Algebra 2—H 12-1 thru 12-5 Review

Give answers as integers or fractions in simplest form, unless otherwise directed.

1. The Cheer Squad is selecting a new uniform. There are 5 styles of tops, 15 styles of skirts, and 6 styles of lettering to choose from. How many ways can 1 top, 1 skirt, and lettering be selected?

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

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 sack of 7 books?

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

5. In how many different ways can 3 identical diamonds, 2 identical rubies, and 4 identical sapphires be arranged in a row in a display case?

6. How many positive 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?

7. 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?

8. 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

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

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

11. Use Pascal's triangle to expand and simplify $\left(x^2-3y\right)^5$.

12. Two six-sided dice are rolled. Find the probability that when they land the dice will be showing:
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.

13. Find the probability that a dart thrown at the target shown hits somewhere in the shaded region. Round the answer to the nearest hundredth.

14. Twenty students attend a leadership conference. Ten are in ASB, 8 particpate in athletics, and 7 do both. Find the probability that a randomly selected student is:
a) not in athletics
b) in ASB or athletics

15. 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 on Coke, if three cans are chosen at the same time
f) 2 cans that are not Dr. Pepper, if two cans are chosen at the same time

16. If the letters in the word "ENGLISH" are arranged as 7-letter "words", find the probability that the first letter of these "words" is a vowel.

17. Fifty-four percent of a company's employees are men. Forty-seven percent of the men and 35% of the women exercise regularly. Find the probability that a randomly selected employee does not exercise regularly. Give the answer as a percent, rounded to the nearest tenth of a percent.

Answers:

1. 450
2. 1024
3. a) 5040 b) 2520 c) 720
4. 9,979,200
5. 1260
6. 26
7. a) 153 b) 4896
8. a) 75,240 b) 210
9. $1{,}689{,}600x^{10}$
10. $136{,}080x^4$
11. $x^{10} - 15x^8y + 90x^6y^2 - 270x^4y^3 + 405x^2y^4 - 243y^5$
12. a) 11/36 b) 31/36 c) 1/9
13. 0.69
14. a) 3/5 b) 11/20
15. a) 6/11 b) 10/121 c) 8/99 d) 6/55 e) 29/33 f) 5/6
16. 2/7
17. 58.5%