

Name \_\_\_\_\_

**MULTIPLE CHOICE.** Choose the one alternative that best completes the statement or answers the question.

List all the subsets of the given set.

1) {5}

A) { }

B) {5}

C) {5}, { }

D) {0}, {5}, { }

Let  $U = \{q, r, s, t, u, v, w, x, y, z\}$

$A = \{q, s, u, w, y\}$

$B = \{q, s, y, z\}$

$C = \{v, w, x, y, z\}$ . List the elements in the set.

2)  $(A \cap C)'$

A) {q, s, y, z}

B) {q, r, s, t, u, v, x, z}

C) {q, r, s, t, u, v, w, x, y, z}

D) {w, y}

3)  $(A \cap B \cap C)'$

A) {q, r, s, t, u, v, w, x, z}

B)  $\emptyset$

C) {r, t, v, x}

D) {q, s, u, w, z}

Write  $\subseteq$  or  $\not\subseteq$  in the blank so that the resulting statement is true.

4)  $\{5, 7, 9\}$  \_\_\_  $\{4, 5, 6, 7, 9\}$

A)  $\not\subseteq$

B)  $\subseteq$

Let  $U = \{q, r, s, t, u, v, w, x, y, z\}$

$A = \{q, s, u, w, y\}$

$B = \{q, s, y, z\}$

$C = \{v, w, x, y, z\}$ . List the elements in the set.

5)  $(A \cup B)'$

A) {r, s, t, u, v, w, x, z}

B) {t, v, x}

C) {s, u, w}

D) {r, t, v, x}

Express the quantified statement in an equivalent way, that is, in a way that has exactly the same meaning.

6) No American League baseball teams have won a World Series.

A) Some American League baseball teams have won a World Series.

B) All American League baseball teams have not won a World Series.

C) All American League baseball teams have won a World Series.

D) At least one American League baseball team has won a World Series.

Given that  $p$  and  $q$  each represents a simple statement, write the indicated symbolic statement in words.

7)  $p$ : The refrigerator is working.

$q$ : The milk is warm.

$p \leftrightarrow \sim q$

A) The refrigerator is not working if and only if the milk is warm.

B) The refrigerator is working if and only if the milk is not warm.

C) The refrigerator is working and the milk is not warm.

D) If the refrigerator is working, then the milk is not warm.

Express the quantified statement in an equivalent way, that is, in a way that has exactly the same meaning.

8) All robins are birds.

A) Some birds are not robins.

B) All birds are not robins.

C) There are no robins that are not birds.

D) At least one robin is a bird.

Construct a truth table for the statement.

9)  $\sim(q \rightarrow \sim p)$

A) 

| p | q | $\sim p$ | $q \rightarrow \sim p$ | $\sim(q \rightarrow \sim p)$ |
|---|---|----------|------------------------|------------------------------|
| T | T | F        | T                      | F                            |
| T | F | F        | F                      | T                            |
| F | T | T        | F                      | T                            |
| F | F | T        | F                      | T                            |

B) 

| p | q | $\sim p$ | $q \rightarrow \sim p$ | $\sim(q \rightarrow \sim p)$ |
|---|---|----------|------------------------|------------------------------|
| T | T | F        | F                      | T                            |
| T | F | F        | T                      | F                            |
| F | T | T        | T                      | T                            |
| F | F | T        | T                      | F                            |

C) 

| p | q | $\sim p$ | $q \rightarrow \sim p$ | $\sim(q \rightarrow \sim p)$ |
|---|---|----------|------------------------|------------------------------|
| T | T | F        | F                      | T                            |
| T | F | F        | T                      | F                            |
| F | T | T        | T                      | F                            |
| F | F | T        | T                      | F                            |

D) 

| p | q | $\sim p$ | $q \rightarrow \sim p$ | $\sim(q \rightarrow \sim p)$ |
|---|---|----------|------------------------|------------------------------|
| T | T | F        | F                      | T                            |
| T | F | F        | F                      | T                            |
| F | T | T        | T                      | F                            |
| F | F | T        | T                      | F                            |

Complete the truth table by filling in the required columns.

10)  $\sim p \vee p$

| p | $\sim p$ | $\sim p \vee p$ |
|---|----------|-----------------|
| T |          |                 |
| F |          |                 |

A) 

| p | $\sim p$ | $\sim p \vee p$ |
|---|----------|-----------------|
| T | F        | T               |
| F | T        | T               |

B) 

| p | $\sim p$ | $\sim p \vee p$ |
|---|----------|-----------------|
| T | F        | T               |
| F | F        | F               |

C) 

| p | $\sim p$ | $\sim p \vee p$ |
|---|----------|-----------------|
| T | T        | T               |
| F | F        | T               |

D) 

| p | $\sim p$ | $\sim p \vee p$ |
|---|----------|-----------------|
| T | F        | F               |
| F | T        | F               |

Find the least common multiple of the numbers.

