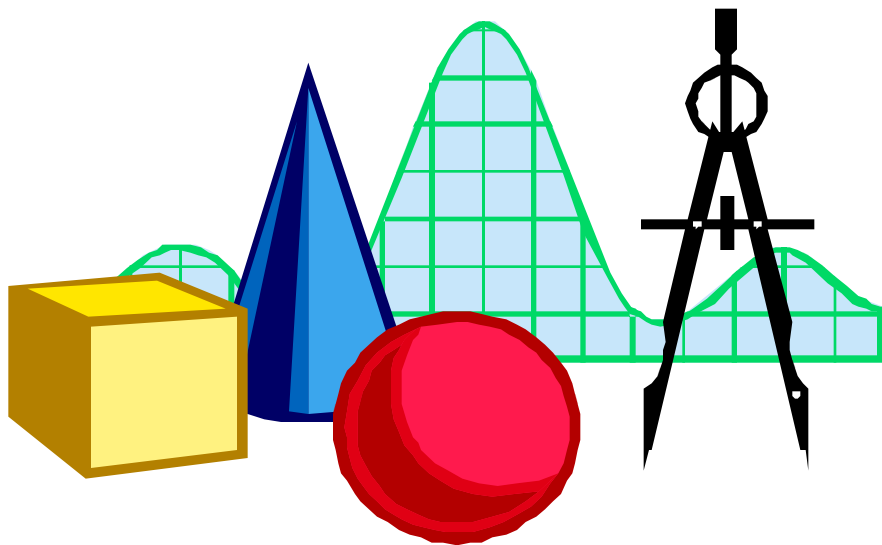


Sample Test for the Nevada High School Proficiency Examination in Mathematics



Test 4B

Formula Sheet

Note to Student: You may use these formulas throughout this entire test. Feel free to flip back to this Formula Sheet as needed during your testing time.

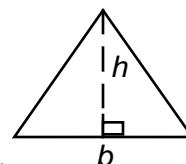
Rectangle



Perimeter $p = 2l + 2w$
or
 $p = 2(l + w)$

Area $A = l w$

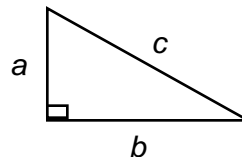
Triangle



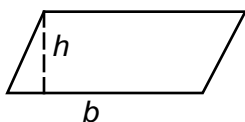
Area $A = \frac{1}{2} b h$

Pythagorean Theorem

$$a^2 + b^2 = c^2$$

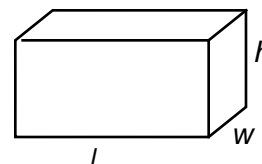


Parallelogram



Area $A = b h$

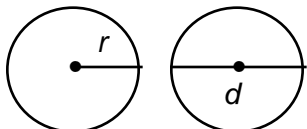
Rectangular Solid



Volume $V = l w h$

Surface Area $SA = 2lw + 2lh + 2hw$

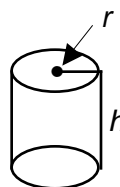
Circle



Circumference $C = 2\pi r$
or
 $C = \pi d$

Area $A = \pi r^2$

Cylinder



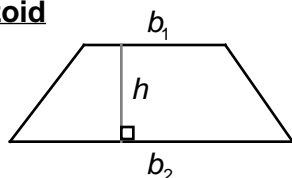
Volume $V = \pi r^2 h$

Cone



Volume $V = \frac{1}{3} \pi r^2 h$

Trapezoid



Area $= \frac{1}{2} h(b_1 + b_2)$

Other Necessary Information

1 quart 0.95 liters

1 pound 0.45 kilograms

1 inch 2.54 centimeters

$$^{\circ}F = \frac{9}{5} C + 32$$

$$^{\circ}C = \frac{5}{9} (F - 32)$$

(This sheet is for the 1998 Series of tests -- 2001-2002 School Year)

Determine the best answer to each question. Indicate the letter on your answer sheet.

