Propz Test

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Question 2. Some assumptions I made so I could solve this exercise:

- 1. All elements are integers. This is not explicit said and I based this only on the options given;
- 2. The set can be of any possible size. Different sets can lead to the same mean and the size is also not given;
- 3. At least 4 of the possible options should be in the set.

Ok, given this, my answer is option A) 30. First of all, the only rule explicit in the question is that

$$x_{max} = 5 + 2 * x_{min}$$

So, if $x_{min} = 30$, $x_{max} = 90$ and all other options greater than x_{max} would be outside the set. From 50 on, it's possible to find a set with all the options and mean = 100 for example [50,70,71,70,120,154,155], where $x_{min} = 50$ and $x_{max} = 155$, statisfying the $x_{max} = 5+3*x_{min}$ condition.

Question 4 Considering that the costumers buy ONLY in the store of the mentioned probability (this is not explicit in the question), we have 50% buying in A, 30% buying in B and 20% buying in C

a. for A store, the answer rate is 50%. so 50% of the costumers did not answer. So here we have 50% (not-answering-rate) of 50% (costumer that buy at A) and we can manage to find our

$$P(didn'tanswer|A) = 0.5 * 0.5 = 0.25$$

using the same technique, we have

$$P(didn'tanswer|B) = 0.4 * 0.3 = 0.12$$

and

$$P(didn'tanswer|C) = 0.1 * 0.2 = 0.02$$

Now, knowing the "didn't aswer rate" of all three stores, we can know too the general rate by summing them: 0.25 + 0.12 + 0.02 = 0.39

or 39%. So this is the probability that a random customer didn't answer the campaign.

$$P(didn'tanswer) = 0.39$$

b. To find out a responder that went to C, we can apply Bayes

$$\begin{aligned} P(C|answered) &= \frac{P(answered|C) \cdot P(C)}{P(answered)} \\ &= \frac{0.9 \cdot 0.2}{0.61} \\ &= 0.2951 \end{aligned}$$

So the probability is 29.51%

Question 5 The probability of getting one the b type dice ($P(b)$) is 3/12 and the probability of getting a six is 0.85, so the conditional probability is of 0.2125 or 21.25%