Hit The Road!

You and your friends have decided to plan a road trip. You must decide if you want to travel through Ohio via the Ohio Turnpike or through Pennsylvania via the Pennsylvania Turnpike.

Many states use an electronic transponder called an EZ Pass to collect tolls. By purchasing an EZ Pass, your cost per mile is reduced! Your task is to collect data from each state’s turnpike authority, make a table, make a scatterplot, and find the line of best fit. You will use your line of best fit to interpret the slope and y-intercept, and make predictions about the cost of your trip.

**PART I: OHIO TURNPIKE**

You will be purchasing an EZ Pass for $9.

1. Go to [www.ohioturnpike.org](http://www.ohioturnpike.org) and select FARE CALCULATOR from the menu on the left.

2. Travelling as a Class 1 vehicle, enter the turnpike at Exit 2 – Westgate.

3. Keeping Exit 2 – Westgate as your entrance, choose 10 different exits, calculating the cost each time. You must use Exit 110.

4. Record the exit number, miles traveled (subtract the entrance from the exit), and record the cost using an EZ Pass (add $9 to each EZ Pass fare to account for the cost of the pass).

5. Use the graphing calculator to find the line of best fit.

**PART II: PENNSYLVANIA TURNPIKE**

You will be purchasing an EZ Pass for $3.

1. Go to [www.paturnpike.org](http://www.paturnpike.org) and select TOLLS/EZPASS, then select TOLL CALCULATOR/PRINTABLE SCHEDULES.

2. Traveling as a Class 1, 2-axle vehicle, enter the turnpike at Exit 2 – Gateway.

3. Keeping Exit 2 – Gateway as your entrance, choose 10 different exits (do not go use the NORTHEAST EXTENSION), calculating the cost each time. You must include Exit 266.

4. Record the exit number, miles traveled (subtract the entrance from the exit), and record the cost using an EZ Pass (add $3 to each EZ Pass fare to account for the cost of the pass).

5. Use the graphing calculator to find the line of best fit.

**PART III: COMPARE**

Answer each question using a complete sentence. Write on a separate sheet of paper or type.

1. Describe the slopes and y-intercepts for each regression in the context of the problem.

2. Compare and contrast the equations for each turnpike. What similarities are there? What differences do you notice?

3. Graph both sets of data on the same coordinate plane. Graph each state in a different color.

4. Compare and contrast the graphs for each turnpike. What similarities are there? What differences do you notice?

5. One of your stops on your Ohio road trip will be Cedar Point. Using your regression equation for the Ohio Turnpike, find the cost of travelling to Cedar Point (Exit 110). How does this differ from the cost of getting off at Exit 110 as reported in your table?

6. One of your stops on your Pennsylvania trip will be Hershey Park. Using your regression equation for the Pennsylvania Turnpike, find the cost of travelling to Cedar Point (Exit 266). How does this differ from the cost of getting at Exit 266 as reported in your table?

7. Both states decide to add an exit at mile 190. How much would it cost in each state? What is the difference in price between the two states?

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| **OHIO TURNPIKE** |
| **Exit Name and Number** | **Miles Travelled** | **Cost (including EZ Pass purchase)** |
| 2 – Westgate | 0 | $9 |
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| **PENNSYLVANIA TURNPIKE** |
| **Exit Name and Number** | **Miles Travelled** | **Cost (including EZ Pass purchase)** |
| 2 – Gateway | 0 | $3 |
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