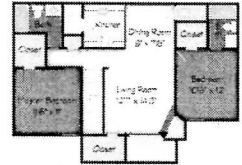Emory and Charlie see an ad for a 2-bedroom apartment for $585.00 per month. The apartment has 2 bedrooms: the master bedroom and the other bedroom. Emory is willing to pay $350.00 per month for the master bedroom or $270.00 per month for the other bedroom. Charlie is willing to pay $325.00 per month for the master bedroom or $225.00 per month for the other bedroom.

	master	other
Emory	$350.00	$270.00
Charlie	$325.00	$225.00

1. A generous MA111 student suggested that Emory pays $265.00 for the other bedroom, while Charlie pays $320.00 for the master bedroom.

(a) Would Emory accept this arrangement? (Are they paying at most what the room is worth to them?)

Sure! Emory is willing to pay $270 for the "other" bedroom, so $265 is definitely OK.

(b) Would Charlie accept this arrangement? (Are they paying at most what the room is worth to them?)

Sure! Charlie is willing to pay $325 for the master bedroom, so $320 is definitely OK.

(c) Would the land-lord accept this arrangement? (Are Emory and Charlie paying enough for rent?)

Sure! They are paying 265 + 320 = $585, so rent is covered.

(d) Does Emory prefer their own room and rent or would they prefer the deal being offered to Charlie?

Emory thinks He is saving $5 (270 - 265) now

Emory thinks Charlie is saving $30 (350 - 320)

Emory would rather switch with Charlie

(e) Does Charlie prefer their own room and rent or would they prefer the deal being offered to Emory?

Charlie thinks Charlie is saving $5 (325 - 320)

Charlie thinks Emory is overpaying by $40 (265 - 225)

Charlie would rather keep their own arrangement.

Emory and Charlie see an ad for a 2-bedroom apartment for $585.00 per month. The apartment has 2 bedrooms: the master bedroom and the other bedroom. Emory is willing to pay $350.00 per month for the master bedroom or $270.00 per month for the other bedroom. Charlie is willing to pay $325.00 per month for the master bedroom or $225.00 per month for the other bedroom.

	master	other
Emory	$350.00	$270.00
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2. A shady stranger suggests Emory pays $292.50 for the master bedroom and Charlie pays $292.50 for the other bedroom. (Each roommate pays half the rent.)

(a) Would Emory accept this arrangement? (Are they paying at most what the room is worth to them?)

Sure! Emory thinks he is saving $57.50 (350−292.50)

(b) Would Charlie accept this arrangement? (Are they paying at most what the room is worth to them?)

Nope! Charlie thinks they are overpaying by $67.50 (292.50−225)

(c) Would the land-lord accept this arrangement? (Are Emory and Charlie paying enough for rent?)

Sure! The total rent being paid is 292.50+292.50 = 585

(d) Does Emory prefer their own room and rent or would they prefer the deal being offered to Charlie?

Even Emory thinks Charlie's deal is bad, overpaying by $22.50 (292.50−270).

Emory likes his own deal better.

(e) Does Charlie prefer their own room and rent or would they prefer the deal being offered to Emory?

Charlie definitely prefers Emory's deal: saving $32.50 (325−292.50)

Everybody likes Emory's deal better

Four friends won a contest together. The prize was a charger. They split the prize using Knaster's method (give item to highest bidder; everyone pays or is paid according to their own stated value; extra is split evenly amongst everyone).

	Full Value	Their 25% share	Else's 75% share
Alice	$4.00	$1.00	$3.00
Blair	$8.00	$2.00	$6.00
Charlie	$12.00	$3.00	$9.00
Davin	$16.00	$4.00	$12.00
Average	$10.00		

So Davin gets the charger; Alice gets paid $2.50, Blair gets paid $3.50, Charlie gets paid $4.50, and Davin pays $10.50.

Explain how the numbers above help answer these questions:

5. (a) Would Davin rather have what they got or what Alice got?

Davin thinks Davin paid $10.50 for a $16 charger, so $5.50 up
Davin thinks Alice got $2.50.

Davin would prefer her own $5.50 to Alice's $2.50

(b) Would Alice rather have what they got or what Davin got?

Alice thinks Davin paid $10.50 for a $4 charger, so $6.50 down
Alice would rather have $2.50 cash than pay all that for a $4 charger.

(c) Would Alice rather have what they got or what Charlie got?

Alice thinks Charlie got $4.50.

Alice would prefer $4.50 to $2.50.

(d) What would be a better way to distribute the prize and the money to avoid having people want other people's share? Explain why your distribution is better.

Make all the payments even so Alice/Charlie/Blair all are happy with own share. Pay them at least $3 (so Charlie doesn't prefer the charger) and at most $4 (so Davin doesn't prefer cash). Maybe split the middle equally.

Davin gets charger, pays $10.50 total ($3.50 each).
Davin prefers $16 - $10.50 = $5.50 to $3.50
A/B/C prefer $3.50 to $4/$8/$12 - $10.50 = -6.50/-2.50/1.50
A/B/C don't mind A/B/c : $3.50 to $3.50

Analyze the following game: Four people play a game: Each person writes down a dollar amount; once everyone has written them down the amounts are revealed. The person who wrote down the biggest dollar amounts gets the "prize" but pays everyone else the second highest dollar amount. (We called this the Dutch auction.)

Alice thinks the prize is worth $400 total. We consider Alice to have "won" if Alice prefers her own result to everyone else's (or at least considers them equal). Since the prize is worth $400 to Alice, Alice would feel paying $300 for the prize is the same as getting paid $100, but would prefer getting $150 (but not the prize) to paying $300 for the prize (and getting the prize).

(a) What could go wrong if Alice writes down the dollar amount $150? (Feel free to make up numbers for the other three players if it helps you explain.)

If B/C/D say $125, then Alice pays $375 for $400 prize.
Alice would prefer to be paid $125 vs 400-375 = $25.

(b) What could go wrong if Alice writes down the dollar amount $50?

If B/C/D say $75, then one of them gets the prize for only $225 but A only gets $75. A would prefer 400-225 = $175 to $75.

(c) What dollar amount would you write down if you were Alice? Explain why.

$400/4 = $100 If anybody says above $100, then they would have to pay at least $100 to Alice and $300 total, so Alice would prefer $100+ to $400 - $300+

If everybody says below $100 then Alice pays less than $300 for the prize. Alice prefers $400 - ($300 - a little) to $100 - a little.