam		3 hours	
Trip Back		4 hours	6 km
TOTALS			

To find our average speed, we need to know total distance/total time

Ex 2. The A passenger plane made a trip to Las Vegas and back. On the trip there it flew 432 mph and on the return trip it went 480 mph. How long did the trip there take if the return trip took nine hours?

SOLUTION (Use TABLE to organize info) → **NOTE: $(\text{Time}) = (\text{distance}) / (\text{speed})$**

Trip	Distance	Time	Speed
To Las Vegas	432 miles		
Return trip			480 mph
TOTAL		9 hours	

To find the time taken to get to Las Vegas, we need to know the distance and the speed

Now try the textbook question, p29, Q7-10 using the same tabular set up

Ex 3. A cattle train left Miami and traveled toward New York. 14 hours later a diesel train left traveling at 45 km/h in an effort to catch up to the cattle train. After traveling for four hours the diesel train finally caught up. What was the cattle train's average speed?

SOLUTION (Use TABLE to organize info) → **NOTE: $(\text{speed}) = (\text{distance}) / (\text{time})$**

Which Train	Distance	Time	Speed
Cattle Train		t	
Diesel Train		t - 14	45 km/h
TOTAL		Caught up after 4 hours ??	

To find our average speed, we need to know total distance/total time

Now attempt and complete Q1-6 on p30