

7th Grade Cipheryng - Hoover High School Math Tournament - February 22, 2003

- 1-1. Find the midpoint of the two points (2, 5) and (-1, -3). Ans: $\left(\frac{1}{2}, 1\right)$
- 1-2. In an election, nine-sixteenths of voters voted "NO", while the other 98 voted "YES".
How many people voted? Ans: 224
- 1-3. $123_4 = \underline{\hspace{2cm}}_8$ Ans: 33_8
- 1.4. Given: $a \# b = \frac{a^2 + b^2}{ab}$. Evaluate: $(3 \# 4) + (8 \# 3)$ Ans: $\frac{41}{8}$
- 1-5. What is 17 % of 300? Ans: 51
- 2-1. In the pattern 5, -10, -12, _____, 22, -44, -46, 92, 90, what is the missing term?
Ans: 24
- 2-2. Three fair dice are rolled. What is the probability that the sum of the numbers is 17?
Ans: $\frac{1}{72}$
- 2-3. Evil Genius Bob can paint a castle in 6 hours. His assistant Roger can paint a castle in 10 hours. How many hours will it take them to paint a castle together? Ans: $\frac{15}{4}$
- 2-4. For the set of numbers {10, 8, 0, 6, 6}, x = mean, y = median, and z = mode. Find $z + \frac{y}{x}$. Ans: 7
- 2-5. Find the distance between the points (3, 7) and (-1, 4)? Ans: 5
- 3-1. Jill is 6 years older than Emily. Eight years ago Jill was two times as old as Emily was then. How old will Jill be in four years? Ans: 24
- 3-2. A flying monkey is tied to the top of a 12 foot pole by a 3 foot long rope. What is the volume of the sphere in which the monkey can fly? Ignore the volume of the pole.
Ans: 36π cubic feet

3-3. Simplify:
$$\frac{\left(\frac{\frac{1}{2} + \frac{2}{3} \times \frac{3}{4} + \frac{4}{5}}{6} \right) - 1}{5}$$

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

3-4. The points $(-3,3), (-3,-2), (4,-2)$ form a triangle. Find the area of this triangle.

Ans: $\frac{35}{2}$ or 17.5

3-5 Evaluate, writing your answer in scientific notation, $(1.609 \times 10^{-19}) \times 2000$

Ans: 3.218×10^{-16}

4-1. Solve for x : $\frac{7x}{2} - 7 = 21$

Ans: 8

4-2. Bob has a rectangular prism shaped tank with dimensions $14 \times 6 \times 5$. How many monkeys can he place in the tank if each monkey needs 5 cubic units of space?

Ans: 84

4-3. If the area of a circle is 256π , what is the circumference of the circle? Ans: 32π

4-4. Simplify:

$$5 + 3 \left[(32 - 28)(3 \times 9 \div 28) \left[\left[(16 - 2 \times 4) \div 8 \right] - 1 \right] \right]$$

Ans: 17

4-5 In a monkey race, Michael the Monkey can complete a 1.5 mile race in 10 minutes. How fast can Michael the Monkey run in miles per hour?

Ans: 9 mph

E-1. Given: $2x + 5y = 16$ and $x + 3y = 5$. Find: $x - y$.

Ans: 29

E-2. Erin has a closed box that is a rectangular prism. What is the surface area of the box if its dimensions are $14 \times 6 \times 5$?

Ans: 368

E-3 A circular rug with a diameter of 6 meters is on a rectangular floor that measures 20 meters by 6 meters. What is the area of the floor that is not covered by the rug?

Ans: $120 - 9\pi$