

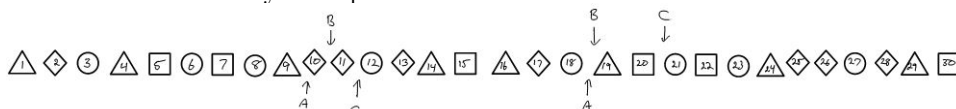
INSTRUCTIONS: Answer all 10 problems by filling in the bubble sheet on the back. Due: April 15 (or April 17 with 10% penalty). Open everything.

A huge collection of low-value Magic cards appraised at \$100 is being divided by 5 kids (P_1, P_2, P_3, P_4, P_5) using the last-diminisher method. The players play in a fixed order, with P_1 first, P_2 second, and so on. In round 1, P_1 makes the first selection and makes a claim on a pile of cards. For each of the remaining players, the value of the *current* pile of cards at the time it is their turn is given in the following table:

| | P_2 | P_3 | P_4 | P_5 |
|------------------------------------|-------|-------|-------|-------|
| Value of the current pile of cards | \$15 | \$22 | \$18 | \$19 |

- Which player gets his or her share at the end of round 1?
A. P_1 B. P_2 C. P_3 D. P_4 E. P_5
- What is the value of the share to the player receiving it?
A. \$20 B. \$15 C. \$22 D. \$18 E. \$19
- 7 players are dividing a cake using the Fink protocol (also known as Method of Lone Choser). After the first six rounds the first 6 players each have what they believe to be $1/6$ of the cake. At this next (seventh) round, a bunch of cuts are going to be made. How many in total?
A. 6 B. 36 C. 42 D. 49

Three players, A, B, and C, want to divide the objects in the figure below using the method of markers. Their markers have already been placed.



- Who gets the first group of objects? A. A B. B C. C
- How many pieces does B get (before leftovers are divided up)? A. 18 B. 8 C. 11 D. 12
- How many leftover pieces are there? A. 0 B. 1 C. 2 D. 3 E. 4

As part of an inheritance, four children, Abby, Ben, Carla, and Dan, are dividing four vehicles using Sealed Bids. Their bids (in thousands of dollars) for each item is shown below. Use the Sealed Bid method to allocate the goods; answer the given questions about the final allocation.

| | Abby | Ben | Carla | Dan |
|------------|------|-----|-------|-----|
| Motorcycle | 6 | 7 | 10 | 8 |
| Car | 8 | 13 | 10 | 12 |
| Tractor | 3 | 2 | 5 | 4 |
| Boat | 7 | 6 | 3 | 8 |

- Who inherits the car? A. Abby B. Ben C. Carla D. Dan
- What is the total cash value of Ben's inheritance (in thousands)?
A. 8 B. 9 C. 10 D. 11 E. None of the above
- Who inherits the most (total cash value)? A. Abby B. Ben C. Carla D. Dan
- A cake is to be divided among Roy, Sam, and Trish by the Selfridge-Conway variant of Lone Divider. The three players value the pieces after the first cut as follows:

| | P1 | P2 | P3 |
|-------|--------|--------|--------|
| Roy | 10% | 55% | 35% |
| Sam | 33.33% | 33.33% | 33.33% |
| Trish | 40% | 30% | 30% |

Who divides the trimmings? (This is after the trimmed pieces are already allocated to the diners.)
A. Roy B. Sam C. Trish