

COLLEGE ALGEBRA QUIZ

- (1) Combinations do not involve order and arrangements of objects.
Solution: (a)
(a) True
(b) False
- (2) An interior designer is arranging 6 nutcrackers on a fireplace mantle. In how many ways can this be accomplished?
Solution: $6! = 720$
- (3) 5 necklaces in a row are to be displayed on the cover of a Valentines Day catalogue. If there are 15 different necklaces to choose from, how many different displays are possible?
Solution: $15 \cdot 14 \cdot 13 \cdot 12 \cdot 11 = 360,360$
- (4) After class each student can choose 3 of 8 candies. How many different sets of candies can be chosen?
Solution: $\binom{8}{3} = 56$
- (5) Allowing numbers 1 through 9, how many passwords can be made if 4 different numbers must be used.
Solution: $9 \cdot 8 \cdot 7 \cdot 6 = 3,024$
- (6) In how many different ways can the letters in Mississippi be arranged?
Solution: $\frac{11!}{1! \cdot 4! \cdot 4! \cdot 2!} = 34,650$
- (7) Sam is building a custom vehicle online. He's already decided on the make and model, so now he has to choose between 8 exterior colors, 4 interior fabrics, and 2 different transmission options. How many different outcomes are possible?
Solution: $8 \cdot 4 \cdot 2 = 64$
- (8) How many 3 letter monograms can be formed using any of the 26 letters in the english alphabet.
(a) If the letters can be repeated?
(b) If the letters cannot be repeated?
(c) If the letters cannot be repeated but must start with N?
(d) If the letters cannot be repeated but must end with PA?

Solution: (a) $26^3 = 17,576$; (b) ${}^{26}P_3 = 15,600$; (c) ${}^{25}P_2 = 600$; (d) ${}^{24}P_1 = 24$

(9) Solve for n. Given,

$$\binom{n}{7} = 4 \cdot \binom{n-1}{6}$$

Solution: 28

(10) Solve for n. Given,

$$\binom{n}{n-1} = 54$$

Solution: 54