## 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. $\mathrm{P}(\mathrm{A})=0.5 ; \mathrm{P}(\mathrm{B})=0.7 ; \mathrm{P}(\mathrm{A}$ and B$)=$ ?
7. A and B are dependent. $\mathrm{P}(\mathrm{A})=0.5 ; \mathrm{P}(\mathrm{A}$ and B$)=0.35 ; \mathrm{P}(\mathrm{A} \mid \mathrm{B})=$ ?

## 8-05

Find the indicated probability.
8. $\mathrm{P}(\mathrm{A})=0.5 ; \mathrm{P}(\mathrm{B})=0.3 ; \mathrm{P}(\mathrm{A}$ or B$)=0.7 ; \mathrm{P}(\mathrm{A}$ 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 $\boldsymbol{k}$ successes for a binomial experiment consisting of $\boldsymbol{n}$ trials with probability $\boldsymbol{p}$ 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 ?

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$\qquad$
14. What is the probability that a randomly picked point in a circle with $r=5$ in will be in a 3 in $\times 5$ 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 16 , 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. $\quad P($ history $\mid$ woman $)=0.529$
6. 0.35
7. 0.7
8. 0.1
9. 19958400
10. 495
11. $x^{4}+20 x^{3}+150 x^{2}+500 x+625$
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)

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20. 133784560 (combination)

1. 1860480 (permutation)
$P(06 ' s)=0.58 ; P(16 ' s)=0.35 ; P\left(26^{\prime} s\right)=0.07 ; P\left(36^{\prime} s\right)=0.005$

