# Quiz 2

## Table of Contents



Ethan Vosburg

# Quiz 2 Data

Clear the workspace and command window

```
clc
clear

% Define the data
quiz2Data = {1 2 3 4 5 6; 'Sierra
 College' 'Davis' 'Vacaville' 'Vallejo' 'Berkeley' 'SF State'; 0 36.4 55.4
 79.3 98.6 113.6; 0 40 61 82 103 127}';
```

# Problem 1

Create a 3-column array of Way Point, Distance from Sierra College, and Time from Sierra College.

```
% Cast the data to a numeric values and create the array
quiz2DataTable = cell2mat(quiz2Data(:, [1 3:4]))
```

*quiz2DataTable =*

| | | |
|---|---|---|
| *1.0000* | *0* | *0* |
| *2.0000* | *36.4000* | *40.0000* |
| *3.0000* | *55.4000* | *61.0000* |
| *4.0000* | *79.3000* | *82.0000* |
| *5.0000* | *98.6000* | *103.0000* |
| *6.0000* | *113.6000* | *127.0000* |

# Problem 2

Create a 3-column table of Way Point, Distance Traveled, and Time Traveled. Include the table in your output. Use any method to create the table—your choice. Your table should have column headings with appropriate units.

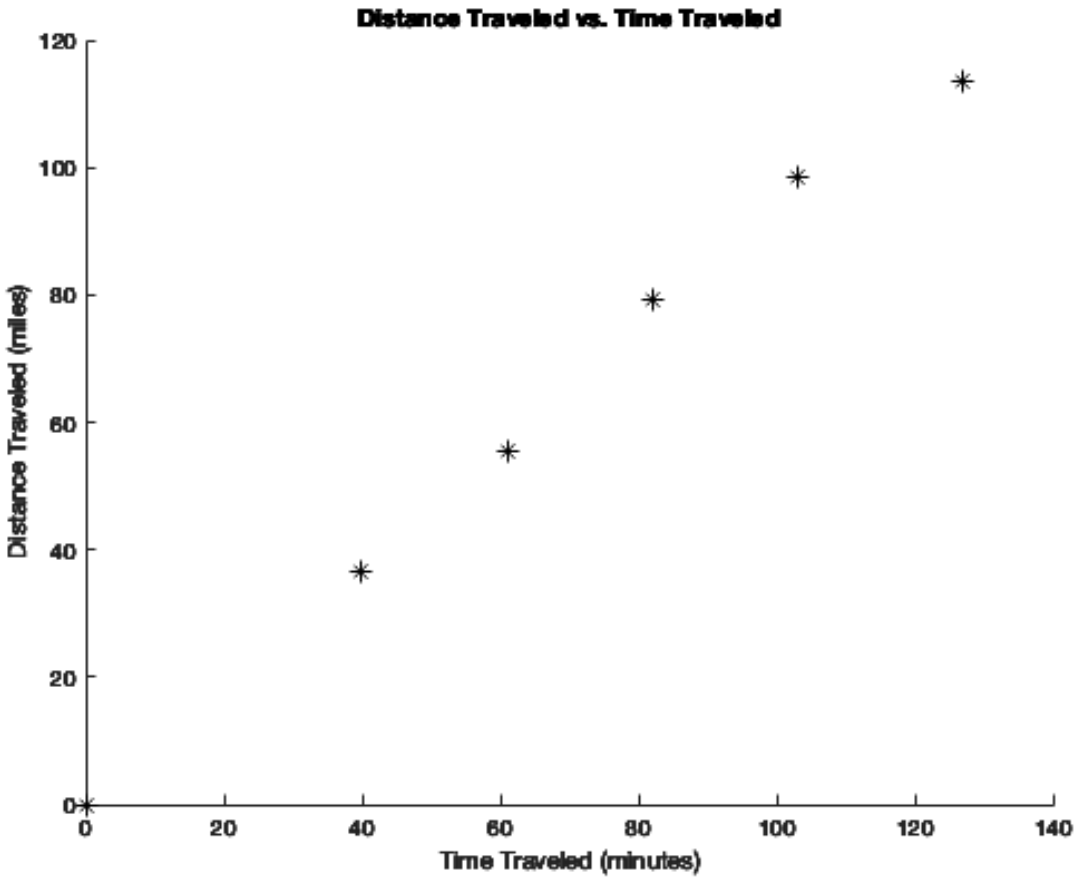
```
% Create the table
table(quiz2DataTable(:, 1), quiz2DataTable(:, 2), quiz2DataTable(:,
 3), 'VariableNames', {'WayPoint', 'DistanceTraveled (miles)', 'TimeTraveled
 (minutes)'})
```

```
ans =

  6x3 table

    WayPoint    DistanceTraveled (miles)    TimeTraveled (minutes)
    ________    ________________________    ______________________

       1                     0                          0
       2                  36.4                         40
       3                  55.4                         61
       4                  79.3                         82
       5                  98.6                        103
       6                 113.6                        127
```

# Problem 3

Plot Distance Traveled (y-axis) vs. Time Traveled (x-axis). Use indexing to extract the data from your 3-column array to plot the points. Show the data as points on the plot. Title the plot and label the axes. Include units on the axis labels.

