
1. (1 point) Library/ASU-topics/setCount/sw10_2_14.pg

A pianist plans to play 8 different pieces at a recital. In how many ways can she arrange these pieces in the program?

Your answer is : _____

Correct Answers:

- 40320

2. (1 point) Library/Rochester/setAlgebra38Counting/sw10_2_21.pg

Find the number of distinguishable permutations of the given letters "AABBC".

Your answer is : _____

Correct Answers:

- 30

3. (1 point) Library/NAU/setCounting/Counting_13.pg

A bowl contains 9 red balls and 10 blue balls. A woman selects 4 balls at random from the bowl. How many different selections are possible if at least 3 balls must be blue? _____

Correct Answers:

- 1290

4. (1 point) Library/NAU/setCounting/Fibonacci.pg

How many ways can we climb a staircase with 8 steps if we can take either 1 or 2 steps at a time?

Hint: Group the different ways according to the number of double steps. _____

Correct Answers:

- 34

5. (1 point) Library/ASU-topics/setCount/p11.pg

A bit is a 0 or a 1. A bit string of length 6 is a sequence of 6 digits, all of which are either 0 and 1.

(a) How many bit strings of length 6 are there?

(b) How many bit strings of length 6 or less are there? (Count the empty string of length zero also.)

Correct Answers:

- 64
- 127

6. (1 point) Library/ASU-topics/setCount/p12.pg

How many strings of 5 lower case English letters are there that have the letter x in them somewhere? Here strings may use the same letter more than once. (Hint: It might be easier to first count the strings that don't have an x in them.)

Your answer is: _____

Correct Answers:

- 2115751

7. (1 point) Library/ASU-topics/setCount/pcount1.pg

A coin is tossed 9 times.

a) How many different outcomes are possible?

b) How many different outcomes have exactly 6 heads?

c) How many different outcomes have at least 2 heads?

d) How many different outcomes have at most 5 heads?

Correct Answers:

- 512
- 84
- 502
- 382

8. (1 point) Library/ASU-topics/setCount/pcount2.pg

A boy has 2 red, 3 yellow and 2 green marbles. In how many ways can the boy arrange the marbles in a line if:

a) Marbles of the same color are indistinguishable?

b) All marbles have different sizes?

Correct Answers:

- 210
- 5040

9. (1 point) Library/Rochester/setAlgebra38Counting/sw10_2_22.pg

Find the number of distinguishable permutations of the given letters "AAABBBBCD".

Your answer is : _____

Correct Answers:

- 1120

10. (1 point) Library/ASU-topics/setCount/sw10_2_40.pg

In how many ways can 2 ice cream toppings be chosen from 12 available toppings?

Your answer is : _____

Correct Answers:

11. (1 point) Library/ASU-topics/setCount/sw10_2_52.pg

In the 6/55 lottery game, a player picks six numbers from 1 to 55. How many different choices does the player have if repetition is not allowed?

Note that the order of the numbers is not important.

Your answer is : _____

Correct Answers:

- 28989675

12. (1 point) Library/NAU/setCounting/Counting_1.pg

A girl owns 6 pairs of pants, 2 shirts, 4 ties, and 6 jackets. How many different outfits can the girl wear to school if each outfit must consist of one of each item?

There are _____ different outfits.

Correct Answers:

- 288

13. (1 point) Library/NAU/setCounting/counting1.pg

There are 17 portable mini suites (a.k.a. cages) in a row at the Paws and Claws Holiday Pet Resort. They are neatly labeled with their guests' names. There are 8 poodles and 9 tabbies. How many ways can the "suites" be arranged if:

a) there are no restrictions.

b) cats and dogs must alternate.

c) dogs must be next to each other.

d) dogs must be next to each other and cats must be next to each other.

Correct Answers:

- 3.55687E+14
- 1.46313E+10
- 1.46313E+11
- 2.92626E+10

14. (1 point) Library/NAU/setCounting/Counting_2.pg

A vendor sells ice cream from a cart on a sidewalk in downtown Flagstaff, Arizona. He offers 5 different flavors (vanilla, chocolate,...) served on 3 different cones. How many different single-scoop ice-cream cones can you buy from this vendor?

Your answer is : _____

Correct Answers:

- 15

15. (1 point) Library/NAU/setCounting/counting2.pg

Page Turner loves discrete mathematics. She has 3 "graph theory" books, 7 books about combinatorics, and 7 "set theory" books.

How many ways can she place her discrete mathematics books on the same shelf in a row if:

a) there are no restrictions.

b) graph theory books are next to each other but the others could be anywhere on the shelf.

c) books are organized by their topic (same kinds are next to each other).

Correct Answers:

- 3.55687E+14
- 7.84605E+12
- 9.14458E+08

16. (1 point) Library/NAU/setCounting/counting3.pg

The annual National No Spying Day is celebrated at KAOS headquarters this year. There are 8 Control agents and 19 KAOS agents attending. How many ways can we choose a team of 9 agents if 2 team members need to be from Control and 7 from KAOS?

How many ways can we choose a team of 9 agents if at least 1 team member needs to be from Control?

Correct Answers:

- 1.41086E+06
- 4.59445E+06

17. (1 point) Library/NAU/setCounting/Counting_5.pg

How many strings of 3 lower case English letters are possible?

