Problem 1.40

If Baniaz has twins, she has to be willing to spend 4¢ to make sure everyone gets the same color. Because in the worst case, she may buy 3 different colors in the first 3 tries and finally get two same color when she buys the fourth one. If she has quadruplets, she has to be willing to spend 9¢. Because the only way is to buy all the green gumballs. The worst case is that she buys all the other gumballs before she gets the four green gumballs. So she have to be prepared to but all the gumballs in the machine.

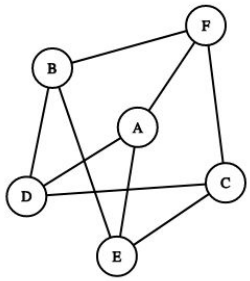
Problem 2.5 (a)

$(A \cap B) \cup (A \cap C)$

Problem 2.21 (c)

$O = \{n \mid n=(-1)^k \cdot (k-1), \text{ where } k \in N\}$

Problem 2.22(c)



Problem 3.9

p=eat peas, q=have ice-cream

The statement your parents mean: $\neg p \rightarrow \neg q$

The statement you imagine: $p \rightarrow q$

p	q	¬p	¬q	$\neg p \rightarrow \neg q$	$p \rightarrow q$
T	T	F	F	T	T
T	F	F	T	T	F
F	T	T	F	F	T
F	F	T	T	T	T

In your imagination, parents are required to give you ice-cream. However, this truth table shows that no matter if the parents give you ice-cream or not, their statement is always true. So, they are not required to give you ice-cream.

Problem 3.13

p=has p on a side of card, q=5 on other side

p	q	p→q
T	T	T
T	F	F
F	T	T
F	T	T

The only two card we need to consider is the card with 5 and the card with P. For the card with 5 which is q in the table. The first and third row shows that no matter if p is true or not. The rules will always be true. So we don't need to flip card 5. However, for the card P, based on the first two rows of the truth table, the only way to keep the rule true is that q is true. So we only need to flip card P to verify the rule is not broken.

Problem 3.23

(a) I don't know. Only ace the final doesn't satisfy the requirement "ace the quiz and final". So I don't know.
(b) True. Ace the final satisfy the requirement "ace the quiz or final". So true.
(c) I don't know. Get an A does not depend on "ace the quiz and final". So I don't know.
(d) I don't know. Get an A does not depend on "ace the quiz or final". So I don't know.
(e) I don't know. You may get a B because you didn't ace the quiz or didn't ace the final. So I don't know.
(f) False. You got a B means you neither ace the quiz or ace the final. So you didn't ace the final.