1. A warehouse manager's computer showed that there were 382 baseballs in stock. The baseballs were all in full boxes of 4 or 12. The manager claimed the computer's count was wrong. The manager was correct because ?.
 - A. 382 is not divisible by 3
 - B. 382 is not a multiple of 2
 - C. 382 is not divisible by 4
 - D. 382 is not a multiple of 6
 - E. 382 is a multiple of 12

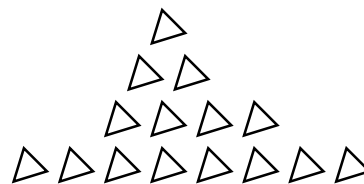
2. If $\frac{1}{2}$ of a number is $\frac{1}{4}$, what is $\frac{1}{3}$ of the number?
 - A. $\frac{1}{2}$
 - B. $\frac{1}{4}$
 - C. $\frac{1}{6}$
 - D. $\frac{1}{8}$
 - E. $\frac{1}{10}$

3. A shirt was originally priced at \$23.00. The original price is marked up 50% and then later decreased by 20%. Which procedure below could be used to determine the new selling price of the shirt?
 - A. Selling Price = $(23 + .50) - .20$
 - B. Selling Price = $(23 \cdot 1.5) \cdot .80$
 - C. Selling Price = $(23 \cdot (.50 - .20))$
 - D. Selling Price = $(23 + .50 - .20)$
 - E. Selling Price = $(23 \cdot .50 \cdot (-.20))$

4. A repair company charges \$25 for a house call and \$30 per hour for labor. If h stands for the number of hours, which formula does the company use to determine a bill?
 - A. $25h + 30$
 - B. $(25 + 30)h$
 - C. $25 \times 30h$
 - D. $25 \div 30h$
 - E. $25 + 30h$

5. A pair of jeans sells for \$25.00. If the selling price is marked down 20% for a sale and then later marked up 20%, what is the final selling price of the jeans?
- A. \$20
 B. \$24
 C. \$25
 D. \$26
 E. \$30
6. The mass of a proton is about 200 times the mass of a positron. If a proton's mass is about 1.82×10^{-28} kg, which of the following could be the mass of a positron?
- A. 3.64×10^{-26} kg
 B. 3.64×10^{-30} kg
 C. 9.11×10^{-30} kg
 D. 9.11×10^{-31} kg
 E. 1.82×10^{-200} kg
7. What is the greatest whole number y for which $3y \leq 23$?
- A. 20
 B. 69
 C. 8
 D. 7
 E. 2
8. Which of the following expressions correctly determines the number of triangles in the n th row using the pattern below?

Row Number	Number of Triangles in the Row	Total Number of Triangles in the Figure
1	1	1
2	2	3
3	4	7
4	8	
n		



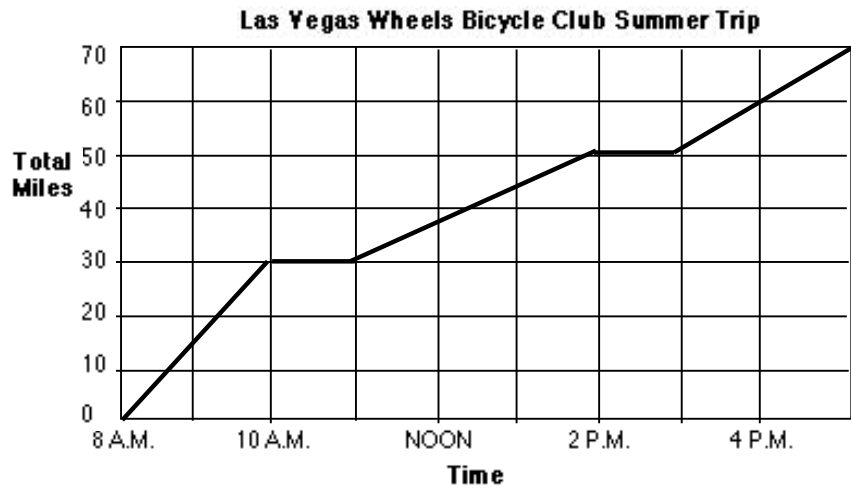
- A. 2^{n-1}
 B. $2n^2 - 1$
 C. $2n - 2$
 D. $n^2 - 1$
 E. $2n^2 - n$

9. A jet ski uses a mixture of gasoline and oil. For each ounce of oil in the mixture, there is 16 ounces of gasoline. If the tank holds 51 ounces of the mixture, how many ounces of oil does it require when it is full?

- A. 2 ounces
- B. 3 ounces
- C. 4 ounces
- D. 21 ounces
- E. 30 ounces

10. The Las Vegas Wheels Bicycle Club went on their annual summer bicycle trip. The graph shows the relationship between the total time and total distance traveled by the club members.

