

EXAM II SOLUTIONS

Part 1: Multiple Choice (4 points each)

Test A	Test B
1.D	1.C
2.B	$\times 2.0.3281$
3.B	3.D
4.B	4.E
5.A	5.B
6.A	6.A
7.D	7.D
8.C	8.B
9.E	9.B
10.B	10.B
11.A	11.A
12.C	12.A
$\times 13.A$	13.D
14.D	14.C
15.C	15.C
16.C	16.C
17.A	17.B
18.B	18.A

Part 2: Written Answers

Basketball question

(A)

$$X \sim \text{Binomial}(n = 10, p = .90)$$

(B)

$$P(X = 10) = P(Y = 0)$$

where Y is the number of free throws he doesn't make out of 10 so $Y \sim B(10, .1)$

$$P(Y = 10) = .3487$$

(C)

Now $X \sim B(400, .90)$ with $\mu_X = np = 400(.9) = 360$ and $\sigma_X = \sqrt{np(1-p)} = 6$

Because n is large and $np > 15$ and $n(1-p) > 15$ we can approximate with the normal distribution $X \sim N(360, 6)$

(D)

Note that $\bar{X}$ = mean number of successful free throws per season (if he attempts 400 per season).

Using the information in part (C) $\bar{X} \sim N(360, \frac{6}{\sqrt{400}})$

$P(\bar{X} < 350) = P(Z < \frac{350-360}{\frac{6}{\sqrt{400}}}) = P(Z < -33.3) = 0$ so it is impossible for him to throw less than 350 successful freethrows per season on average.