1.40

(a) Goal: find the maximum spending to get twins the same color gumballs.

1. Each color of gumballs will come out once.
2. The fourth gumballs will let the twins to have the same gumballs no matter what color it is in this case.
3. 3 cents + 1 cent = 4 cents.

Conclusion: Baniaz must be willing to spend 4 cents.

(b) Goal: find the maximum spending to get quadruplets the same color gumballs.

1. only GREEN has 4 gumballs.
2. In this case, we need to calculate the condition when RED and BLUE gumballs come out first, then the GREEN gumballs which satisfy the requirement.
3. 2 RED + 3 BLUE + 4 GREEN = 9 cents.

Conclusion: Baniaz must be willing to spend 9 cents.

2.5 (a)

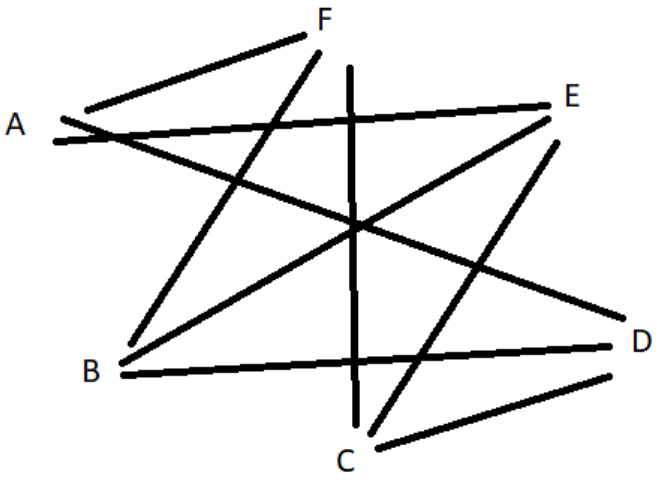
Shaded area: $(A \cap C) \cup (A \cap B)$

1. Find the intersection of A and C
2. Find the intersection of A and B
3. Then union step 1 and 2 results.

2.21 (c)

{ 0, 1, -2, 3, -4, 5, -6, … } = { r | r = n * (-1) ^ (n + 1) ; n ∈ $\mathbb{N}0$ }.

2.22 (c)



3.9

P = don’t eat peas, Q = can’t have ice-cream

P	q	$P \rightarrow Q$
T	T	T
T	F	F
F	T	T
F	F	T

From the table, we can see that if we eat the peas, we could have ice-cream and we could not, both would lead to True to the statement. In this case, parents are not required to give ice-cream and it is not logically equivalent to the statement.

3.13

1. There are two conditions that the rules will be broken:
    a. We see a P on one side, and the other side is not 5
    b. We see a number that is not 5 on one side, and the other side is P
2. In this case we have to check 3 cards: P, 3 and 4

3.23

P = aced quiz/final Q = get an A

(a) IDK

P implies Q. In order for P to become True, it has to satisfy both condition. However, it only satisfies one condition in this case, we cannot state that Q is true.

(b) True

(c) IDK

P implies Q. IF Q is true, we cannot necessarily make sure p is true from the true false table above

(d) IDK

P implies Q. IF Q is true, P might be true because you aced the quiz or final or other reason, in this case, answer is I don’t know.

(e) IDK

(f) False