7th grade Ciphering - Hoover High School Math Tournament - February 24, 2001

1-1. Express $.2\overline{81}$ as a fraction in lowest terms. Ans: $\frac{31}{110}$

1-2. $1234_5 =$ _____$_{10}$? Ans: 194

1-3. Find the area of the right triangle with hypotenuse 25 and one leg 20. Ans: 150

1-4. What percent of 175 is 84% of 200? Ans: 96%

1-5. Simplify the product: $\sqrt{15} \bullet \sqrt{60}$. Ans: 30

2-1. Find the surface area of a cylinder whose height is 14 inches and whose base has a diameter of 16 inches. Ans: 352π

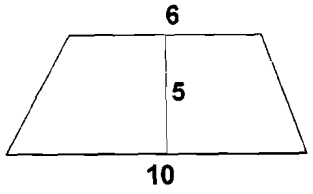
2-2. How many different ways can 5 books be arranged on a shelf? Ans: 120

2-3. Simplify: $\frac{147^4}{49^4}$ Ans: 81

2-4. Find the median of $\frac{7}{8}, \frac{3}{4}, \frac{5}{6}$. Ans: $\frac{5}{6}$

2-5. Find the sum of the LCM and GCF of 27 and 72. Ans: 225

3-1. Find the area of the trapezoid:



Ans: 40

3-2. Find the mean of $\frac{7}{8}, \frac{3}{4}, \frac{5}{6}, \frac{2}{3}$. Ans: $\frac{25}{32}$

3-3. Find the 15th term of the sequence 1, 4, 7, 10, … Ans: 43

3-4. Simplify and write as an improper fraction in lowest terms: $\frac{\frac{1}{2}+\frac{6}{7}}{\frac{3}{5}-\frac{3}{4}}$. Ans: $-\frac{190}{21}$

3-5. Find the original price of a lamp if the sale price of \$189 was 40% off the original price. Ans: \$315.00

4-1. Evaluate and write your answer as a mixed number: $\sqrt{121}+2\frac{3}{4}-4.625+2^3$

Ans: $17\frac{1}{8}$

4-2. What is the area of the largest circle that will fit inside a square with an area of 64 square centimeters? Ans: 16π

4-3. Write in scientific notation: $\left(6.238\times10^4\right)+\left(6.438\times10^5\right)$. Ans: 7.0618×10^5

4-4. If the operation $a*b=3a^2b+5b$, then find $8*5$. Ans: 985

4-5. If the radius of sphere **A** is 4 and the radius of sphere **B** is 6, what is the ratio of the volume of sphere **A** to the volume of sphere **B**?

Ans: 8:27

E-1. Evaluate: $2\bullet6^3-5\bullet2^2+4(8)-11$ Ans: 433

E-2. Chris is late for class 20% of the time. Amitha is late for class 35% of the time. Find the probability that they will both be late for class on the same day.

Ans: 7%=0.07

E-3. Find the volume of a rectangular prism with length 3, width 4, and height 5.

Ans: 60