Algebra 2

8-Review

Take this test as you would take a test in class. When you are finished, check your work against the answers.

8-01

1. What is the sample space for an experiment where you flip and coin and roll a dice?

8-02

2. A new flu shot was given to 73 old people and 27 young people. Of those, 15 old people and 3 young people got the flu. Organize these results in a two-way table.

Answer the following questions about this two-way table showing the results of a survey about what type of books people like to read.

	History	Literature	Total
Men	31	18	49
Women	27	24	51
Total	58	42	100

3. (a) How many women prefer to read history? (b) How many men were surveyed? (c) How many people said they preferred to read literature?

4. Rewrite the two-way table to show relative frequencies.

8-03

5. What is the probability that a person prefers to read history given that they are a woman?

8-04

Find the indicated probability

6. A and B are independent. P(A) = 0.5; P(B) = 0.7; P(A and B) = ?

7. A and B are dependent. P(A) = 0.5; P(A and B) = 0.35; P(B | A) = ?

8-05

Find the indicated probability.

8. P(A) = 0.5; P(B) = 0.3; P(A or B) = 0.7; P(A and B) = ?

8-06A

Find the number of permutations or combinations.

9. ${}_{12}P_8$

10. ${}_{12}C_8$

8-06B

Use the binomial theorem.

11. $(x + 5)^4$

8-07

Calculate the probability of *k* successes for a binomial experiment consisting of *n* trials with probability *p* of success on each trial. (Round to the two decimal places.)

12. $k = 6, n = 10, p = 0.8$

8-02 to 8-07

Word problems. (Round to two decimal places.)

13. If you roll one regular dice, what is the probability that you will roll a multiple of 3?

14. What is the probability that a randomly picked point in a circle with $r = 5$ in will be in a 3 in × 5 in rectangle inside the circle?
15. If you make 80% of free throws in basketball, what is the probability you will miss a free throw?
16. Consider the numbers 1 to 10 inclusive. What is the probability that a random number is even given that it is a factor of 60?
17. If you randomly draw two cards from a bag containing 10 cards numbered 1 through 10, what is the probability of drawing a multiple of 6 and multiple of 3 without replacement?
18. If you randomly draw a single card from a bag containing 10 cards numbered 1 through 10, what is the probability of drawing a multiple of 6 or a multiple of 3?
19. What is the probability of correctly randomly guessing the answers to all 10 questions on a quiz if they are multiple choice with 5 options each?
20. If you draw 7 cards have from a bag containing 52 different cards, how many groups of 7 cards are possible?
21. If there are 20 people running for 5 class officer positions, how many different orders can there be for the class officers?
22. Three regular dice are rolled at the same time. Make a histogram showing the probability of getting each possible number of 6's. (Hint: You could get 0 6's, or 1 6, or 2 6's, or all 3 6's.)

Answers

1. H1, H2, H3, H4, H5, H6, T1, T2, T3, T4, T5, T6
2.

	Flu	No Flu	Total
Old	15	58	73
Young	3	24	27
Total	18	82	100

3. 27; 49; 42
4.

	History	Literature	Total
Men	0.31	0.18	0.49
Women	0.27	0.24	0.51
Total	0.58	0.42	1

5. $P(history \mid woman) = 0.529$
6. 0.35
7. 0.7
8. 0.1
9. 19958400
10. 495
11. $x^4 + 20x^3 + 150x^2 + 500x + 625$
12. 0.09
13. $\frac{1}{3} \approx 0.33$
14. 0.19
15. 0.20
16. $\frac{4}{7} = 0.57$
17. $\frac{1}{45} \approx 0.02$
18. $\frac{3}{10} = 0.3$
19. $\frac{1}{9765625} = 1.024 \times 10^{-7}$ (binomial distribution)
20. 133784560 (combination)
21. 1860480 (permutation)
22. P(0 6's) = 0.58; P(1 6's) = 0.35; P(2 6's) = 0.07; P(3 6's) = 0.005