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

Give answers in simplest fractional form unless otherwise requested.

1. A mall employee is dressing a mannequin. There are 6 pairs of shoes, 4 types of jeans, 8 tops to choose from. Using 1 of each, how many ways can the mannequin be dressed?

2. Simplify: $\frac{(n-4)!}{(n-2)!}$

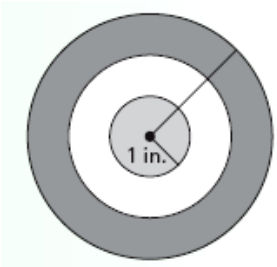
3. You need to stack 7 books on a shelf. In how many different orders can the books be stacked,
a) if all 7 books are stacked?
b) if you decide to only stack 5 of the 7 books?
c) if the smallest book must be on top of the stack of 7 books and the largest book must be on the bottom?

4. In how many ways can 3 identical iPads, 2 identical Mac Books, and 4 identical iPhones be arranged in a row in an Apple Store window?

5. Using the digits 0, 1, 2, 3, 4 without repetition, how many 4-digit numerals whose values are at least 1000 and less than 4000 can be formed?

6. Eighteen chefs participate in a cooking competition.
a) How many ways could they be paired up?
b) How many ways could they finish in 1st, 2nd, and 3rd places?

7. Find the probability that a dart thrown at the dartboard shown hits somewhere in either grey-shaded region. The radius of the dartboard is 3 inches, and the rings have equal widths. Round the answer to the nearest hundredth.



8. Samantha and Mike each put one entry into the drawing for a door prize at a fundraising event. Two winners will be selected from the 40 total entries. What is the probability that Mike wins first prize and Samantha wins second prize?

9. A cooler contains 5 cans of Coke, 4 cans of Dr. Pepper, and 2 cans of Sprite, buried under ice. Cans are chosen at random. Find the probability of choosing:
a) a Sprite or a Dr. Pepper
b) a Coke first and then a Sprite, with replacement
c) a Coke, then a Dr. Pepper, and then another Coke, without replacement
d) 2 Dr. Peppers, if two cans are chosen at the same time
e) at least one Coke, if three cans are chosen at the same time

10. Twenty students attend a leadership conference. Ten are in ASB, 8 participate in athletics, and 7 do both. Draw and label a Venn diagram of the situation. Then find the probability that a randomly selected student is:
a) not in athletics
b) in ASB or athletics
c) in athletics, given that the student is in ASB

11. On a given day, the probability that it will rain in Placentia 10% and the probability it will rain in Laguna Beach is 20%. Find the probability as a percent that it will rain in at least one of these cities.

12. A teacher collected data on the activities that her class did over summer break. The data is summarized in the table.

a. Find P(student went to beach)
b. Find P(joined sports team | went to beach)
c. Find P(did not go to beach | did not join sports team)
d. Find P(student went to beach or joined sports team)

		Went to Beach	
		Yes	No
Joined a sports team	Yes	10	9
	No	11	6

13. Find and simplify the term containing x^{10} from $(2x-5)^{12}$.

14. Find the middle term of $\left(x^2-2y\right)^6$.

15. A tree has a 25% chance of flowering. In a random sample of 15 trees, what is the probability to the nearest hundredth that at least 4 develop flowers?

Answers

1. 192
2. $\frac{1}{n^2-5n+6}$

3a. 5,040 3b. 2,520 3c. 120
4. 1,260
5. 72
6a. 153 6b. 4,896
7. 0.67
8. $\frac{1}{1560}$

9a. $\frac{6}{11}$ 9b. $\frac{10}{121}$ 9c. $\frac{8}{99}$
9d. $\frac{6}{55}$ 9e. $\frac{29}{33}$

10a. $\frac{3}{5}$ 10b. $\frac{11}{20}$ 10c. $\frac{7}{10}$
11. 28%
12a. $\frac{7}{12}$ 12b. $\frac{10}{21}$ 12c. $\frac{6}{17}$
12d. $\frac{5}{6}$
13. $1{,}689{,}600x^{10}$
14. $-160x^6y^3$
15. 0.54