Alg 2 Ch 11 Practice Test Name Key Per___

For #1-4, evaluate the given expression ...

1) $5!$ → 120

2) $\frac{7!}{5!2!}$ → 21

3) ${}_{10}P_5$ → 30,240

4) ${}_{14}C_9$ → 2002

For #5-6 , calculate the number of possible arrangements

5) Getting dressed in the morning, Jake has a choice of 7 colors of shirts, 2 colors of pants, and 3 colors of shoes. Selecting one color from each category, how many different outfits can be made from these options?

$7 \cdot 2 \cdot 3 = 42$

6) The license plate c1991 of the Caribbean island of Curacao is shown at right. How many different license plates can be made if there are no restrictions on what digits or letters are used?

$10 \cdot 10 \cdot 10 \cdot 26 \cdot 26 = 676{,}000$

For #7-8 state the correct formula needed (nPr or nCr) and then solve

7) In how many ways can 5 students be selected from a class of 30?

nCr ${}_{30}C_5 = 142{,}506$

8) There are 28 entrants in a distance race. In how many ways can the first three places be arranged?

nPr ${}_{28}P_3 = 19{,}656$

For #9-10 state whether the events A and B are independent or dependent

9) Rolling a number cube while flipping a coin.

independent

10) A bag contains 3 yellow marbles, 2 blue marbles and 5 green marbles. Draw a yellow marble and then a yellow marble again

dependent

For #11-13 calculate the probabilities

11) Toss a coin and roll a 6-sided number cube; what is the probability of getting "Heads" on the coin and an even number on the number cube? $\frac{1}{2} \cdot \frac{3}{6} = \frac{3}{12}$ or $\frac{1}{4}$

12) Roll a pair of 6-sided number cubes; what is the probability of rolling "doubles?" 6/36 = 1/6

13) If a bag contains one of each U.S. coin (penny, nickel, dime, quarter, ½-dollar, dollar) and you reach in and randomly select 2 coins, what is the probability the sum of their values is less than 62 cents? $\frac{9}{6C2} = \frac{9}{15} = \frac{3}{5}$

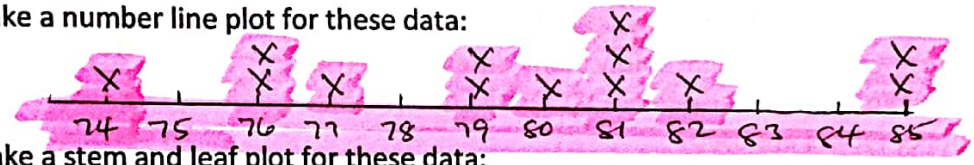
	p	n	d	q	h	$1
p		6	11	26	51	101
n			15	30	55	105
d				35	60	110
q					75	125
h						150

For questions #14-20 use the following data:

Heights of Los Angeles Lakers basketball players (2017) measured in inches:

77 81 76 85 80 79 76 81 74 82 85 79 81

14) Make a number line plot for these data:



15) Make a stem and leaf plot for these data:

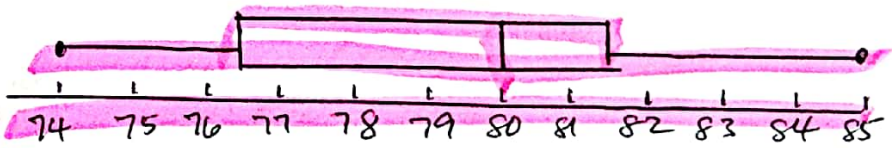
7	4 6 6 7 9 9
8	0 1 1 1 2 5 5

16) Calculate the following (round to one decimal place):

mean 79.7 median 80 mode 81

Q1 76.5 Q3 81.5 range 11

17) Make a box plot for these data:



18) Calculate the following (round to one decimal place):

standard deviation 3.2 variance 10.4

19) What height is at the 85th percentile? 82

20) Suppose the shortest player was actually 68 inches tall. Would this change most affect the mean, the median, or the mode? mean

In general ...

21) What is the relationship between the variance and the standard deviation?

variance = (stnd. dev)^2

22) What percentile value is associated with the lower quartile (Q1)? 25th

23) What percent of data lie within 1 standard deviation of the mean? 68%

For #24-27, provide a short written explanation of why or why not the example describes a random sample.

24) The first 50 names listed on the Vietnam War Memorial

not all names have the same chance of being selected - not random

25) Twelve jurors selected through examination by opposing lawyers

not random - selection based on performance

26) Two class representatives selected by drawing names from a hat

random - all students have equal chance of being selected

27) Five live streamers selected based on number of followers

not random - selection based on performance

28) Identify any bias in the sampling method used: The city council is trying to determine if the city's residents would support the building of a new parking structure, so they poll 200 people at the local bus station.

biased - convenience sample from those waiting for a bus. Bus riders don't need a parking structure

For #29-30, state the value of p, the probability of success, for these binomial experiments:

29) A series of coin flips where success is coin landing on "heads" 1/2

30) A series of number cube rolls where success is the die showing a "2" or a "4"

$\frac{2}{6}$ or ... 1/3

For #31-33, find the following probabilities ~~is~~ if the probability of success for each trial is 0.6

31) 13 successes in 24 trials 13.67%

$24C13\,(.6)^{13}(.4)^{11}$

32) 9 successes in 20 trials 7.10%

$20C9\,(.6)^{9}(.4)^{11}$

33) 6 failures in 12 trials 17.66%

$12C6\,(.6)^{6}(.4)^{6}$

For #34-35 use the binomial theorem to find each of the following

34) the expansion of $(x + 2y)^3$ $x^3 + 6x^2y + 12xy^2 + 8y^3$

$x^3 + 3(x^2)(2y) + 3(x)(2y)^2 + (2y)^3$

35) the 6th term in the expansion of $(a + b)^7$ $21a^5b^2$

$7C5\,(a)^5(b)^2$

There are 24 questions on the Ch 11 test.

The questions are VERY similar to these!! Study hard, and good luck ☺