Practice Questions for Probabilty

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| Question | A number X is chosen at random from the numbers -3, -2, -1, 0, 1, 2, 3. What is the probability that |X|<2 |
| Option A | 5/7 |
| Option B | 3/7 |
| Option C | 3/5 |
| Option D | 1/3 |
| Answer | Option B |
| Explanation | X can take 7 values. To get |X|<2 ( i.e., −2<X<+2) take X={−1,0,1}  ⇒ P(|X|<2)=   |  | | --- | | Favourable Cases | | Total Cases |   = **3/7** |

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| Question | Two brother X and Y appeared for an exam. The probability of selection of X is 1/7 and that of B is 2/9. Find the probability that both of them are selected. |
| Option A | 1/63 |
| Option B | 2/35 |
| Option C | 2/63 |
| Option D | 9/14 |
| Answer | Option C |
| Explanation | Let A be the event that X is selected and B is the event that Y is selected.  P(A)= (1/7),   |  | | --- | |  | |  |   P(B)= (2/9)  Let C be the event that both are selected.  P(C)=P(A)×P(B) as A and B are independent events:  =(1/7) X (2/9)   |  | | --- | |  | |  |   = **2/63** |

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| Question | An urn contains 6red, 5 blue and 2 green marbles. If 2 marbles are picked at random, what is the probability that both are red? |
| Option A | 6/13 |
| Option B | 5/26 |
| Option C | 5/13 |
| Option D | 7/26 |
| Answer | Option B |
| Explanation | P(Both are red) =  = **5/26** |

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| Question | Four dice are thrown simultaneously. Find the probability that all of them show the same face. |
| Option A | 1/216 |
| Option B | 1/36 |
| Option C | 4/216 |
| Option D | 3/216 |
| Answer | Option A |
| Explanation | The total number of elementary events associated to the random experiments of throwing four dice simultaneously is: =6×6×6×6=64 n(S)=64  Let X be the event that all dice show the same face.  X ={(1,1,1,1,),(2,2,2,2),(3,3,3,3),(4,4,4,4),(5,5,5,5),(6,6,6,6)} n(X)=6  Hence required probability = n(X)/n(S)  = (6/) = **1/216** |

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| Question | What is the probability that a number selected from numbers 1,2,3,...,30, is prime number, when each of the given numbers is equally likely to be selected? |
| Option A | 9/30 |
| Option B | 8/30 |
| Option C | 10/30 |
| Option D | 11/30 |
| Answer | Option C |
| Explanation | X ={2,3,5,7,11,13,17,19,23,29}  n(X)=10,n(S)=30  Hence required probability = n(X)/n(S)  = **10/30** |

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| Question | A bag contains 21 toys numbered 1 to 21. A toy is drawn and then another toy is drawn without replacement. Find the probability that both toys will show even numbers. |
| Option A | 5/21 |
| Option B | 9/42 |
| Option C | 11/42 |
| Option D | 4/21 |
| Answer | Option B |
| Explanation | The probability that first toy shows the even number = (10/21)  Since, the toy is not replaced there are now 9 even numbered toys and total 20 toys left.  Hence, probability that second toy shows the even number = (9/20)   |  | | --- | |  | |  |   Required probability =(10/21) X (9/20)  = **9/42** |

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| Question | A bag contains 5 red and 3 green balls. Another bag contains 4 red and 6 green balls. If one ball is drawn from each bag. Find the probability that one ball is red and one is green |
| Option A | 19/20 |
| Option B | 17/20 |
| Option C | 8/10 |
| Option D | 21/40 |
| Answer | Option D |
| Explanation | Let A be the event that ball selected from the first bag is red and ball selected from second bag is green. Let B be the event that ball selected from the first bag is green and ball selected from second bag is red.  P(A)=(5/8) X (6/10) = 3/8   |  | | --- | |  |    and  P(B)=(3/8) X (4/10) = 3/20   |  | | --- | |  | |  |   Hence required probability =P(A)+P(B) = (3/8) + (3/20) = **21/40** |