11) 60 and 72

A) 864

B) 4320

C) 360

D) 720

Insert < or > in the area between the integers to make the statement true.

12)  $-15$        $-1$

A) <

B) >

Use the zero and negative exponent rules to simplify the expression.

13)  $(-11)^0$

A) -11

B) 0

C) 1

D) -1

Perform the indicated operation. Where possible, reduce the answer to lowest terms.

14)  $\frac{5}{13} - \left(-\frac{1}{13}\right)$

A)  $\frac{1}{13}$

B)  $\frac{6}{13}$

C)  $\frac{4}{13}$

D)  $-\frac{6}{13}$

Find the rational number halfway between the two numbers in each pair.

15)  $\frac{1}{2}$  and  $\frac{1}{4}$

A)  $\frac{3}{8}$

B)  $\frac{1}{8}$

C)  $\frac{3}{4}$

D)  $\frac{1}{4}$

Write the decimal as a percent.

16) 85

A) 0.85%

B) 4250%

C) 8.5%

D) 8500%

Solve the problem.

17) Jeans with an original price of \$60 are on sale at 15% off. What is the sale price of the jeans? (Round to the nearest cent, if necessary.)

A) \$9.00

B) \$51.00

C) \$59.10

D) \$69.00

18) The finance charge per \$100 financed for a stove that is paid off in 24 equal monthly payments is \$11.45. Use an APR table to find the APR for this loan.

A) 10.5%

B) 14%

C) 11%

D) 14.13%

19) Suppose that 15% of teachers at a university attended a conference. If 7000 teachers are enrolled at the university, about how many teachers attended the conference?

A) 10,500 teachers

B) 105 teachers

C) 105,000 teachers

D) 1050 teachers

20) Lonnie needs extra money to buy a truck to start up a delivery service. He takes out a simple interest loan for \$8000.00 for 3 months at a rate of 9.25%. How much interest must he pay, and what is the maturity value of the loan?

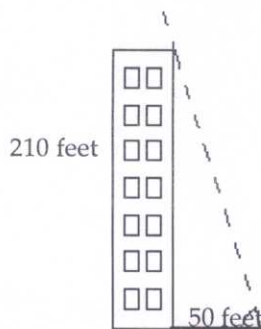
A) interest: \$201.82 ; maturity value: \$8201.82

B) interest: \$185.00 ; maturity value: \$8198.00

C) interest: \$185.00 ; maturity value: \$8185.00

D) interest: \$2220.00 ; maturity value: \$10,220.00

21) A building 210 feet tall casts a 50 foot long shadow. Find the angle of elevation of the sun to the nearest degree.



A)  $13^\circ$

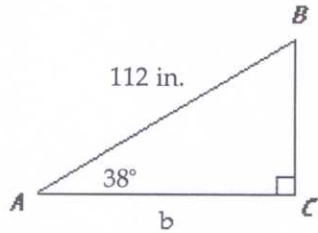
B)  $77^\circ$

C)  $14^\circ$

D)  $76^\circ$

Find the measure of the side of the right triangle whose length is designated by the lowercase letter. Round your answer to the nearest whole number.

22)



A) 83 in.

B) 88 in.

C) 81 in.

D) 77 in.

Solve the problem.

23) At a certain time of day, the angle of elevation of the sun is  $64^\circ$ . To the nearest foot, find the height of a pole whose shadow at that time is 12 feet long.



A) 26 feet

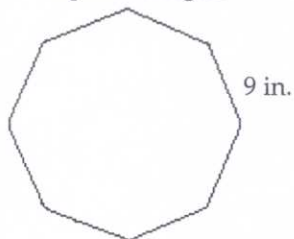
B) 25 feet

C) 28 feet

D) 5 feet

Find the perimeter of the figure named and shown. Express the perimeter in the same unit of measure that appears on the given side or sides.

24) regular octagon



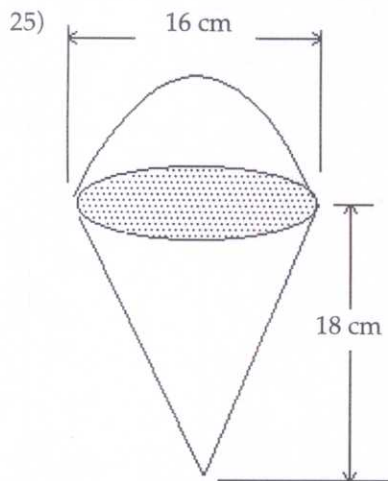
A) 63 in.

