Math Competency Inventory
Grade 7
Form A

Name _____

The use of calculators is not permitted during this test! Students will need graph paper.

1. Express 13,048 in expanded form using exponents.

   _____

2. Evaluate:

   a. 5(x + 2) _____

   b. 3 x 2 + 3 x 4 _____

3. Write the following in scientific notation:

   a. 57,215 _____

   b. 0.0016978 _____

4. Find the square root of each number:

   a. $\sqrt{25}$ _____

   b. $\sqrt{289}$ _____

5. Solve.

   a. $(6)^2$ _____

   b. $(-4)^3$ _____

   c. $(2)^3$ _____

   d. $(-7)^2$ _____

6. Find the least common multiple of 24 and 30 _____

7. Find the greatest common factor for 28 and 36. _____

8. Use the divisibility test to determine all numbers 1134 is divisible by.

   1134 2, 3, 4, 5, 6, 9, 10

9. Write the absolute value of the following numbers.

   a. |4| _____

   b. |−13| _____

   c. |−2111| _____

10. Solve.

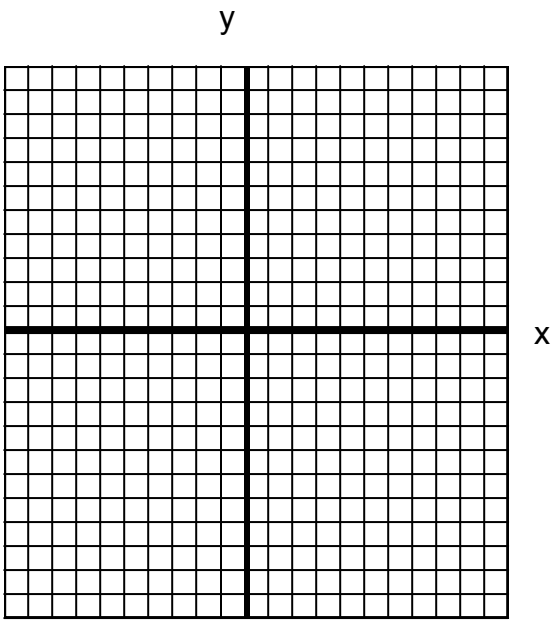
   a. −4 + 7 _____

   b. 4 − (−17) _____

   c. −4 + (−11) _____

11. Graph the following.

x	0	1	2	3
y	0	2	4	6



12. Write an algebraic expression for the following.

28 less than 2 times a number _____

13. Use inverse operations to solve each equation.

a. $t - 13 = 6$ _____

b. $n + 8 = -5$ _____

c. $4m = 36$ _____

d. $y \div 6 = 5$ _____

14. Solve.

a. $2n + 80 = 500$ _____

b. $(y \div 3) + 4 = 11$ _____

15. Solve.

a. $6x = 24$ _____

b. $z \div 3 = 30$ _____

c. $16 \div y = 8$ _____

16. Solve and reduce to lowest term.

a. $\frac{2}{3} + \frac{2}{3} =$ _____

b. $\frac{7}{8} - \frac{1}{3} =$ _____

c. $\frac{2}{3} \times \frac{5}{8} =$ _____

d. $\frac{5}{8} \div \frac{7}{8} =$ _____

17. Convert $\frac{1}{3}$ into a decimal, using proper notation for repeating. _____

18. What is the unit price of each, rounded to the nearest tenth of a cent?

    a. 16 oz. box of cereal for $4.08 _____

       20 oz. box of cereal for $4.89 _____

    b. Which is a better buy? Circle your answer.

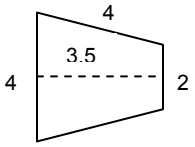
19. Complete the chart. Reduce fractions to lowest terms.

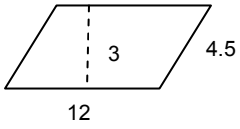
Fractions	Decimals	Percents
	0.8	
	0.75	75%
$\frac{1}{8}$		

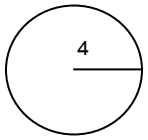
20. Your team won 17 of its 25 softball games. What percent of the games did your team win? _____

21. You borrowed $18,000 for a new car. The annual interest rate is 7%. Find how much interest you will pay in 1 year. _____

22. Find the area of the following shapes. Round to the nearest hundredth. The units are in cm. _____

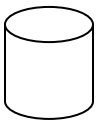
a. 

b. 

c. 

_____ _____ _____

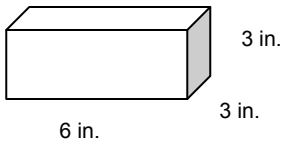
23. Find the **surface area** and the **volume** of a cylinder whose height is 7 in. and whose diameter is 4 in. Round to the nearest hundredth.



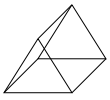
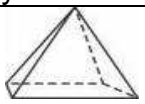
Surface Area _____ Volume _____

24. Find the surface area and the volume of the rectangular prism.

Surface Area _____ Volume _____



25. Give the number of faces, vertices, and edges of the following shapes.

	Rectangular Prism	Triangular Prism	Rectangular Pyramid
			
A. Faces			
B. Vertices			
C. Edges			

26. There are 15 marbles in a jar: 5 green, 3 blue, 6 red, and 1 yellow. If you randomly choose one marble, what is the probability that it will be red? Write the probability as a fraction. _____

27. This table represents the number of delegates each state sent to a convention. Make a frequency table and histogram from the following information. Use the back of this sheet.

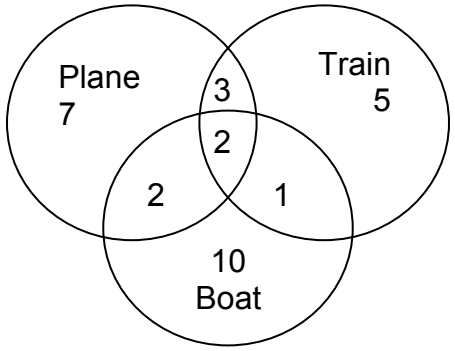
AL 26	HI 6	MA 12
ID 12	MI 50	
MN 25	NC 50	
ND 10	GA 6	
VT 8	CO 30	
CT 18	KY 23	
LA 26	TN 9	
NH 12	RI 6	
SC 15	OH 9	

28. Use a line graph to represent the data in the table from number 25.

29. You work for a company that makes sneakers. You make 6 types (aerobic, walking, running, volleyball, soccer, basketball), 2 colors (black, white), 6 men's sizes (7,8,9,10,11,12), and 2 women's sizes (7,8). How many different pairs of sneakers does your company manufacture? Make a tree diagram. _____

30. Use the Venn diagram at the right to answer the following question.
Find the probability that a traveler rode in a boat and flew in a plane only.

_____



31. You want to buy a shirt that was marked 30% off. The price tag says that the original cost of the shirt was $21.50. What is the sale price?

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