

NAME: _____

1. A random number table is used to simulate the chance of rain in a three day period. The probability of rain each day is 70%. Therefore, the digits 0, 1, 2, 3, 4, 5, 6 represent rainy days and the digits 7, 8, and 9 represent no rain. Given these groups of three digits to represent the weather for three days, what is the experimental probability that it will rain for exactly two of the three days?

306 561 789 452 324 184 813 687 286 497
676 199 755 802 673 975 951 177 244 834
260 387 657 212 236 634

2. A biologist has determined that a particular osprey has a 70% chance of catching a fish on each of the next three days. Use a simulation of twenty trials using the random number table to find the probability that the osprey will actually catch a fish on all of the next three days.

98675 32140 93728 14605 12069 38745 10523 98746 15360 24897 46153 79820

3. An engineer predicts that a machine will manufacture good parts 80% of the time. Use a simulation of twelve trials and the random number chart to find the probability that the machine will make good parts on all of the next four attempts.

94954 24780 46707 58102 13431 45684 62553 57506 03032 99

[A] 67% [B] 50% [C] 64% [D] 58%

4. Use the probability distribution below to assign the values from 1 to 100 to each outcome.

$P(\text{red}) = 0.21$, $P(\text{blue}) = 0.15$, $P(\text{purple}) = 0.64$

Then, generate 10 random numbers using $\text{Int}(100 \times \text{Rand} + 1)$ on your calculator. Summarize your results.

5. A quality control analyst found that the length of time a customer waited on the phone to talk to a representative varied according to this distribution:

Probability Distribution for Telephone Waiting Time

$t(\text{min})$	1	2	3	4	more than 4
$P(t)$	0.1	0.4	0.3	0.15	0.05

Use random numbers to simulate the number of minutes a random customer will have to wait.

6. On a given highway, the number of cars that pass by a certain location each minute varies according to the distribution below.

c	0	1	2	3	4	5
$P(c)$	0.07	0.19	0.22	0.26	0.16	0.1

Use random numbers to simulate the number of cars passing over a ten-minute period.

[1] $\frac{10}{26}$ or $\frac{5}{13}$ _____

[2] 40% _____

[3] D _____

Answers may vary. Sample: $1 - 21 = \text{red}$, $22 - 36 = \text{blue}$, $37 - 100 = \text{purple}$

Random numbers: 15, 52, 41, 74, 5, 34, 100, 21, 80, 96

[4] Results: red 3; blue 1; purple 6 _____

[5] Answers may vary. Sample: $\text{Int}(100 \times \text{Rand} + 1) = 91$, therefore a random customer may wait 4 minutes. _____

Answers may vary. Sample:

51	72	7	78	10	15	79	16	26	48
3	3	0	4	1	1	4	1	1	2

[6] It is likely that 20 cars will pass by in a 10-minute period. _____