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6.32. Let  $x$  be a binomial random variable with  $n = 15$  and  $p = .5$ .

(a) Show that the normal approximation is or is not appropriate?

(b) Find  $P(x \geq 6)$  using the approximation.

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(c) Find  $P(x > 6)$  using the approximation.

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6.38(2). Find the normal approximation to  $P(355 \leq x \leq 360)$  for the binomial distribution with  $n = 400$ ,  $p = .9$ .

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6.41 '(3). A hotel overbooks its rooms. Suppose that on average 10% of quests do not claim their reservation. If the hotel accepts 210 reservations but has only 200 rooms, what is the probability that all quests who arrive to claim a room will receive one? Think carefully about which number is  $n$  and which is  $k$ . Hint:  $k \leq n$ .

1	10480
2	22368
3	24130
4	42167
5	37570
6	77921
7	99562
8	96301
9	89579
10	84575
11	28918
12	63553
13	09429
14	10365
15	07119
16	51085
17	02368
18	01011
19	52162
20	07056

This is a list of the first twenty random numbers from Table 10 in Appendix 1. To randomly pick a 6-element sample from  $\{1, 2, \dots, 50\}$ , you need the first two digits of the first 6 elements in the list. Skip numbers which are not in the list or which have already been picked. Hence the random sample of 6 elements would be  $\{10, 22, 24, 42, 37, 28\}$ . Note 77, 99, 96, 89, 84 were skipped since they are not in  $\{1, 2, \dots, 50\}$ .

To randomly pick a 6-element sample from  $\{1, 2, \dots, 8000\}$ , use the first 4 digits. The sample would be  $\{1048, 2236, 2413, 4216, 3757, 7792\}$

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7.2. A political analyst wishes to sample 7 people from a population of 2000. Suppose he has numbered the 2000 people in some way. If they were numbered randomly, we could just pick the first 7 in the list. But suppose the list is not random. Use the random number table to randomly select 7 numbers from the 2000 numbers of  $\{1, 2, 3, \dots, 2000\}$ . Skip numbers that exceed 2000.

1048, 942,

7.4. Suppose the population is 20,000 and you must pick a random sample of size 7. Again use the random number.