B) 54 in.

C) 8 in.

D) 72 in.

Use two formulas for volume to find the volume of the figure. Round the answer to the nearest whole number.



- A)  $3351 \text{ cm}^3$       B)  $4691 \text{ cm}^3$       C)  $85,786 \text{ cm}^3$       D)  $2279 \text{ cm}^3$

In 5-card poker, played with a standard 52-card deck,  ${}_{52}C_5$ , or 2,598,960 different hands are possible. The probability of being dealt various hands is the number of different ways they can occur divided by 2,598,960. Find the probability of not being dealt this type of hand.

- 26) Four of a kind: 4 cards with the same number, plus 1 additional card, if the number of ways this hand can occur is 624, and the probability of this hand is  $\frac{624}{2,598,960}$

- A)  $\frac{625}{2,598,960}$       B)  $\frac{1248}{2,598,960}$       C)  $\frac{2,598,336}{2,598,960}$       D)  $\frac{624}{2,598,960}$

Solve the problem.

- 27) A service that repairs televisions sells maintenance agreements for \$10 a year. The average cost for repairing a television is \$38 and 4 in every 100 people who purchase maintenance agreements have televisions that require repair. Find the service's expected profit per maintenance agreement.

- A) \$9.96      B) \$8.86      C) \$8.48      D) \$9.62

The chart shows the probability of dying from four conditions in the U.S. Express all probabilities as decimals to three decimal places. Assume all events are mutually exclusive.

| Causes of Death | Percentage of all Deaths |
|-----------------|--------------------------|
| Disease A       | 30.3%                    |
| Disease B       | 23.0%                    |
| Disease C       | 5.8%                     |
| Disease D       | 4.7%                     |

- 28) What is the probability of dying from disease A or B?

- A) 0.533      B) 0.230      C) 0.303      D) 0.697

Solve the problem by applying the Fundamental Counting Principle with two groups of items.

- 29) There are 5 roads leading from Bluffton to Hardeeville, 6 roads leading from Hardeeville to Savannah, and 4 roads leading from Savannah to Macon. How many ways are there to get from Bluffton to Macon?

- A) 240 ways      B) 120 ways      C) 30 ways      D) 15 ways

Evaluate the factorial expression.

30)  $\frac{500!}{499!}$

A) 1

B) 500

C) 499

D) 249,500

Compute the mean, range, and standard deviation for the data items in each of the three samples. Then one way in which the samples are alike and one way in which they are different.

31) Sample A: 7, 9, 11, 13, 15, 17, 19

Sample B: 7, 10, 10, 13, 16, 16, 19

Sample C: 7, 7, 7, 13, 19, 19, 19

A) Mean (A) 9 (B) 10 (C) 11. Range (for A, B, and C): 12 Standard deviation: (A) 6 (B) 6 (C) 6. Samples have the same standard deviation but different means.

B) Mean (for A, B and C): 13 Range (for A, B, and C): 12 Standard deviation: (A) 7 (B) 4.24 (C) 6. Samples have the same mean but different standard deviations.

C) Mean (A) 12 (B) 13 (C) 14. Range (for A, B, and C): 12 Standard deviation: (A) 6 (B) 6 (C) 6. Samples have the same standard deviation but different means.

D) Mean (for A, B and C): 13 Range (for A, B, and C): 12 Standard deviation: (A) 4.32 (B) 4.24 (C) 6. Samples have the same mean but different standard deviations.

A set of data items is normally distributed with a mean of 500. Find the data item in this distribution that corresponds to the given z-score.

32)  $z = 1.5$ , if the standard deviation is 30.

A) 545

B) 515

C) 650

D) 530

Find the mode for the group of data items. If there is no mode, so state.

33) 97, 97, 93, 32, 70, 97

A) 93

B) no mode

C) 97

D) 32

Use a table of z-scores and percentiles to find the percentage of data items in a normal distribution that lie between:

34)  $z = -0.5$  and  $z = 0.5$

A) 38.3%

B) 50%

C) 69.15%

D) 30.85%

Find the a. mean and b. standard deviation of the data set. Round answers to two decimal places.

