Basic Probability Practice #2

1. Peter has won a car, which will be randomly selected from the following cars in the lot:

Black BMW M6   Black BMW M6   White BMW M3   Black Mercedes SLK

Silver Mercedes SLR   Black Mercedes SLR   Black Porsche Cayenne   Silver Porsche Carrera

   a) What is the probability of not getting a black BMW?

   b) What is the probability of getting a BMW or a Mercedes?

   c) What is the probability of getting a German car?

2. Mary and Alex are comparing who sent them text messages during a week.

	Family	Friends	Other	Total
Mary	30	260	10	300
Alex	100	150	30	280

   a) What is the probability that a randomly selected text to Mary was from family?

   b) What is the probability that a randomly selected text to Alex was not from a friend?

   c) What is the probability that a randomly selected text will have been to Mary?

   d) If a text was from family, what is the probability it was to Alex?

3. When drawing randomly from a normal deck of cards (no jokers) replacing each time:

   a) What is the probability of getting an Ace twice in a row?

   b) What is the probability when making three draws that at least one will be black and at least one will be red?

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Answers: Basic Probability Practice #2

1. a) P (not getting a black BMW) = 6 out of 8 = $\frac{6}{8}$ = $\frac{3}{4}$ = **0.75** = **75%**

    b) P (getting a BMW or Merc) = 6 out of 8 = $\frac{6}{8}$ = $\frac{3}{4}$ = **0.75** = **75%**

    c) P (getting a German car) = 8 out of 8 = $\frac{8}{8}$ = **1** = **100%**

2. a) 30 out of the 300 = $\frac{30}{300}$ (or = $\frac{1}{10}$ = **0.10** = **10%**)

    b) 130 out of the 280 = $\frac{130}{280}$ (or = $\frac{13}{28}$ = **0.464** = **46.4%**)

    c) 300 out of the 580 in total = $\frac{300}{580}$ (or = $\frac{15}{29}$ = **0.517** = **51.7%**)

    d) 100 out of the 130 in total = $\frac{100}{130}$ (or = $\frac{10}{13}$ = **0.7692** = **76.9%**)

3. a) P (King) = 4 out of 52 = $\frac{4}{52}$ = $\frac{1}{13}$

    Probability Aces twice in a row = $\frac{1}{13}$ × $\frac{1}{13}$ = $\frac{1}{169}$ = **0.0059** = **0.59%**

    b) The simplest way is to take 100% and subtract the opposite

    black – black – black = ½ × ½ × ½ = $\frac{1}{8}$ and red – red – red = ½ × ½ × ½ = $\frac{1}{8}$

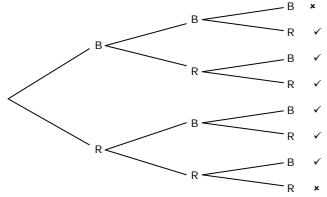   Remainder is = $\frac{6}{8}$ = **0.75** = **75%**

    or

    You can list all the options = RRR, RRB, RBR, RBB, BRR, BRB, BBR, BBB

    Of the eight equally likely options, six mix colours, so probability = $\frac{6}{8}$

    or

    You can draw a tree

    There are six out of eight equally likely results that mix colours, so probability = $\frac{6}{8}$