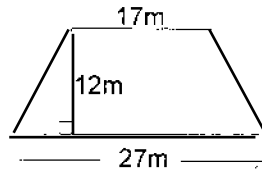


**1997 Hoover High School
7th Grade Written Test**

1. What is the difference when four hundred twenty-five ten-thousandths are subtracted from four hundred and twenty-five ten-thousandths?

- a. 0 b. 24.9975 c. 399.6 d. 399.96 e. none of these

2. Find the perimeter of the isosceles trapezoid.



- a. 70m b. 68m c. 56m d. 112m e. none of these

3. Heather won an election by a margin of 5 to 3. If her opponent received 1500 votes, then how many votes did Heather receive?

- a. 1900 b. 7500 c. 4000 d. 2500 e. none of these

4. Of the trees in Jennifer's orchard, 22.5% bear grapefruit, 12.5% bear lemons, 50% bear oranges, and the remaining 45 bear limes. How many trees are there in Jennifer's orchard?

- a. 300 b. 53 c. 54 d. 281 e. none of these

5. Jim has a wooden cube 12 inches on a side. If Jim cuts a square hole that is 3 inches on a side through the cube, then how much wood is left in the cube?

- a. 135 in.³ b. 1728 in.³ c. 1620 in.³ d. 1721 in.³ e. none of these

6. The following points are located on a number line: A(12), B(-4), C(-15), and D(8). Write as a ratio the length of AC to the length of BD.

- a. $-\frac{3}{4}$ b. $\frac{3}{4}$ c. $\frac{4}{9}$ d. $\frac{9}{4}$ e. none of these

7. Michael has a nickel, a dime, a quarter, and a penny in his pocket. If he picks two coins at random, then find the probability that the sum of the values of the two coins he picks is less than 25 cents.

- a. $\frac{1}{6}$ b. $\frac{1}{2}$ c. $\frac{1}{3}$ d. $\frac{1}{4}$ e. none of these

8. 110001 in base 2 is equal to _____ in base 3.
- a. 1201 b. 1120 c. 1122 d. 1211 e. none of these
9. Of the 206 bones in Alan's body, eight bones are in each wrist, five in each hand, three in each finger (excluding the thumbs), and two in each thumb. To the nearest percent, what percent of Alan's bones are not in any of these locations?
- a. 87% b. 74% c. 80% d. 83% e. none of these
10. Given $S = -\frac{17}{8}$, $C = -1.8$, $O = -1\frac{15}{16}$, $R = -1\frac{2}{3}$, and $E = -2.0$. David selects the greatest and second-greatest of these numbers and multiplies them. What should this product be?
- a. $4\frac{1}{2}$ b. 3 c. $4\frac{1}{4}$ d. $3\frac{11}{48}$ e. none of these
11. Two spheres have radii of 5 cm and 2 cm. What is the ratio of the volume of the larger sphere to the volume of the smaller sphere?
- a. 2.5 : 1 b. $5\pi : 2\pi$ c. 25 : 4 d. 5 : 2 e. none of these
12. There are two numbers whose sum is 41 and whose product is 364. The absolute value of the difference of these two numbers is:
- a. 9 b. 15 c. 17 d. 13 e. none of these
13. 30% of 30% of 30 is what percent of 30?
- a. 0.3% b. 60% c. 0.9% d. 30% e. none of these
14. Evaluate the expression " $ab - 2 \div a \cdot b + b$ " if $a = 2$ and $b = 3$.
- a. 0 b. 9 c. 18 d. 12 e. none of these
15. The sides of a triangle have lengths of 7.5, 11, and x , where x is a whole number. What is the largest possible value of x ?
- a. 17 b. 18 c. 4 d. 3 e. none of these
16. A milk truck has 36 gallons of liquid in its tank when it is 25% empty. How many gallons of gas will the tank hold when it is completely full?
- a. 48 b. 144 c. 72 d. 9 e. none of these

17. What is $83\frac{1}{3}\%$ of $87\frac{1}{2}\%$ of 288?

- a. 210 b. 192 c. 176 d. 225 e. none of these

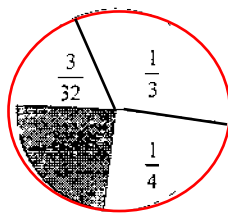
18. Simplify: $\frac{(2.4 \times 10^{-3})(1.5 \times 10^{-2})}{(1.6 \times 10^{-6})(5.0 \times 10^0)}$.

- a. 0.045 b. 4.5×10^0 c. 4.5×10^{-11} d. 4.5×10^{-1} e. none of these

19. How many subsets of { P, A, U, L } have exactly two elements?

- a. 6 b. 8 c. 4 d. 12 e. none of these

20. The shaded sector is what fractional part of the area of the circle (each fraction represents the fraction of the total area of the circle that is contained in the sector)?



- a. $\frac{29}{96}$ b. $\frac{5}{16}$ c. $\frac{31}{96}$ d. $\frac{1}{3}$ e. none of these

21. Find the 79th term of the sequence -7, -4, -1,

- a. 224 b. 227 c. 230 d. 233 e. none of these

22. In how many ways can 6 charms be placed on a bracelet that has **no** clasp?

- a. 720 b. 120 c. 360 d. 60 e. none of these

23. The following is a Fibonacci-like sequence:

19, 23, 42, 65, ...

Find the sum of the first ten terms of this sequence.

- a. 3069 b. 190 c. 1181 d. 4980 e. none of these

24. If $f(x) = \left(\frac{1}{x^2 - 1} + 1\right)\left(\frac{1}{x - 1} + 1\right)^{-1}$, then find $f(2)$.

- a. $\frac{8}{3}$ b. 1 c. $\frac{2}{3}$ d. $\frac{9}{4}$ e. none of these

25. Simplify: $1 + \frac{1}{1 + \frac{1}{1 + \frac{1}{1 + \frac{1}{1}}}}$.

a. $\frac{4}{3}$

b. 8

c. $\frac{7}{2}$

d. $\frac{8}{5}$

e. none of these

TIEBREAKERS

TB1. $B = \{ 2, 3, 4, 5 \}$, $C = \{ 4, 5, 6, 7 \}$, and $D = \{ 6, 7, 8, 9 \}$. Find $(B \cap C) \cap (B \cap D)$.

TB2. Find the sum of the first 20 terms of the geometric series $3 + 6 + 12 + \dots$.

TB3. Find the area of the triangle formed by these three lines: $x = 0$, $y = 0$, and $4x + 5y = 20$.