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Show all your work

1) Find the probability of getting 4 aces when four cards are drawn without replacement from a randomly shuffled deck.
2) A card is drawn from the top of a randomly shuffled deck. Find the probability that the card is
a) a 5 or a 6
b) an ace or a diamond
c) a queen or a diamond
3) If there are 36 different ways that two dice can be rolled, find the probability of rolling less than a 12 .
4) A hydraulic unit on an airliner has a probability of failure of .002. If two are installed on a plane independently, find the probability that
a) they will both work.
b) neither will work
c) at least one will work
5) Find the probability that at least one student in this class(there are 28 when everyone is actually here (-)) have July $4^{\text {th }}$ as their birthday.
6) A california driver's licence number consists of one letter followed by seven digits.
a) Since any number can be used more than once how many different CDL numbers are possible?
b) If each digit can be used only once, how many different CDL numbers would be possible?
7) Given the tree diagram below, fill out the probabilities for the given outcomes in the blank spaces provided. For this model, a pair of dice are rolled twice. In this diagram, $\mathrm{P}(7)=$ probability of rolling a seven. $\mathrm{P}(11)=$ probability of rolling an 11.

8) A jar has 5 red marbles and 3 blue marbles. Construct a probability tree for each case stated below.
a) drawing two marbles with replacement

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b) drawing two marbles without replacement (construct your own tree here)
