Sample questions with solutions:

1. Three people are to be seated on a bench. How many different sitting arrangements are possible if Erik must sit next to Joe?

a) 2.
b) 4.
c) 6.
d) 8.
e) 10.

2. How many 3-digit numbers satisfy the following conditions: The first digit is different from zero and the other digits are all different from each other?

a) 648.
b) 504.
c) 576.
d) 810.
e) 672.

3. In jar A there are 3 white balls and 2 green ones, in jar B there is one white ball and three green ones. A jar is randomly picked, what is the probability of picking up a white ball out of jar A?

a) 2/5.
b) 3/5.
c) 3/10.
d) 3/4
e) 2/3.

4. Out of a box that contains 4 black and 6 white mice, three are randomly chosen. What is the probability that all three will be black?

a) 8/125.
b) 1/30.
c) 2/5.
d) 1/720.
e) 3/10.

5. Barbara has 8 shirts and 9 pants. How many clothing combinations does Barbara have, if she doesn't wear 2 specific shirts with 3 specific pants?

a) 41.
b) 66.
c) 36.

d) 70.
e) 56.

6. In a workshop there are 4 kinds of beds, 3 kinds of closets, 2 kinds of shelves and 7 kinds of chairs. In how many ways can a person decorate his room if he wants to buy in the workshop one shelf, one bed and one of the following: a chair or a closet?

a) 168.
b) 16.
c) 80.
d) 48.
e) 56.

7. In a workshop there are 4 kinds of beds, 3 kinds of closets, 2 kinds of shelves and 7 kinds of chairs. In how many ways can a person decorate his room if he wants to buy in the workshop one shelf, one bed and one of the following: a chair or a closet?

a) 168.
b) 16.
c) 80.
d) 48.
e) 56.

8. A credit card number has 5 digits (between 1 to 9). The first two digits are 12 in that order, the third digit is bigger than 6, the forth is divisible by 3 and the fifth digit is 3 times the sixth. How many different credit card numbers exist?

a) 27.
b) 36.
c) 72.
d) 112.
e) 422.

9. Danny, Doris and Dolly flipped a coin 5 times and each time the coin landed on “heads”. Dolly bet that on the sixth time the coin will land on “tails”, what is the probability that she’s right?

a) 1.
b) ½.
c) ¾.
d) ¼.
e) 1/3.

10. The probability of pulling a black ball out of a glass jar is 1/X. The probability of pulling a black ball out of a glass jar and breaking the jar is 1/Y. What is the probability of breaking the jar?

a) 1/(XY).
b) X/Y.
c) Y/X.
d) 1/(X+Y).
e) 1/(X-Y).

Explanations:
1. The best answer is B.
Treat the two who must sit together as one person. You have two possible sitting arrangements. Then remember that the two that sit together can switch places. So you have two times two arrangements and a total of four.

2. The best answer is C.
For the first digit you have 9 options (from 1 to 9 with out 0), for the second number you have 9 options as well (0 to 9 minus the first digit that was already used) and for the third digit you have 8 options left.
So the number of possibilities is 9 x 9 x 8 = 648.

3. The best answer is C.
The probability of picking the first jar is ½, the probability of picking up a white ball out of jar A Is 3/(3+2) = 3/5. The probability of both events is 1/2 x 3/5 = 3/10.

4. The best answer is B.
The probability for the first one to be black is: 4/(4+6) = 2/5.
The probability for the second one to be black is: 3/(3+6) = 1/3.
The probability for the third one to be black is: 2/(2+6) = 1/4.
The probability for all three events is (2/5) x (1/3) x (1/4) = 1/30.

5. The best answer is D.
There are (8 x 9) 72 possibilities of shirts + pants. (2 x 3) 6 Of the combinations are not allowed. Therefore, only (72 – 6) 66 combinations are possible.

6. The best answer is C.
You must multiply your options to every item. (2 shelves) x (4 beds) x (3 closets + 7 chairs) = 80 possibilities.

7. The best answer is C.
You must multiply your options to every item. (2 shelves) x (4 beds) x (3 closets + 7 chairs) = 80 possibilities.

8. The best answer is A.
First digit is 1, the second is 2, the third can be (7,8,9), the forth can be (3,6,9), the fifth and the sixth are dependent with one another. The fifth one is 3 times bigger than the sixth one, therefore there are only 3 options there: (1,3), (2,6), (3,9).

All together there are: 1 x 1 x 3 x 3 x 3 = 27 options.

9. The best answer is B.
The probability of the coin is independent on its previous outcomes and therefore the probability for “head” or “tail” is always ½.

10. The best answer is B.
Let Z be the probability of breaking the jar, therefore the probability of both events happening is Z x (1/X) = (1/Y). Z = X/Y.