

Name: Solutions score: _____ / 10

There are 10 points possible on this quiz. No aids (book, notes, etc.) are permitted. You may use a calculator. **Show all work and supporting calculations for full credit. Explain how you get your answers.**

1. (6 points) Mary and Robert are going to divide their shared kitchen gadgets, an instant pot and a microwave, using the method of sealed bids. **Fill in the blanks below.**

	Mary	Robert
instant pot	\$100	\$90
microwave	\$50	\$70
total bid	\$150	\$160
What is a fair share for each person?	$150/2 = 75$	$160/2 = 80$
award (who gets what item)	instant pot	microwave
award value	100	70
How much money does each person pay in or receive from the holding pile? Make sure to indicate whether the person pays or receives . <i>award - fair share</i>	$100 - 75 = 25$ <u>PAYS</u> 25	$70 - 80 = -10$ <u>GETS</u> 10
Determine the surplus.	$25 - 10 = 15$ in surplus	
Determine each person's fair share of the surplus.	$\frac{15}{2} = 7.50$	7.50

$$\text{Mary's cash: } -25 + 7.50 = -17.50$$

$$\text{Robert's cash: } 10 + 7.50 = 17.50$$

Determine the Final Allocation by filling out each blank below.

Summary of Final Allocation			
person	items	cash	paid or received?
Mary	instant pot	17.50	paid
Robert	microwave	17.50	received

2. (2 points) Describe a situation that can be modeled with a graph.

What do the **vertices** represent?

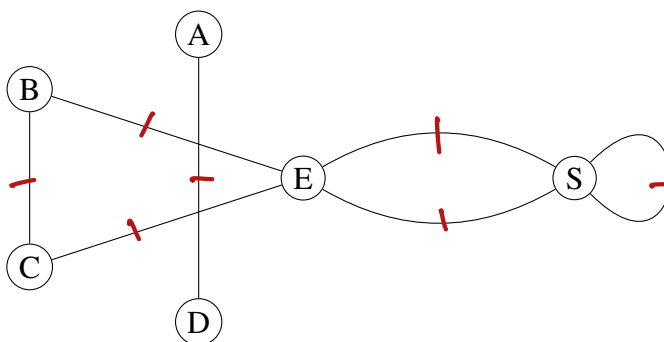
Mail delivery

Intersections of roads in a neighborhood

What do the **edges** represent?

roads in a neighborhood with mailboxes on them

3. (2 points) Consider the following graph:



(a) How many vertices does this graph have? 6

(b) How many edges does this graph have? 7

(c) What is the degree of vertex S? 4

(d) Explain why this graph is not connected. *There is no path (sequence of vertices & edges) between vertex A and vertex B.*