The average rate of speed in miles per hour, r , can be found by the ratio $r = \frac{d}{t}$, where d is the number of miles traveled, and t is the number of hours. What was the average rate of speed from 8 A.M. to 10 A.M. by club members?

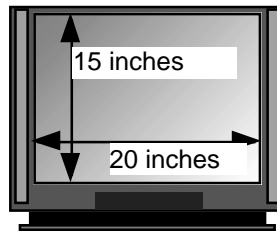


- A. 7.5 mph
- B. 8.6 mph
- C. 10 mph
- D. 15 mph
- E. 45 mph

11. The measurement of a cylinder is given as 60 square centimeters. This is the measure of the ? of the cylinder.
- A. volume
 - B. surface area
 - C. height
 - D. radius
 - E. mass
12. 10 inches is approximately how many centimeters?
- A. 2540 centimeters
 - B. 254 centimeters
 - C. 25.4 centimeters
 - D. 2.54 centimeters
 - E. 0.254 centimeters

13. What is the diagonal measurement of the television screen shown in the figure below?

- A. 15 inches
- B. 19 inches
- C. 21 inches
- D. 25 inches
- E. 27 inches



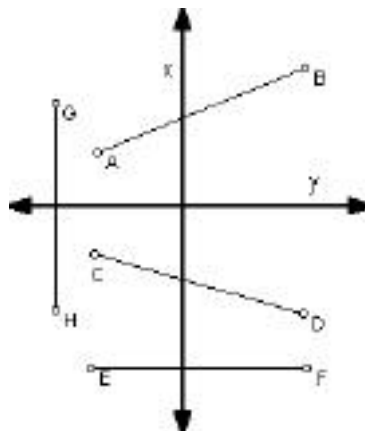
14. The temperature at noon was 24° F. If the temperature decreased by $33\frac{1}{3}\%$, what is the new temperature?
- A. 32° F
 - B. 16° F
 - C. 8° F
 - D. -8° F
 - E. -16° F

15. On average, 2 million marshmallow Peeps™ are made each day. If purple Peeps™ are about 20% of all marshmallow Peeps™ made, about how many purple Peeps™ are made each 5 days?

- A. 1 million
- B. 2 million
- C. 3 million
- D. 4 million
- E. 5 million

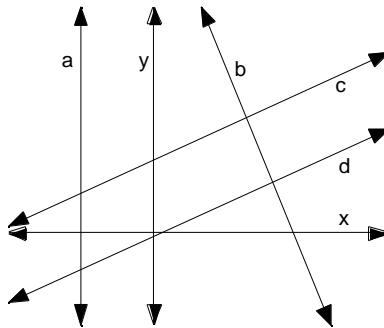
16. Which line segment in the diagram appears to have a negative slope?

- A. Segment AB
- B. Segment CD
- C. Segment EF
- D. Segment GH
- E. None of the above has a negative slope.



17. Which pair of lines in the diagram appears to be perpendicular?

- A. a and b
- B. b and c
- C. c and d
- D. d and a
- E. a and c

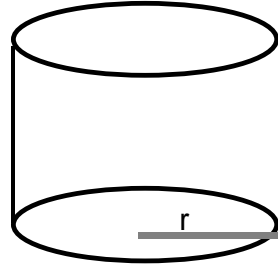


18. Which of the following lines would be the steepest when graphed?

- A. $y = \frac{1}{2}x + 3$
- B. $y = 2x + 4$
- C. $y = \frac{1}{3}x + 5$
- D. $y = 3x + 6$
- E. $y = \frac{1}{4}x + 7$

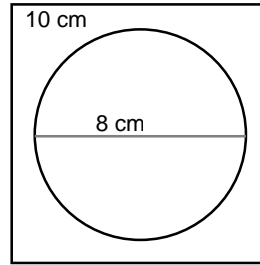
19. A can manufacturer decided to create a new can by doubling the radius of the base of the old can. By how much did the volume of the new can change?

- A. The new volume will be 4 times as great.
- B. The new volume will be twice as great.
- C. The new volume will one-half of the original.
- D. The new volume will be one-fourth the original.
- E. The volume will not change.



