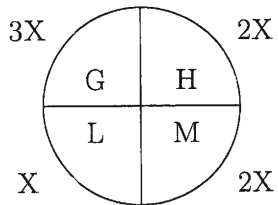


Name:

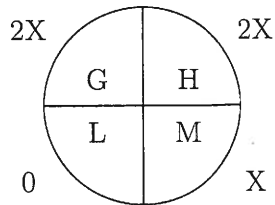
Quiz 6

Two people use I Cut, You Choose to divide a pie with four types of berries in it.

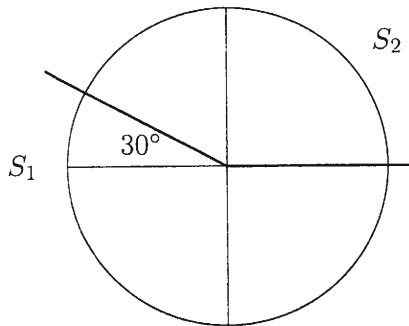
D's preferences



C's preferences:



1. Suppose D divides as below. What fraction of the whole is S_2 worth to C?



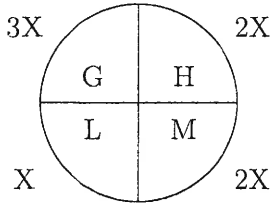
2. What fair division results?
3. Is this division equitable? Why?
4. Would the equal division be an objective improvement over the division pictured above? Why?
5. True or False: Every Pareto-optimal division is fair.
6. True or False: Every envy-free division is fair.

Name: Solutions

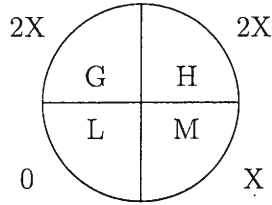
Quiz 6

Two people use I Cut, You Choose to divide a pie with four types of berries in it.

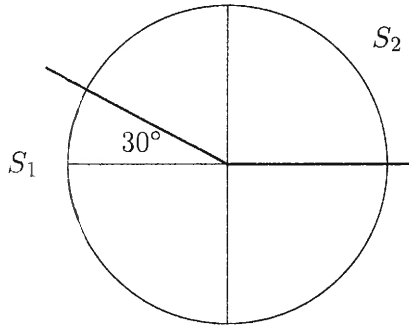
D's preferences



C's preferences:



1. Suppose D divides as below. What fraction of the whole is S_2 worth to C?



$$S_2 = \frac{60(2x) + 90(2x)}{90(2x) + 90(2x) + 90(x) + 0}$$

$$= \frac{150(2x)}{90(5x)} = \frac{30(2)}{90} = \frac{2}{3}$$

2. What fair division results?

C- S_2 D- S_1

3. Is this division equitable? Why?

No. $\frac{2}{3} \neq \frac{1}{2}$

4. Would the equal division be an objective improvement over the division pictured above? Why?

No. D would get the same value, $\frac{1}{2}$, but C would get $\frac{1}{2}$, which is less than what C gets above.

5. True or False: Every Pareto-optimal division is fair.

False

6. True or False: Every envy-free division is fair.

True.