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HOMEWORK 3

Our third session is done — I hope you enjoyed it! On to new topics and adventures in the upcoming sessions…

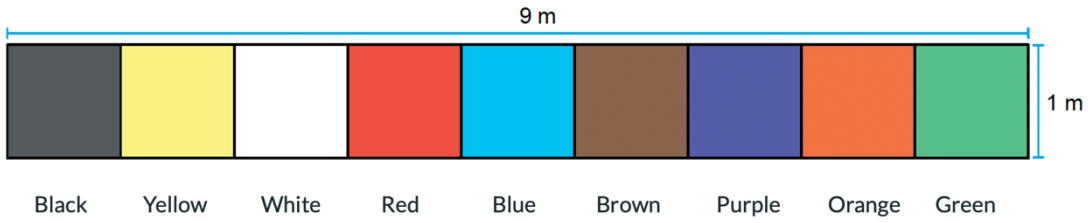
Your homework has four questions to solve.

As always, here's what you need to do:

1) Complete all four questions on your own.
2) If you get stuck, don't worry! Just try your best and show how you thought about the problem. We will go through all of them in the next class.
3) Feel free to print out this worksheet if you want to.
4) Q1, Q2, etc. at the beginning of the questions stand for "Question 1," "Question 2," and so on.
5) Submit your homework at least three days before our next class!

I look forward to your answers. Enjoy, and see you in the next class!

Q1) THE CARPET



The front face of a rectangular carpet with dimensions 1 m by 9 m is painted in different colors as shown in the figure. The square regions covered by each color have equal areas.

The carpet will be cut into two pieces such that the same color does not appear in both pieces.

Accordingly, what is the probability that the painted area of one piece is twice the painted area of the other piece?

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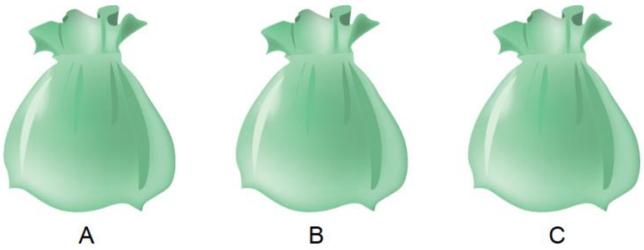
Q2) A BAG OF BALLS



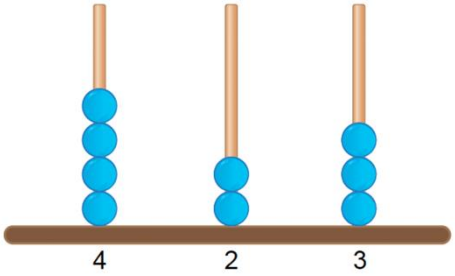
Except for their colors, the balls are identical. Four of them are red, and the rest are white. All of these balls are distributed into three empty bags labeled A, B, and C. The probability of drawing a red ball at random from each bag is equal.

Accordingly, which of the following cannot be the initial number of white balls?

A) 80 B) 83 C) 88 D) 92

Q3) THE ABACUS

The three-digit number 423 is modeled on the abacus given below.



One of the beads on this abacus is removed from its current rod and placed on another rod.

Based on this, what is the probability that the newly modeled number on the abacus will be greater than 500?

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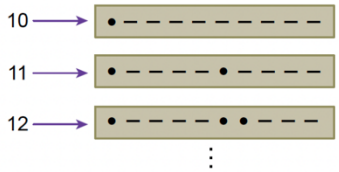
Q4) NUMBERS IN BAGS

The digits defined using the characters • (dot) and — (dash) are given in the table below.

1	•————	6	—••••
2	••———	7	——•••
3	•••——	8	———••
4	••••—	9	————•
5	•••••	0	—————

All two-digit natural numbers formed with the characters corresponding to these digits are written on identical cards as shown below and placed in an empty bag. For example:



What is the probability of drawing a card with 5 dots (•) on it from this bag?