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| Question | A special lottery is to be held to select a student who will live in the only deluxe room in a hostel. There are 100 Year-III, 150 Year-II and 200 Year-I students who applied. Each Year-III's name is placed in the lottery 3 times; each Year-II's name, 2 times and Year-I's name, 1 time. What is the probability that a Year-III's name will be chosen? |
| Option A | 1/8 |
| Option B | 2/9 |
| Option C | 2/7 |
| Option D | 3/8 |
| Answer | Option D |
| Explanation | Total names in the lottery =3×100+2×150+200=800 Number of Year-III's names =3×100=300  Required probability:  = 300/800 = **3/8** |

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| Question | In a charity show tickets numbered consecutively from 101 through 350 are placed in a box. What is the probability that a ticket selected at random (blindly) will have a number with a hundredth digit of 2? |
| Option A | 0.285 |
| Option B | 0.40 |
| Option C | 100/249 |
| Option D | 99/250 |
| Answer | Option B |
| Explanation | 250 numbers between 101 and 350 i.e. n(S)=250 n(E)=100th digits of 2 =299−199=100 P(E)= n(E)/n(S)  = (100/250)  = **0.40** |

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| Question | Derek throws three dice in a special game. If it knows that he needs 15 or higher in this throw to win, then find the chance of his winning the game. |
| Option A | 5/54 |
| Option B | 17/216 |
| Option C | 13/216 |
| Option D | 15/216 |
| Answer | Option A |
| Explanation | Total cases: n(S)=6×6×6=216  Favourable cases: n(X)=20  Required probability = n(X)/n(S)   |  | | --- | |  | |  |    = 20/216 = **5/54** |

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| Question | A card is drawn from a pack of 52 cards. The card is drawn at random. What is the probability that it is neither a spade nor a Jack? |
| Option A | 4/13 |
| Option B | 2/13 |
| Option C | 6/13 |
| Option D | 9/13 |
| Answer | Option D |
| Explanation | There are 13 spade and 3 more jack Probability of getting spade or a jack:  = (13+3)/52 = 16/52 = 4/13  So probability of getting neither spade nor a jack:  =1− 4/13  = **9/13** |

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| Question | There are four hotels in a town. If 3 men check into the hotels in a day then what is the probability that each checks into a different hotel? |
| Option A | 6/7 |
| Option B | 1/8 |
| Option C | 3/8 |
| Option D | 5/9 |
| Answer | Option C |
| Explanation | Total cases of checking in the hotels = ways. Cases when 3 men are checking in different hotels =4×3×2=24 ways.  Required probability:  = 24/  = **3/8** |

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| Question | If x is chosen at random from the set {1,2,3,4} and y is to be chosen at random from the set {5,6,7}, what is the probability that xy will be even? |
| Option A | 5/6 |
| Option B | 1/6 |
| Option C | 1/2 |
| Option D | 2/3 |
| Answer | Option D |
| Explanation | S ={(1,5),(1,6),(1,7),(2,5),(2,6),(2,7),(3,5),(3,6),(3,7),(4,5),(4,6),(4,7)} Total element n(S)=12  xy will be even when even x or y or both will be even. Events of x, y being even is E. E ={(1,6),(2,5),(2,6),(2,7),(3,6),(4,5),(4,6),(4,7)} n(E) = 8  P(E)= n(E)/n(S) = 8/12   |  | | --- | |  |   = **2/3** |

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| Question | Two dice are thrown simultaneously. Find the probability of getting a multiple of 2 on one dice and multiple of 3 on the other dice. |
| Option A | 5/12 |
| Option B | 11/36 |
| Option C | 5/36 |
| Option D | 13/36 |
| Answer | Answer B |
| Explanation | Let X be required events and S be the sample space,  then X ={(2,3),(2,6),(4,3),(4,6),(6,3),(6,6),(3,2),(6,2),(3,4),(6,4),(3,6)} n(X)=11,n(S)=36  Hence, required probability = n(X)/n(S) = **11/36** |

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| Question | In a race where 12 cars are running, the chance that car X will win is 1/6, that Y will win is 1/10 and that Z will win is 1/8. Assuming that a dead heat is impossible. Find the chance that one of them will win. |
| Option A | 47/120 |
| Option B | 1/480 |
| Option C | 1/160 |
| Option D | 1/240 |
| Answer | Option A |
| Explanation | Required probability =P(X)+P(Y)+P(Z) (all the events are mutually exclusive). = 1/6 + 1/10 + 1/8 = **47/120** |