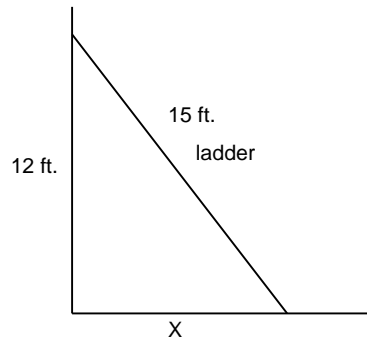
20. Jose has a square sheet of foil, 10 cm on each side. He will cut out a circle with a diameter of 8 cm. About how many square cm of foil will Jose have left?

- A. About 2 square cm
- B. About 15 square cm
- C. About 30 square cm
- D. About 45 square cm
- E. About 84 square cm



21. Maria wanted to lean her 15-foot ladder against a wall at a point 12 feet up on the wall. About how far should the base of the ladder (X) be from the wall?

- A. 225 feet
- B. 144 feet
- C. 81 feet
- D. 27 feet
- E. 9 feet

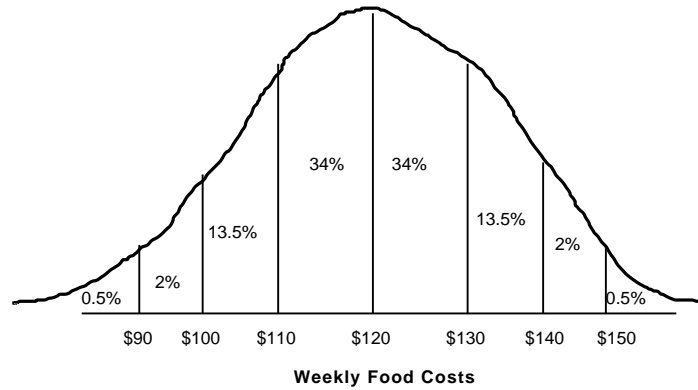


22. What is the range of heights in the table below?

Height in Inches			
60	63	66	70
64	58	68	58

- A. 10 in.
- B. 12 in.
- C. 13 in.
- D. 58 in.
- E. 70 in.

23. In Town A, weekly food costs for a family of four has the distribution shown below.



What is the probability that a Town A family of four chosen at random will have weekly food costs of more than \$140.00?

- A. 50%
 - B. 34%
 - C. 13.5%
 - D. 2.5%
 - E. 0.5%
24. A battery manufacturer sampled its products to determine their shelf life. Out of the 2,000 batteries sampled, the results are in the table below. Of the 10,000 batteries made this week, how many will likely last more than 12 months based on the results of the sampling?

- A. 610
- B. 680
- C. 810
- D. 1,000
- E. 3,050

Shelf Life	< 6 months	6 - 12 months	> 12 months
Number Sampled	680	810	610

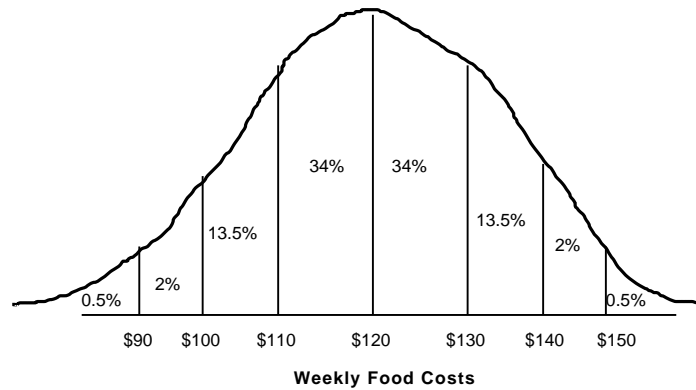
25. An advertising company asked 400 people to evaluate a commercial. Of the people under 25 years of age, 40 percent did not like the commercial. What other information could you use to find out the **total number** of people under 25 who liked the commercial?
- A. the total number of people who did like the commercial
 - B. the percent of people who did not like the commercial
 - C. the number of people 25 years of age or older who were surveyed
 - D. the total number of people who did not like the commercial
 - E. the total number of people who refused to answer the survey

26. If the data in the table below was presented in a circle graph, what would be the central angle measure of the part labeled "Dances"?

- A. 36°
- B. 90°
- C. 100°
- D. 120°
- E. 360°

Class Budget	
Dances	\$ 1,000
Trip	\$ 400
Class Project	\$ 2,200

27. According to the latest survey in Town B, weekly food costs for a family of four has the distribution shown below.



If there were a total of 500 people surveyed, how many people spent between \$110 and \$130 per week on food?

