The Great Physics Roadtrip!

How do you plan a road trip? How long will it take? Which highway has the highest speed? How much gas will you need? How many miles will you put on your car? We're going on a road trip in Physics! We will use this road trip throughout this unit!

Part 1: The Set Up

- 1) Go to maps.google.com and make sure you are signed into your google account.
- 2) Choose a continent or country you want to visit.
- 3) Write down all the cities you want to visit on a road trip. The order should make sense. You must have 8 cities. List them below in order.
 - City #1: Detroit, MI
 - City #2: Indianapolis, IN
 - City #3: Chicago, IL
 - City #4: Kansas City, MO
 - City #5: Fort Worth. TX
 - City #6: New Orlean, LA
 - City #7: Orlando, FL
 - City #8: Charlotte, NC
- 4) Choose your starting point and type in the city in Google maps
- 5) Click Save and then New List
- 6) Label your New List "Physics Road Trip". Do this for all 8 cities. You may need to reference this later on in the project.
- 7) Now it's time to create your road trip! Type in all 8 cities for directions. You do not have to start or end in the same place. See my example below.
- 8) Delete my example below and input your own road trip screenshot below. Include the scale at the bottom.



9) Scroll down on the directions and click on "Details". This will give you the city to city directions.10) Fill out the table below.

City	City	Distance with units	Time (in hours)	
#1: Detroit	#2: Indy	287 miles	4.43 hours (4 + 26/60)	
#2: Indy	#3:Chicago	182 miles	2.95 hours	

#3: Chicago	#4: Kansas City	525 miles	7.72 hours	
#4: Kansas City	#5: Fort Worth 546 miles		7.93 hours	
#5: Fort Worth	#6: New Orleans	537 miles	7.93 hours	
#6: New Orleans	#7: Orlando	640 miles	9.13 hours	
#7: Orlando	#8: Charlotte	524 miles	7.5 hours	

Starting and Ending Cities: Detroit - Charlotte Total Distance of Trip: 3240 miles

Total Time of Trip: 48 hours

Part 2

City	City	Speed (distance/ti me)	X Component of Distance	Y Component of Distance	Displaceme nt	Direction (angle and coordinate direction)	Velocity
#1: Detroit	#2: Indy	64.7 mi/hr	163.99	173.3	240.83 miles	47.5 sw 46 sw	54.4mi/hr 47.5 sw
#2: Indy	#3: Chicago	61.7 mi/hr	71.04	145.76	164.57	62 nw 62.3 nw	55.8 mi/hr 62 nw
#3: Chicago	#4: Kansas City	68.0 mi/hr					

#4: Kansas City	#5: Fort Worth	68.9 mi/hr			
#5: Fort Worth	#6: New Orleans	67.7 mi/hr			
#6: New Orleans	#7: Orlando	70.1 mi/hr			
#7: Orlando	#8: Charlotte	69.9 mi/hr			

Speed of the Whole Trip: 3240 miles/48 hours = 67.5 miles/hr Displacement of the Whole Trip (with angle and direction): 503.98 miles 75.4 SE Velocity of the Whole Trip: 10.5 miles/hr 75.4 SE

Final Project Road Trip Requirements

Standards Assessed

3.1 Distance/Displacement 3.3 Horizontal Motion

S.6.1 Appropriate Display of Data

Reassessment:

C.1 Communication of Content

C.2 Visuals

Presentation to Peer and Teacher Requirements

- 1. Describe your road trip and why you chose this route
- 2. Discuss your distance, displacement, speed and velocity from a chosen city to city drive **and** start to end.
- 3. Discuss why displacement and distance are different.