Score: 68/70 Points 97.14 %

1. Award: **2 out of 2.00 points**

Ch 06 Sec 1 Ex 04

A particular brand of shirt comes in 12 colors, has a male version and a female version, and comes in three sizes for each sex. How many different types of this shirt are made?

✔ 72

If there are n_1 ways to do the first task and for each of these ways of doing the first task, there are n_2 ways to do the second task, then there are n_1n_2 ways to do the procedure.

References

Numeric Response Ch 06 Sec 1 Ex 04

Ch 06 Sec 1 Ex 26 MAIN

Consider strings of four decimal digits.

References

Section Break Ch 06 Sec 1 Ex 26 MAIN

11.

Award: **0 out of 2.00 points**

Ch 06 Sec 1 Ex 32 8th

The ______ principle is used to find the number of strings of eight uppercase English letters that start or end with the letters BO (in that order), if letters can be repeated.

multiplication

Correct: Inclusion-exclusion

Using the principle there are 26^6 strings that start with the letters BO, 26^6 strings that end with the letters BO, and 26^4 strings that both start and end with the letters BO. Therefore, by the principle, the are $26^6+26^6-26^4$ = 617,374,576 strings.

References

Fill in the Blank	Ch 06 Sec 1 Ex 32 8th

28. Award: **2 out of 2.00 points**

Ch 06 Sec 5 Ex 15 4th

d) $0 \leq x_1 \leq 3$, $1 \leq x_2 < 4$, and $x_3 \geq 15$?

✔ 106

First impose the restrictions that $x_3 \geq 15$ and $x_2 \geq 1$. Then the problem is equivalent to counting the number of solutions to $x_1 + x_2' + x_3' + x_4 + x_5 = 5$, where $x_2' = x_2 - 1$ and $x_3' = x_3 - 15$, subject to the constraints that $x_1 \leq 3$ and $x_2' \leq 2$. Note that these two restrictions cannot be violated simultaneously. Thus if the number of solutions is counted to $x_1 + x_2' + x_3' + x_4 + x_5 = 5$, subtract the number of its solutions in which $x_1 \geq 4$, and subtract the numbers of its solutions in which $x_2' \geq 3$,to arrive at the answer.
By theorem 2 of the textbook, there are $C(5 + 5 - 1, 5) = C(9, 5) = 126$ solutions of the unrestricted equation. Applying the first restriction reduces the equation to $x_1 + x_2' + x_3' + x_4 + x_5 = 1$, which has $C(5 + 1 - 1, 1) = C(5, 1) = 5$ solutions. Applying the second restriction reduces the equation to $x_1 + x_2'' + x_3' + x_4 + x_5 = 2$, which has $C(5 + 2 - 1, 2) = C(6, 2) = 15$ solutions.

References

Numeric Response	Ch 06 Sec 5 Ex 15 4th

Since *MISSISSIPPI* has 4 indistinguishable objects of type *S*, 4 indistinguishable objects of type *I*, and 2 indistinguishable objects of type *P*, it has $\frac{11!}{(4!4!2!)}$ = 34,650 strings.

Preview
Design
Code

References

Multiple Choice	Chapter: 06 Counting
Ch 06 Sec 5 Ex 30	Section: 06.05 Generalized Permutations and Combinations

33. Award: **2 out of 2.00 points**

Ch 07 Sec 1 Ex 26 (a)

Find the probability of selecting none of the correct six integers in a lottery, where the order in which these integers are selected does not matter, from the positive integers not exceeding 40. (Note: Enter the value in decimal format and round it to two decimal places.)

✔ .35

If the numbers are chosen from the integers from 1 to n, then there are $C(n, 6)$ possible entries. To avoid all the winning numbers, make the choice from the $n - 6$ nonwinning numbers, and this can be done in $C(n - 6, 6)$ ways. Therefore, since the winning numbers are picked at random, the probability is $\frac{C(n-6, 6)}{C(n, 6)}$.

References

Numeric Response Ch 07 Sec 1 Ex 26 (a)

Ch 07 Sec 1 Ex 34 MAIN

What is the probability that Bo, Colleen, Jeff, and Rohini win the first, second, third, and fourth prizes, respectively, in a drawing if 50 people enter a contest and

References

Section Break Ch 07 Sec 1 Ex 34 MAIN