1) Compute the probability of X successes. 1) D

$n = 7, X = 6, p = 0.3$ q = 1- p = 0.7

A) 0.857 B) 0.996 C) 0.3 D) 0.004

P(x=6) = 7C6 (0.3)^6 (0.7)^1 = 0.00357... On Calculators use Binom pdf on TI84 or Bpd on Casio

2) Determine the indicated probability for a binomial experiment with the given number of trials n and the given success probability p. 2) B

$n = 13, p = 0.7, P$(Fewer than 4)

A) 0.0040 B) 0.0007 C) 0.0001 D) 0.9993

P(fewer than 4) = P(0) + P(1) +P(2) + P(3) = 0.0000001594. + 0.0000048361.+ 0.000067706 + 0.00057926. = 0.00065196.. => 0.0007

P(0) = 13C0 (0.7)^0 (0.3)^13 = 0.0000001594..

P(1) = 13C1 (0.7)^1 (0.3)^12 = 0.0000048361..

P(2) = 13C2 (0.7)^2 (0.3)^11 = 0.000067706..

P(3) = 13C3 (0.7)^3 (0.3)^10= 0.00057926...

3) Determine the indicated probability for a binomial experiment with the given number of trials n and the given success probability p. 3) B

$n = 11, p = 0.5, P$(9 or more)

A) 0.9673 B) 0.0327 C) 0.1133 D) 0.0059

P(9 or more) = P(9) + P(10) +P(11) = 0.026855 + 0.0053711 + 0.00048828 = 0.032715...
P(9) = 11C9 (0.5)^9 (0.5)^2 = 0.026855
P(10) = 11C10 (0.5)^10 (0.5)^1 =0.0053711
P(11) = 11C11 (0.5)^11 (0.5)^0 =0.00048828 **On Casio, Find Bcd (x=8): 1- 0.967285 = 0.032715; on a TI84 binomcdf**

4) Determine the indicated probability for a binomial experiment with the given number of trials n and the given success probability p. 4) B

n =14, $p = 0.1, P$(3 or fewer)

A) 0.8416 B) 0.9559 C) 0.0441 D) 0.9908

P(3 or fewer) = P(0) + P(1) +P(2) +P(3) = 0.22876 + 0.35586 + 0.25701 + 0.11423 = 0.95586
P(0) = 14C0 (0.1)^0 (0.9)^14 = 0.22876
P(1) = 14C1 (0.1)^1 (0.9)^13 = 0.35586
P(2) = 14C2 (0.1)^2 (0.9)^12 = 0.25701
P(3) = 14C3 (0.1)^23(0.9)^11 = 0.11423 **Or, on a graphing calculator, Bcd or binom cdf for x = 3**

5) In a large bag of marbles, 30% of them are red. A child chooses 4 marbles from this bag. If the child chooses the marbles at random, what is the chance that the child gets exactly three red marbles? 5) B

A) 0.176 B) 0.076 C) 0.265 D) 0.108

p = 0.30 x=3 n=4 Therfore, P(3) = 4C3 (0.3)^3 (0.7)^1 = **0.756**

6) A student takes a 15-question, multiple-choice exam with three choices for each question and guesses on each question. Find the probability of guessing exactly 2 out of 15 correctly. 6) A

A) 0.060 B) 0.940 C) 0.333 D) 0.133

n = 15 x = 2 Three choices, therefore Prob question is correct = 1/3 P(2) = 15C2 (1/3)^2 (2/3)^13 = 0.05995

7) If a student randomly guesses at 20 multiple-choice questions, find the probability that the student gets exactly four correct. Each question has four possible choices. 7) C

A) 0.218 B) 0.162 C) 0.190 D) 0.085

n =20 x = 4 Each question four choices, P(correct) = 1/4 = 0.25

P(4) = 20C4 (0.25)^4 (0.75)^16 = 0.189685

8) A coin is tossed five times. Find the probability of getting exactly three heads. 8) A

A) 0.313 B) 0.156 C) 0.125 D) 0.800

n = 5 x = 3 p = 0.5 P(3) = 5C3 (0.5)^3 (0.5)^2 = 0.3125

9) Find the mean for the values of *n* and *p* when the conditions for the binomial distribution are met. 9) A

n = 700, *p* = 0.45

A) 315 B) 385 C) 173.25 D) 13.2

mean = n x p = 700 (0.45) = 315

10) The failure rate for taking the bar exam in Philadelphia is 41%. If 375 people take the bar exam, what is the mean for the number of failures? 10) D

A) 138.1 B) 221.3 C) 90.7 D) 153.8

mean = n x p = 375 x 0.41 = 153.75

11) Find the variance for the values of *n* and *p* when the conditions for the binomial distribution are met. 11) A

n = 900, *p* = 0.3 q = 1 - p = 1 - 0.3 =0.7

A) 189 B) 270 C) 13.7 D) 630

Var = n x p x q = 900 (0.3) (0.7) = 189

12) A coin is tossed 72 times. Find the standard deviation for the number of heads that will be tossed. 12) A

A) 4.24 B) 18 C) 6.78 D) 36

sqrt means Square Root of standard dev = sqrt (n x p x q) = sqrt(72 x 0.5 x 0.5) = 4.2426...