- 1. A die is weighted so that the probability of rolling a "6" is 0.48. The die is rolled 18 times.
 - a) Find the probability that the die lands on a "6" exactly 11 times. A Binomial probability $P(x=11) = \binom{18}{11}(0.48)^{11}(0.52)^{7} \qquad | p = 0.48 \quad n = 18$ $= 0.1020 \quad | Show "work" \quad | x = #of die colls that land "6" \lefter | BinomPDF(18, 0.48, 11)"$
 - b) Find the probability that the die lands on a "6" either 7 or 8 times.

$$P(x=7 \text{ or } 8) = P(x=7) + P(x=8)$$

$$= {\binom{18}{7}} (0.48)^{7} (0.52)^{11} + {\binom{18}{8}} (0.48)^{8} (0.52)^{10}$$

$$= 0.14044 + 0.17825 = 0.3187$$

c) Find the probability that the die lands on a "6" no more than 5 times (this means 5 times or fewer).

$$P(x \le 5) = P(x = 0) + P(x = 1) + P(x = 2) + \dots + P(x = 5)$$

$$= \binom{18}{0} (0.43)^{0} (0.52)^{13} + \binom{13}{1} (0.43)^{1} (0.52)^{17} + \dots + \binom{15}{5} (0.43)^{5} (0.52)^{13}$$

$$= \boxed{0.0676}$$
Again... 0 Show "work"
$$= \boxed{0.0676}$$

$$\boxed{2 Use "Binom CDF(18, 0.48, 5)}$$

d) Find the probability that the die lands on a "6" at least 4 times.

$$P(x \ge 4) = P(x = 4) + P(x = 5) + \dots + P(x = 16) \leftarrow UGH!!!$$

$$= [-[P(x \le 3)]]$$

$$= [-[(18)(0.48)^{0}(0.52)^{10} + \dots + (16)(0.48)^{3}(0.52)^{15}]$$

$$= [-[0.006]] = 0.9939$$
BinomCDF(18, 0.48, 3)

2.	A die is weighted so that the probability of rolling a "6" is 0.42. The die is rolled 18 times.		
	a)	Find the probability that the die lands on a "6" exactly 11 times.	
	b)	Find the probability that the die lands on a "6" either 7 or 8 times.	
	c)	Find the probability that the die lands on a "6" no more than 5 times (this means 5 times or fewer).	
	d)	Find the probability that the die lands on a "6" at least 4 times.	
	e)	In statistics, an event is considered "unlikely" if the probability of it occurring is less than five percent Based on your answer to part (C), is landing a "6" on this die for no more than 5 tosses considered an unlikely event? Explain.	