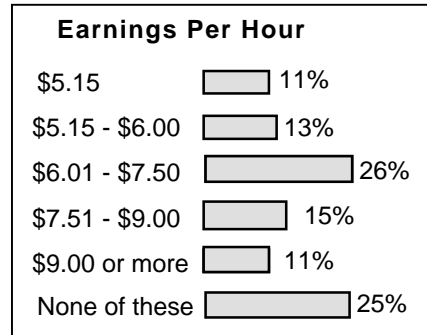
- A. 13.5
 - B. 34
 - C. 68
 - D. 170
 - E. 340
28. Acme Auto makes machinery. In a recent check for faulty parts, the company randomly tested 70 machines from their assembly line. The results are listed below. Based on this information, of the 2,800 machines made this past week, about how many can be expected to have a faulty drive belt?

- A. 400
- B. 100
- C. 70
- D. 40
- E. 10

Part	Number of Faulty Parts Found
Relay Switch	18
Motor	6
Drive Belt	10
Gear	26

29. A survey was taken of 548 teenagers between the ages of 12 and 15 about their summer jobs. The results are shown at the right. About how many teens did not earn \$5.15 an hour or more?

- A. 25
- B. 75
- C. 137
- D. 250
- E. 13,700



30. What conclusion can you make from the survey information above? (At the time of this survey, minimum wage was defined as \$5.15 per hour.)
- A. Older teenagers make more money at their summer jobs.
 - B. Students who hold part-time jobs all year make more money in the summer.
 - C. About 24% of all students make \$6.00 or less per hour.
 - D. About one-fourth of the students surveyed worked for below minimum wage.
 - E. You can not make any conclusions from the information above.

Answer Key -- Proficiency Practice Tests 4A and 4B

Proficiency Practice Test – 4A

- | | | | |
|-----|-------------------------------|-----|-----------------------------------|
| 1. | B - Numbers - Concept | 16. | B - Measurement - Concept |
| 2. | A - Numbers - Concept | 17. | E - Measurement - Procedure |
| 3. | D - Numbers - Procedure | 18. | D - Measurement - Procedure |
| 4. | D - Numbers - Concept | 19. | B - Measurement - Problem Solving |
| 5. | C - Numbers - Problem Solving | 20. | C - Geometry - Concept |
| 6. | B - Numbers - Problem Solving | 21. | B - Geometry - Procedure |
| 7. | C - Algebra - Concept | 22. | E - Geometry - Procedure |
| 8. | E - Algebra - Concept | 23. | B - Geometry - Procedure |
| 9. | A - Algebra - Concept | 24. | B - Data - Concept |
| 10. | A - Algebra - Procedure | 25. | B - Data - Concept |
| 11. | C - Algebra - Procedure | 26. | D - Data - Procedure |
| 12. | B - Algebra - Problem Solving | 27. | D - Data - Procedure |
| 13. | D - Algebra - Problem Solving | 28. | A - Data - Procedure |
| 14. | A - Algebra - Problem Solving | 29. | C - Data - Problem Solving |
| 15. | B - Measurement - Concept | 30. | D - Data - Problem Solving |

Proficiency Practice Test - 4B

- | | | | |
|-----|-----------------------------------|-----|--------------------------------|
| 1. | C - Numbers - Concept | 16. | B - Geometry - Concept |
| 2. | C - Numbers - Concept | 17. | B - Geometry - Concept |
| 3. | B - Numbers - Procedure | 18. | D - Geometry - Concept |
| 4. | E - Numbers - Procedure | 19. | A - Geometry – Problem Solving |
| 5. | B - Numbers - Problem Solving | 20. | D - Geometry – Problem Solving |
| 6. | D - Numbers - Problem Solving | 21. | E - Geometry – Problem Solving |
| 7. | D - Algebra - Concept | 22. | B - Geometry – Problem Solving |
| 8. | A - Algebra - Concept | 23. | D - Data - Concept |
| 9. | B - Algebra - Procedure | 24. | E - Data - Concept |
| 10. | D - Algebra – Problem Solving | 25. | C - Data - Concept |
| 11. | B – Measurement - Concept | 26. | C - Data - Procedure |
| 12. | C - Measurement - Concept | 27. | E - Data – Problem Solving |
| 13. | D - Measurement - Problem Solving | 28. | A - Data – Problem Solving |
| 14. | B - Measurement – Problem Solving | 29. | C - Data - Problem Solving |
| 15. | B - Measurement – Problem Solving | 30. | D - Data - Problem Solving |