

Math 107  
Dusty Wilson

Name KEY  
Circle Class 9:00 or 11:00

### Reading Assignment Ch. 3

Read Chapter Three and answer the following questions. If there is a fill-in, write that word/phrase in the space given. Mark down items you have questions on so you can "check off" those that get answered during tomorrow's lecture.

1. Why did the Lion devour the Ass in Aesop's Fable?

The division was not deemed fair.

2. In fair division problems there are two essential elements. What are they? Give each a *brief* description.

The goods to divide  
The players who get shares.

3. What four assumptions can we make about the players' value systems?

rational, no knowledge of the others' values (privacy),  
symmetry, ~~non-waste system~~, willing to play by the rules (coop)

4. Suppose there are 6 players dividing a set of goods. If Aaron values the 6 divisions the following way, circle those that are technically a *Fair Share* to Aaron.

$s_1 : 8\%$

$s_2 : 30\%$

$s_3 : 16\%$

$s_4 : 10\%$

$s_5 : 17\%$

$s_6 : 19\%$

5. There are two basic types of goods to be divided in fair division schemes. What are they?

discrete or continuous.

6. The basic division methods for continuous problems are: (write the names of the methods)

- divider-choser
- last divider
- last chooser
- last diminisher

7. The basic division methods for discrete problems are: (write the names of the methods)

- a) sealed bids
- b) method of markers

8. What is the layman's term (everyday language) for the Divider-Chooser Method?

you cut, I choose

9. No matter how it works out, the Divider will get what fraction of the total (in their opinion) using the Lone-Divider Method with N players?

$$\frac{1}{N}$$

10. Using the Lone-Chooser Method for three players, what method do the two Dividers use to initially divide the goods?

divider - chooser

11. If a player doesn't want to pass in the Last-Diminisher Method, what must they do?

diminish the size of the claim or become claimant.

12. What two important conditions must be satisfied in order for the Method of Sealed Bids to work?

everyone must have \$  
must accept \$ in the place of stuff.

13. In a well-known biblical fair-division story, who was the divider?

Solomon.