

Use the given data to find r and the equation of the regression line. Determine if a correlation exists. Make predictions indicated. Round the final values to three significant digits, if necessary.

- 1) Two different tests are designed to measure employee productivity and dexterity. Several employees are randomly selected and tested with these results. Predict dexterity if productivity is 22.

Productivity	23	25	28	21	21	25	26	30	34	36
Dexterity	49	53	59	42	47	53	55	63	67	75

- A) $r =$ _____ Table Value = _____ Interpret _____
 B) Regression Equation _____
 C) Prediction _____

- 2) Managers rate employees according to job performance and attitude. The results for several randomly selected employees are given below. Predict attitude if performance is 60.

Performance	59	63	65	69	58	77	76	69	70	64
Attitude	72	67	78	82	75	87	92	83	87	78

- A) $r =$ _____ Table Value = _____ Interpret _____
 B) Regression Equation _____
 C) Prediction _____

- 3) Find $P(\bar{A})$, given that $P(A) = 0.586$.

- 4) A spinner has equal regions numbered 1 through 15. What is the probability that the spinner will stop on an even number or a multiple of 3?

- 5) The table below describes the smoking habits of a group of asthma sufferers.

	Nonsmoker	Occasional smoker	Regular smoker	Heavy smoker	Total
Men	384	33	64	49	530
Women	349	44	72	38	503
Total	733	77	136	87	1033

If one of the 1033 people is randomly selected, find the probability that the person is a man or a heavy smoker.

- 6) A 6-sided die is rolled. Find $P(3 \text{ or } 5)$.

- 7) The table below describes the smoking habits of a group of asthma sufferers.

	Nonsmoker	Occasional smoker	Regular smoker	Heavy smoker	Total
Men	339	33	61	34	467
Women	377	32	84	36	529
Total	716	65	145	70	996

If one of the 996 people is randomly selected, find the probability of getting a regular or heavy smoker.

- 8) In a certain town, 25% of people commute to work by bicycle. If a person is selected randomly from the town, what are the odds against selecting someone who commutes by bicycle?

Determine whether the following is a probability distribution. If not, identify the requirement that is not satisfied.

9)

x	$P(x)$
1	0.037
2	0.200
3	0.444
4	0.296

- 10) If a person is randomly selected from a certain town, the probability distribution for the number, x , of siblings is as described in the accompanying table.

x	$P(x)$
0	0.25
1	0.24
2	0.24
3	0.15
4	0.07
5	0.03

Find the mean of the given probability distribution.

11)

x	$P(x)$
0	0.05
1	0.27
2	0.34
3	0.18
4	0.16

- 12) Find the standard deviation for the given probability distribution.

x	$P(x)$
0	0.05
1	0.28
2	0.47
3	0.11
4	0.09

- 13) Suppose you pay \$1.00 to roll a fair die with the understanding that you will get back \$3.00 for rolling a 5 or a 2, nothing otherwise. What is your expected value? *Is the game fair?*

- 14) The prizes that can be won in a sweepstakes are listed below together with the chances of winning each one: \$3800 (1 chance in 8300); \$2600 (1 chance in 6900); \$800 (1 chance in 3000); \$300 (1 chance in 2300). Find the expected value of the amount won for one entry if the cost to enter is 70 cents.

- 15) Focus groups of 12 people are randomly selected to discuss products of the Yummy Company. It is determined that the mean number (per group) who recognize the Yummy brand name is 9.5, and the standard deviation is 0.69. Would it be unusual to randomly select 12 people and find that fewer than 6 recognize the Yummy brand name?

Determine whether the given procedure results in a binomial distribution. If not, state the reason why.

- 16) Rolling a single die 34 times, keeping track of the numbers that are rolled.
- 17) Rolling a single die 43 times, keeping track of the "fives" rolled.

Assume that a procedure yields a binomial distribution with a trial repeated n times. Use the binomial probability formula to find the probability of x successes given the probability p of success on a single trial. Show the formula!

18) $n = 6, x = 3, p = \frac{1}{6}$

Find the indicated probability.

- 19) A machine has 7 identical components which function independently. The probability that a component will fail is 0.2. The machine will stop working if **more than three** components fail. Find the probability that the machine will be working.

Find the mean, μ , for the binomial distribution which has the stated values of n and p . Round answer to the nearest tenth.

20) $n = 1518; p = .57$

Find the standard deviation, σ , for the binomial distribution which has the stated values of n and p . Round your answer to the nearest hundredth.

21) $n = 22; p = .2$

Use the given values of n and p to find the minimum usual value $\mu - 2\sigma$ and the maximum usual value $\mu + 2\sigma$.

22) $n = 93, p = 0.20$

Determine if the outcome is unusual.

- 23) A survey for brand recognition is done and it is determined that 68% of consumers have heard of Dull Computer Company. A survey of 800 randomly selected consumers is to be conducted. For such groups of 800, would it be unusual to get 666 consumers who recognize the Dull Computer Company name?

Why?

Answer Key

Testname: K300REVIEWTEST#2FALL2007

- 1) $y = 5.05 + 1.91x$ $r = .886$ $t_{table} = .632$ significant corr. prediction = 47.07
2) $y = 11.7 + 1.02x$ $r = .863$ $t_{table} = .632$ " " " 72.9
3) 0.414
4) $\frac{2}{3}$
5) 0.550
6) $\frac{1}{3}$
7) 0.216
8) 3 : 1
9) Not a probability distribution. The sum of the P(x)'s is not 1.
10) Not a probability distribution. The sum of the P(x)'s is not 1.
11) 2.13
12) 0.97
13) \$0.00 yes!
14) \$0.53
15) Yes
16) Not binomial: there are more than two outcomes for each trial.
17) Procedure results in a binomial distribution.
18) 0.0536
19) 0.967
20) $\mu = 865.3$
21) $\sigma = 1.88$
22) Minimum: 10.88; maximum: 26.32
23) Yes