8.3 Counting

Apply Fundamental Counting Principle (1-26)

Answer the question.
1) In how many ways can you answer the questions on an exam that consists of 7 multiple choice questions, each of which has 3 answer choices?

Answer the question.
2) How many automobile license plates can be made involving 3 letters followed by 2 digits, if letters cannot be repeated (used more than once) but digits can be repeated?

Evaluate Factorial Expression (27-30)

Evaluate.
3) 7!

Compute Permutations (31-40)

Evaluate the expression.
4) P(11, 3)

Permutation Applications (41-56)

Solve.
5) How many ways can a president, vice-president, and secretary be chosen from a club with 11 members?

Combination (57-66)

Evaluate.
6) C(11, 3)

8.6 Probability

0 ≤ P(E) ≤ 1 (1-8)

Determine if the stated number could represent a probability.
10) 3.8

11) -0.218

12) 113%

13) \( \frac{37}{21} \)

14) \( \frac{26}{31} \)
Probability of an Event (9–20)

Find the probability of the event.
15) When a single card is drawn from an ordinary 52-card deck, find the probability of getting a jack.

Find the probability of the event.
16) A bag contains 5 red marbles, 4 blue marbles, and 1 green marble. What is the probability of choosing a marble that is not blue when one marble is drawn from the bag?

Probability of Compound Events (21–54)

Find the probability of the compound event.
17) Two 6-sided dice are rolled. What is the probability that the sum of the two numbers on the dice will be greater than 9?

Find the probability of the compound event.
18) Urn A has balls numbered 1 through 6. Urn B has balls numbered 1 through 5. What is the probability that a 4 is drawn from A followed by a 2 from B?

Solve the problem.
19) The distribution of B.A. degrees conferred by a local college is listed below, by major.

<table>
<thead>
<tr>
<th>Major</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>2,073</td>
</tr>
<tr>
<td>Mathematics</td>
<td>2,164</td>
</tr>
<tr>
<td>Chemistry</td>
<td>318</td>
</tr>
<tr>
<td>Physics</td>
<td>856</td>
</tr>
<tr>
<td>Liberal Arts</td>
<td>1,358</td>
</tr>
<tr>
<td>Business</td>
<td>1,676</td>
</tr>
<tr>
<td>Engineering</td>
<td>868</td>
</tr>
</tbody>
</table>

What is the probability that a randomly selected degree is not in Mathematics?

20) Four boys and three girls are seated, in a row, at random, to watch a play. What is the probability that
   a) a girl is seated at each end of the row?
   b) one of the boys is seated in the middle seat?
   c) boys and girls are seated alternately?

21) A 5-card hand is dealt from a deck of 52 cards. What is the probability that
   a) all are from the same suit?
   b) all are hearts?
   c) exactly 2 are spades?
Answer Key
Testname: 1710CH8R

1) 2187
2) 1,560,000
3) 5040
4) 990
5) 990
6) 165
7) 126
8) 210
9) 210
10) No
11) No
12) No
13) No
14) Yes
15) \(\frac{1}{13}\)
16) \(\frac{3}{5}\)
17) \(\frac{1}{6}\)
18) \(\frac{1}{30}\)
19) 0.768
20) a) \(\frac{1}{7}\) b) \(\frac{4}{7}\) c) \(\frac{1}{35}\)
21) a) 0.00198 b) 0.000495 c) 0.27428