

## Section 4: cont'd

Thursday, March 23, 2017

1:30 PM

Test 4 on Friday, April 7

Covers Sections 2 - 6 inclusive

formula sheet will be posted soon

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- ③ drilling company successful on 82% of drilling attempts  
find  $P(\text{at least } 7 \text{ successes in } 8 \text{ attempts})$

is it binomial?

- are there a fixed number of trials?
- does each trial have only two outcomes?  
(success/failure)
- does the probability remain unchanged from trial to trial?

yes

$$P(\text{at least } 7 \text{ in } 8) = P(7) + P(8)$$

$$P(X=k) = {}_n C_k p^k q^{n-k}$$

$$P(x=7) = {}_8C_7 (0.82)^7 (0.18)^{8-7} \\ = 0.358971$$

$$P(x=8) = {}_8C_8 (0.82)^8 (0.18)^{8-8} \\ = 0.209414$$

$$P(7 \text{ or } 8) = 0.563385 \\ = 56\% \text{ or } 0.563385$$

- ⑤ A dart-thrower hits target 30% of the time. He does not improve with practice. Find the probability that he hits the target 2 or 3 times in 10 throws.

binomial:  $n=10$   
 $p=0.3$   
 $q=0.7$

$$P(x=k) = {}_nC_k p^k q^{n-k}$$

$$P(x=2) = {}_{10}C_2 (0.3)^2 (0.7)^8 \\ = 0.233474$$

$$P(x=3) = {}_{10}C_3 (0.3)^3 (0.7)^7 \\ = 0.266828$$

$$P(2 \text{ or } 3) = 0.500302$$

50% or 0.500302