35) International Travel Destinations of U.S. Citizens in 2000.

| Country | U.S. Citizens, in thousands |
|---------|-----------------------------|
| A       | 999                         |
| B       | 599                         |
| C       | 219                         |
| D       | 199                         |
| E       | 159                         |
| F       | 104                         |
| G       | 102                         |
| H       | 101                         |
| I       | 89                          |
| J       | 79                          |

A) a. 265 b. 300.55

B) a. 259 b. 9000

C) a. 259 b. 300.55

D) a. 265 b. 9000

## Answer Key

Testname: FINAL EXAM REVIEW

- 1) C  
ID: TM1B 2.1.5-2  
Objective: (2.2) Determine the Number of Subsets of a Set
- 2) B  
ID: TM1B 2.2.2-10  
Objective: (2.3) Perform Operations with Sets
- 3) A  
ID: TM1B 2.3.1-8  
Objective: (2.4) Perform Set Operations with Three Sets
- 4) B  
ID: TM1B 2.1.4-1  
Objective: (2.2) Use Symbols for Subset/Not a Subset/Proper Subset
- 5) D  
ID: TM1B 2.2.2-2  
Objective: (2.3) Perform Operations with Sets
- 6) B  
ID: TM1B 3.1.6-4  
Objective: (3.1) Express Quantified Statements in Two Ways
- 7) B  
ID: TM1B 3.2.3-4  
Objective: (3.2) Additional Miscellaneous Items for Section 3.2
- 8) C  
ID: TM1B 3.1.6-1  
Objective: (3.1) Express Quantified Statements in Two Ways
- 9) C  
ID: TM1B 3.4.2-2  
Objective: (3.4) Construct Truth Tables for Conditional Statements
- 10) A  
ID: TM1B 3.3.2-1  
Objective: (3.3) Construct Truth Tables
- 11) C  
ID: TM1B 5.1.5-2  
Objective: (5.1) Find the Least Common Multiple of Two Numbers
- 12) A  
ID: TM1B 5.2.3-4  
Objective: (5.2) Use the Symbols  $<$  and  $>$
- 13) C  
ID: TM1B 5.6.1-6  
Objective: (5.6) Use Properties of Exponents
- 14) B  
ID: TM1B 5.3.5-11  
Objective: (5.3) Perform Operations with Rational Numbers
- 15) A  
ID: TM1B 5.3.6-1  
Objective: (5.3) Apply the Density Property of Rational Numbers

## Answer Key

### Testname: FINAL EXAM REVIEW

- 16) D  
ID: TM1B 8.1.2-5  
Objective: (8.1) Express a Decimal as a Percent
- 17) B  
ID: TM1B 8.1.4-2  
Objective: (8.1) Solve Applied Problems Involving Percent
- 18) A  
ID: TM1B 8.3.2-2  
Objective: (8.3) Determine the APR
- 19) D  
ID: TM1B 8.1.4-4  
Objective: (8.1) Solve Applied Problems Involving Percent
- 20) C  
ID: TM1B 8.2.1-7  
Objective: (8.2) Calculate Simple Interest and Maturity Value
- 21) B  
ID: TM1B 10.6.3-2  
Objective: (10.6) Use Trig Ratios to Solve Applied Problems
- 22) B  
ID: TM1B 10.6.2-2  
Objective: (10.6) Use Trig Ratios to Find Missing Parts of Rt Triangle
- 23) B  
ID: TM1B 10.6.3-3  
Objective: (10.6) Use Trig Ratios to Solve Applied Problems
- 24) D  
ID: TM1B 10.3.3-7  
Objective: (10.3) Solve Problems Involving a Polygon's Perimeter
- 25) D  
ID: TM1B 10.5.1-6  
Objective: (10.5) Use Formulas to Compute Volumes of 3Ds, Solve Apps
- 26) C  
ID: TM1B 11.6.1-3  
Objective: (11.6) Find the Probability an Event Will Not Occur
- 27) C  
ID: TM1B 11.8.2-6  
Objective: (11.8) Use Expected Value to Solve Applied Problems
- 28) A  
ID: TM1B 11.6.2-3  
Objective: (11.6) Find the Probability of One Event or a Second Event
- 29) B  
ID: TM1B 11.1.1-4  
Objective: (11.1) Use Fundamental Count Prin to Det Number of Outcomes
- 30) B  
ID: TM1B 11.2.2-2  
Objective: (11.2) Evaluate Factorial Expressions

## Answer Key

Testname: FINAL EXAM REVIEW

- 31) D  
ID: TM1B 12.3.2-6  
Objective: (12.3) Determine Standard Deviation for Data
- 32) A  
ID: TM1B 12.4.5-9  
Objective: (12.4) Convert Data Item to z-Score
- 33) C  
ID: TM1B 12.2.3-2  
Objective: (12.2) Determine the Mode for a Data Set
- 34) A  
ID: TM1B 12.4.6-5  
Objective: (12.4) Understand and Use Percentiles
- 35) A  
ID: TM1B 12.3.2-8  
Objective: (12.3) Determine Standard Deviation for Data