

Names of group members: _____

Clearly circle the letter of the correct answer. Give a one-sentence reason for each problem.

(1) A take-away game is played in which each of two players are allowed to remove 1,2,3,4,5, or 6 counters during a turn, and the player removing the last counter wins. Suppose the game begins with 300 counters. Which of the following is true?

- (A) The second player has the winning strategy.
- (B) The first player has the winning strategy, and that begins with that player first removing 4 counters.
- (C) The first player has the winning strategy, and that begins with that player first removing 5 counters.
- (D) The first player has the winning strategy, and that begins with that player first removing 6 counters.

Reason:

(2) $18 \equiv 33 \pmod{m}$, where m might be the following

- (A) 2, 3, or 10 (B) 3,4, or 12 (C) 2, 5, or 7 (D) 3,5, or 15

Reason:

(3) Circle any of the following with are true. The set of positive and negative odd numbers is

- (A) Closed under addition.
- (B) Closed under subtraction.
- (C) Closed under multiplication.
- (D) Closed under division.

Reason: