Name:

## Algebra 2 Unit 7 Review

Determine the possible number of license plates that can be made with each configuration if letters and digits can be repeated

1. 3 letters followed by 2 digits

   1757600

2. 1 digit (not 0), 2 letters, 4 digits

   60840000

Determine the possible number of license plates that can be made with each configuration if letters and digits cannot be repeated

3. 2 letters followed by 3 digits

   468,000

4. 3 digits then 4 letters

   258,336,000

5. You own 10 books and plan to take 3 on vacation. In how many ways can you take 3 books?

   120

6. Math club is electing a President, Vice President, and Secretary from the 15 members. In how many ways can the three offices be filled?

   2730

7. A pizza parlor offers a special of a large pizza with cheese, 1 vegetable and 1 meat for $12. You have a choice of 4 cheeses, 9 vegetables, and 10 meats. How many pizzas are possible?

   360

Determine the number of 5-card hands that are possible from a standard deck of cards with each configuration.

8. 3 sevens and 2 face cards

   264

9. No hearts

   575,757

10. Find the number of distinguishable permutations of the word PERPLEX.

    1260

Determine the probability of drawing a face card, then a seven, then an ace if:

11. cards are replaced

    0.0014

12. cards are not replaced

    0.0015

A 5-card hand is randomly selected from a standard deck of cards. Find the probability of getting each hand described.

13. At least one club

    0.78

14. 2 diamonds and 3 black cards

    0.078

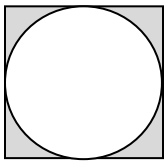
15. ASB consists of 12 seniors (8 females and 4 males) and 9 juniors (3 females and 6 males). A student is randomly selected. What is the probability that the student is a junior or female?

    17/21

16. Jacob, Eli, and Brandon are among 18 students that are applying for a trip to London. Three students will be selected at random to go. What is the probability that the three students will be Jacob, Eli, and Brandon?

    $\frac{1}{816}$

Find the probability that a dart thrown at the target will hit the shaded region

17. 


    0.22

18. One a certain day the chance of rain in Portland is 82% and the chance of rain in Phoenix is 25%. What is the probability that it will not rain in either city?

    13.5%

9. A bag has 6 large orange marbles, 5 large blue marbles, 4 small orange marbles, and 7 small blue marbles. A marble is randomly selected. What is the probability that the marble is orange given that it is large?

$\frac{6}{11}$

20. A high school basketball team leads at halftime in 65% of the games in a season. The team wins 70% of the time when they have the halftime lead, but only 15% of the time when they do not. What is the probability that the team wins a particular game during the season?

50.75%

P(wins and leads at ½ time) or P(win and not leading at ½ time)
$= (.70)(.65) + (.15)(.35) = 0.5075$

21. Find the probability of drawing the given cards without replacement: a spade, then a heart, then not a heart nor a spade.

$\frac{169}{5100} \approx 0.03$

Determine the number of terms in each expansion

23. $(3y^2 - 7)^{15}$ 16

24. $(x + 5)^{10}$ 11

25. $(z^3 - r)^{24}$ 25

26. Expand $(y^2 - 3)^5$ $y^{10} - 15y^8 + 90y^6 - 270y^4 + 405y^2 - 243$

28. Find the coefficient of $x^4$ in the expansion of $(2x - 5)^{10}$

52,500,000

29. Find the coefficient of $x^{12}$ in the expansion of $(x^3 + 2)^8$

1,120

30. A tennis player wins a match 75% when she serves first and 39% of the time when her opponent serves first. The player who serves first is determined by a coin toss. What is the probability that the player wins a given match?

57%

P(win and serves first) + P(win and doesn't serve first)
$= (.75)(.5) + (.39)(.5) = .57$

31. A box contains 8 large red marbles, 5 large yellow marbles, 4 small red marbles and 8 small yellow marbles. If a marble is drawn at random, what is the probability that it is yellow, given that it is one of the small marbles?

0.67

32. A card is randomly selected from a standard deck of cards. Find the probability that it is
   a) a king or a diamond . $\frac{4}{13}$
   b) a 2 or an ace. $\frac{2}{13}$

33. A bag contains 12 red marbles, 6 blue marble and 2 black marbles. A marble is drawn and left out of the bag and then a second marble is drawn. Find each probability:
   a) drawing a blue, then a red 0.19
   b) drawing both the same color 0.43

34. On a certain day the chance of getting out of 5th period early is 25% and the chance of getting out of 1st period early is 15%. Assume the chance of getting out of class early in the two periods is independent. What is the probability that it neither class will get out early.

63.8%

35. Write the formulas for ${}_nC_r$ and ${}_nP_r$. $nCr = \frac{n!}{r!(n-r)!}$ $nPr = \frac{n!}{(n-r)!}$

36. How many 5-card hands are possible that contain one seven and 4 face cards?

1980

37. At a picnic, Russell reaches into a cooler (without looking) containing 12 regular soft drinks and 6 diet soft drinks and takes out a drink. Brooke then reaches into the cooler & removes a can. What is the probability that both Russ & Brooke chose a regular soft drink?

$\frac{22}{51}$