

### Problem 1

#### THE WAITRESS AND THE COOK

At the Superdiner, a waitress earns \$40 per day plus 75% of her tips. The cook earns \$75 per day plus the remaining 25% of the tips. In this activity you will determine the amount that must be collected in tips in order for the waitress and the cook to make an equal amount of money in a day.

1.1

Fill in the following table to calculate the amounts earned based on the tips collected.

A	B	C	D	E
tips	waitress	cook		
1	20			
2	50			
3	100			
A1	20			

1.2

Click to add ...

Caption: waitress

Click to add variable

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Click to add ...

Caption: cook

Click to add variable

1.3

**Question**

Examine the table and predict the amount in tips the waitress must collect to make the same as the cook. Write your prediction below.

**Answer** ⌵

1.4

Turn to the next page to create a scatterplot. Graph the earnings for the waitress as a scatterplot using **tips** on the x axis and **waitress** on the y axis. Change the window settings to see all points.

Graph the earnings for the cook as a scatterplot using **tips** on the x axis and **cook** on the y axis.

1.5

What type(s) of functions appears to be plotted?

Linear

absolute value

quadratic

sinusoidal

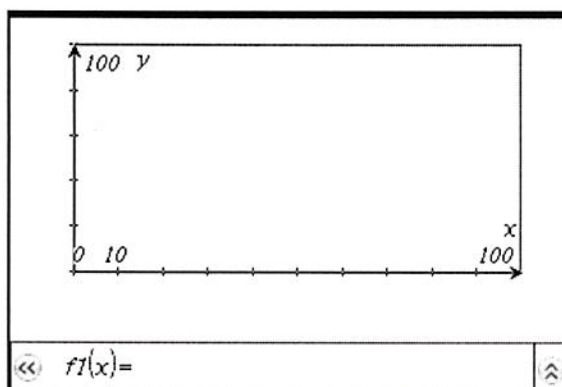
1.6

On the next page **use** the regression feature to determine the equations that represent the earnings of the waitress and of the cook.

**Save** the waitress in f1 and the cook in f2.

**Find** the coordinates for the point of intersection to determine the amount collected in tips in order for the waitress and the cook to earn the same amount in a day.

1.7



1.8

What amount in tips must the waitress collect to make the same amount as the cook in a day?

Student: type response here

1.9

How much would they make?

Student: type response here

1.10

How will the day's earnings compare if the tips exceed the value you found on 1.9? What evidence do you see of this from the graph?

Student: type response here

1.11

## Problem 2

Once you make it to this page...

Take a moment to brainstorm where else you might be able to use systems of equations to solve similar problems. Share your idea with a neighbor and be prepared to share with the class your findings.

2.1