CC Algebra 2H Review 7B: Ch 7, 8-6, and Binomial Theorem

Give answers in simplest fractional form unless otherwise requested.

1. There are 10 questions on a true-false quiz. How many ways can all 10 questions be answered?

2. How many distinct permutations of the letters in "INTELLIGENCE" are there?

3. How many multiples of 5 that are less than 600 can be formed using only the digits 2, 3, 4, 5, and 6, if digits may be repeated?

4. A frozen yogurt shop offers 12 different flavors of frozen yogurt and 20 different toppings. Find the number of ways you could choose:
a) 2 different yogurt flavors and 3 different toppings
b) 1 or 2 different toppings for your yogurt dessert

5. Two 1-6 number cubes are rolled. Find the probability that when they land the cubes will show:
a) a sum that is a multiple of 6 or greater than 9
b) a sum that is not 3 or 4
c) a sum that is even and less than 5

6. The 10-member math team randomly selects 4 representatives to send to a meet. What is the probability that the 4 members chosen are the 4 with the highest math grades or the 4 with the lowest test grades?

7. If the letters in "INDIANA" are rearranged, find the probability that they spell "INDIANA".

8. Each student in a high school received a 4-digit code to use the library computers, with no repeated digits. Manny received the code 7654. What is the probability he would receive a code of consecutive numbers?

9. Four high school friends will all be attending the same university next year. There are 14 dormitories on campus. Find the probability to the nearest hundredth that at least 2 of the friends will be in the same dorm.

10. In a bag of 48 red and green marbles, some are opaque and some are translucent. If $\frac{1}{3}$ are red, $\frac{5}{12}$ are translucent, and $\frac{1}{2}$ are red or translucent, how many are red and translucent?

11. Suppose that in the United States, 56% of all children get an allowance and 41% of all children get an allowance and do household chores. What is the probability to the nearest percent that a child does household chores given that the child gets an allowance?

12. A group of children and adults were asked if they liked broccoli. The table of the joint relative frequencies and marginal relative frequencies reflecting their responses is shown. Round decimals to nearest hundredth.

	Yes	No	Total
Children	0.15	0.4	0.55
Adults	0.35	0.1	0.45
Total	0.5	0.5	1

a. Find P(liked broccoli, given respondent is an adult)
b. Find P(did not like broccoli, given respondent is a child)
c. Find the probability that 3 randomly selected adults in the group like broccoli.
d. If there are 80 children in the group, how many of them said they liked broccoli?

13. An automobile safety researcher claims that 3 out of 10 automobile accidents are caused by distracted drivers. Find the probability to the nearest thousandth that:
a. exactly 3 out of 5 accidents are caused by distracted drivers
b. at least 3 out of 5 accidents are caused by distracted drivers

14. Find and simplify the 7th term of $\left(3x-\sqrt{2}\right)^{10}$.

Answers
1. 1,024
2. 9,979,200
3. 26
4a. 75,240 4b. 210
5a. $\frac{11}{36}$ 5b. $\frac{31}{36}$ 5c. $\frac{1}{9}$
6. $\frac{1}{105}$
7. $\frac{1}{630}$
8. $\frac{1}{360}$
9. 0.37
10. 12
11. 73%
12a. 0.78 12b. 0.07 12c. 0.04
12d. 12
13a. 0.132 13b. 0.163
14. $136{,}080x^4$