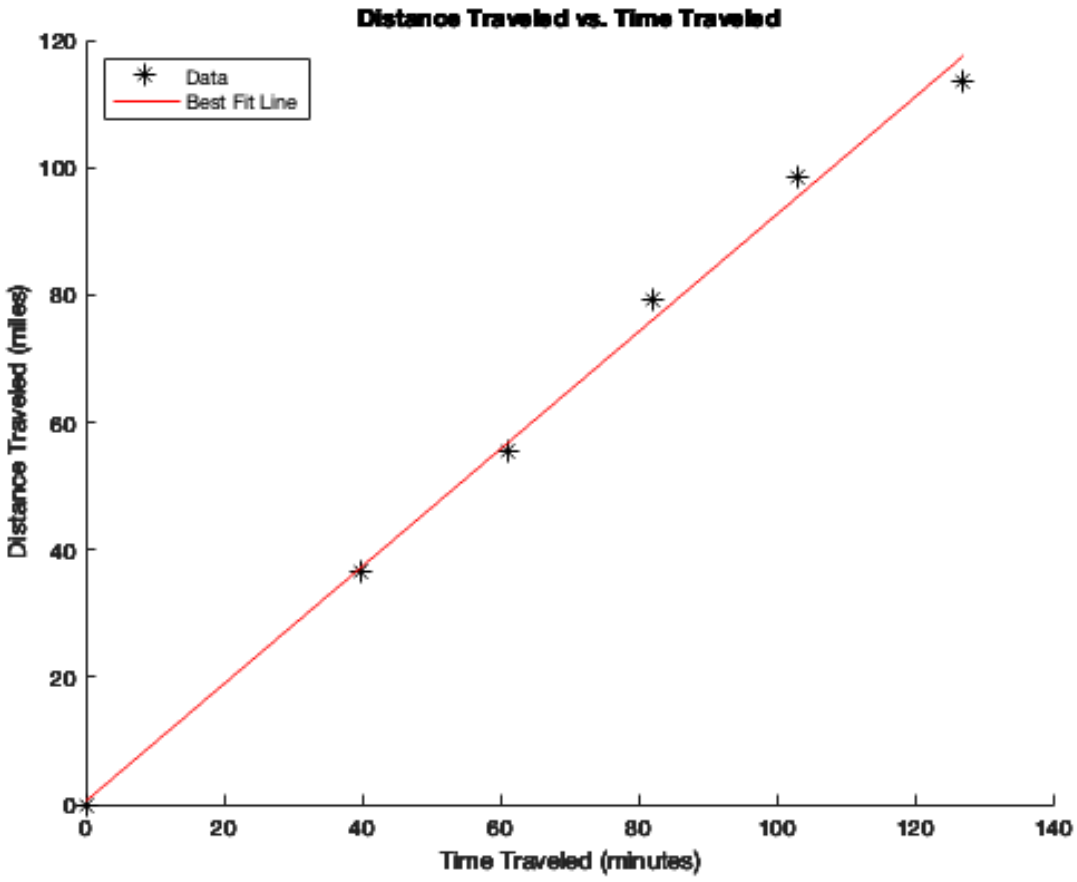
```
% Define the figure
figure(30);
problem3Plot = axes;
hold(problem3Plot, 'on');
xlabel(problem3Plot, 'Time Traveled (minutes)');
ylabel(problem3Plot, 'Distance Traveled (miles)');
title(problem3Plot, 'Distance Traveled vs. Time Traveled');

% Plot the data
plot(quiz2DataTable(:, 3), quiz2DataTable(:, 2), '*k', 'Parent',
 problem3Plot);
```




# Problem 4

Use polyfit() to create a function describing the professor's trip. Use indexing to extract the data from your 3-column array for the polyfit() function. Add this function as a best-fit line to the plot from problem 2. Should be a straight line shown through the data points.

```
% Plot the best fit line
quiz2Fit = polyfit(quiz2DataTable(:, 3), quiz2DataTable(:, 2), 1);
fplot(@(x) quiz2Fit(1) * x + quiz2Fit(2), [0 127], '-r', 'Parent',
 problem3Plot);
hold(problem3Plot, 'off');

% Add a legend
legend(problem3Plot, 'Data', 'Best Fit Line', 'Location', 'northwest');
```




# Problem 5

Use the data in your 3-column array from Problem 1 and/or the coefficients in your best-fit line to create details (shown below) of the professor's trip to output from your code. Use indexing to extract data from your 3-column array and the polyfit() function output vector to create the values of the trip details. Use fprintf() to report the following details EXACTLY as follows:

The details of the professor's trip are as follows:

They traveled a total of xx.x miles.

They traveled a total of x.xx hours.

They traveled at an average speed of xx.xx mph.

Report miles to one decimal point. Report time (in hours) to two decimal points. Report average speed (miles per hour) to two decimal points.

```
% Print the details
fprintf('The details of the professor''s trip are as follows:\n');
fprintf('%31s %.1f miles.\n', "They traveled a total of", quiz2DataTable(end,
 2));
fprintf('%31s %.2f hours.\n',"They traveled a total of", quiz2DataTable(end,
 3) / 60);
```

```
fprintf('%43s %.2f mph.\n',"They traveled at an average speed of",
 quiz2DataTable(end, 2) / (quiz2DataTable(end, 3) / 60));
```

```
The details of the professor's trip are as follows:
       They traveled a total of 113.6 miles.
       They traveled a total of 2.12 hours.
       They traveled at an average speed of 53.67 mph.
```

*Published with MATLAB® R2022b*