1. initial: 
   Bob
   Bike (12)
   Rowing (10)
   Music Collection (14)
   Computer (17)
   Novels (22)
   Music Collection (11)
   Tot: 72

   Alex
   Textbooks (20)
   Barbells (5)
   Piano Collection (4)
   Desk (15)
   Tot: 40

   pt ratios:
   Bike: $\frac{12}{10}$
   Rowing machine: $\frac{10}{2}$
   Computer: $\frac{17}{15}$
   Novels: $\frac{22}{20}$ \(\star\) smallest
   Music: $\frac{11}{8}$

   \[
   50 + 22(1-x) = 40 + 20x \\
   72 - 22x = 40 + 20x \\
   32 = 42x \\
   x = \frac{32}{42} = \frac{16}{21}
   \]

   Final allocation:
   Bob gets: Bike, Rowing machine, Computer, Music collection,
   and $\frac{5}{21}$ of the Novels.

   Alex gets: Textbooks, Barbells, Desk, and $\frac{16}{21}$ of the Novels.

2. Questions:
   1. Are you willing to split items?
   2. Do you have a lot of cash? (probably a bit rude in real life)
   3. How large are the items?

   Q1 helps decide whether adjusted winner is a good procedure.
   Q2 helps decide whether Knaster inheritance procedure is a good procedure.
   Q3 helps decide whether something besides Knaster inheritance can be done well.

   One note: the adjusted winner procedure only works for two people. You would have to create some variation that is not as optimal.
3. Player 1 cuts piece: Player 2 views as \( \text{trims to} \) Player 3 views as \( \text{and passes} \) \( \Rightarrow \) Player 2 gets 1st piece.

Then Player 1 & Player 3 do divide & choose:
player 1 cuts 1/2 way through penultimate column
player 3 picks left piece.

Final distribution (in each players view)
player 1: 6 tiles player 2: 5 tiles player 3: 8 tiles

4. It takes a great deal of bravery to stand up to our enemies,
but just as much to stand up to our friends.

5. a. If Sunday is zero, Wednesday is 3, so 3 + 16 = 19 = 5 (mod 7).
Thus, in 16 days, it will be Friday.

b. 4 + 37 = 41 = 5 (mod 12) \( \Rightarrow \) it will be 5:00 in 37 hours.