How many strings of 3 lower case English letters are possible that have the letter "t" in them somewhere? Here strings may use the same letter more than once. (Hint: It might be easier to first count the strings that don't have a "t" in them.)

Correct Answers:

- 17576
- 1951

18. (1 point) Library/NAU/setCounting/Counting_6.pg

In how many ways can 6 students be seated in a row of 6 chairs if Janet insists on sitting in the first chair?

Your answer is : _____

Correct Answers:

- 120

19. (1 point) Library/NAU/setCounting/Counting_7.pg

There are 9 different positions on a baseball team. If a team has 17 players how many different line-ups can the team make? The team can make _____ different line-ups.

Correct Answers:

- 8821612800

20. (1 point) Library/NAU/setCounting/Counting_8.pg

How many different ways can an election for a treasurer with 8 contestants be completed? (Assume there is no tie.) Your answer is : _____

Correct Answers:

- 40320

21. (1 point) Library/NAU/setCounting/Counting_9.pg

A boy has 2 red , 5 yellow and 4 green marbles. In how many ways can the boy arrange the marbles in a line if all marbles have different sizes?

Correct Answers:

- 39916800

22. (1 point) Library/NAU/setCounting/generalizedCombination1.pg

Santa's elves are creating treat bags containing a selection of Kit Kats, Reese's cups and Almond Joys.

(A) How many different types of bags can they make containing 15 chocolate bars.

(B) How many different types of bags can they make containing 15 chocolate bars if Santa wants to have at least 2 Kit Kat(s), 1 Reese's cup(s) and 2 Almond Joy(s) in the bag.

Correct Answers:

- 136
- 66

23. (1 point) Library/NAU/setCounting/generalizedCombination2.pg

After a (not very successful) trick or treating round, Candice has 10 Tootsie rolls and 8 Twizzlers in her pillow case. Her mother asks her to share the loot with her three younger brothers.

(A) How many different ways can she do this?

(B) How many different ways can she do this after her Mother warns her to give at least one of each type of candies to each of her brothers?

Correct Answers:

- 47190
- 6720

24. (1 point) Library/NAU/setCounting/PermutationsCombination1.pg

You are rearranging your bookshelf to make it more interesting and harder to find anything on it. On one of the shelves you plan to put 13 biographies and 8 mysteries. How many ways can you arrange them on the shelf if you don't want any two mystery books next to each other (i.e. they need to be separated by at least one biography, maybe more...).

Correct Answers:

- 7.53974E+17

25. (1 point) Library/NAU/setCounting/RepeatedCombination1.pg

How many anagrams can be created from the word 'needlessly' if the new words do not need to be meaningful?

Correct Answers:

- 151200

26. (1 point) Library/NAU/setCounting/RepeatedCombination2.pg

To avoid collisions with invasive species of aliens, new imperial regulations allow only positive integer space jumps parallel to the three space axes defined in the Jedi council's booklet of rules and regulations. How many ways can the Millenium Falcon travel from Earth with coordinates (3,2,3) to the Wookiee smugglers trading place at (11,6,6)? _____

Correct Answers:

- 225225

27. (1 point) Library/NAU/setCounting/combinationsAdvanced.pg

How many words can we build using exactly 3 A's, 3 B's and 3 C's if the first 3 letters cannot be A's, the second 3 letters cannot be B's and the third 3 letters cannot be C's?

Hint: Group the different ways according to the number of B's in the first group.

Correct Answers:

- 56

28. (1 point) Library/NAU/setCounting/Counting_10.pg

James owns 7 different mathematics books and 6 different computer science books and wish to fill 5 positions on a shelf. If the first 3 positions are to be occupied by math books and the last 2 by computer science books, in how many ways can this be done? _____

Correct Answers:

- 6300

29. (1 point) Library/NAU/setCounting/Counting_11.pg
How many ways are there to seat 4 people in a row of 7 chairs?

Correct Answers:

- 840

30. (1 point) Library/NAU/setCounting/Counting_12.pg
A boy has 6 red , 6 yellow and 3 green marbles. In how many ways can the boy arrange the marbles in a line if all marbles of the same color are indistinguishable?

Correct Answers:

- 420420

31. (1 point) Library/NAU/setCounting/Counting_15.pg
A 4-card poker hand is dealt at random from a standard 52-card deck. What is the total number of possible hands?_____

What is the total number of possible hands if the hand contains exactly one heart? _____

Correct Answers:

- 270725
- 118807

32. (1 point) Library/ASU-topics/setDiscrete/stef4-5b.pg

You have 20 cards and 7 envelopes (labeled 1,2, ...,7).
In how many ways can you put the 20 cards into the envelopes if

(a) The cards are distinct?

Answer = _____

(b) The cards are identical?

Answer = _____

(b) The cards are identical and no envelope can be left empty?

Answer = _____

Correct Answers:

- 79792266297612001
- 230230
- 27132

33. (1 point) Library/ASU-topics/setDiscrete/stefi4-5a.pg

A store is selling 5 types of hard candies: cherry, strawberry, orange, lemon and pineapple. How many ways are there to choose:

(a) 29 candies?

Answer = _____

(b) 29 candies with at least a piece of each flavor?

Answer = _____

(b) 29 candies with at least 1 cherry and at least 5 lemon?

Answer = _____

Correct Answers:

- 40920
- 20475
- 17550