

**1997 Hoover High School  
7<sup>th</sup> Grade Ciphering**

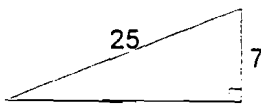
1.1 Evaluate:  $\frac{1}{1 + \frac{1}{1 + \frac{1}{2 + \frac{1}{1 + \frac{1}{3}}}}}$

**answer:** 8/9.

1.2 If the operation  $x*y = \frac{1}{2}x^2y$ , then find the value of  $16*3$ .

**answer:** 384.

1.3 Find the area of the triangle:



**answer:** 84.

1.4 Express  $0.\overline{126}$  as a fraction in lowest terms.

**answer:**  $\frac{25}{198}$ .

1.5 Express in scientific notation:  $2.394 \times 10^5 - 3.687 \times 10^3$ .

**answer:**  $2.35713 \times 10^5$ .

2.1 Evaluate:  $4^2 - (8 \times 3) \frac{5}{6} + 10 \div 3$ .

**answer:**  $-\frac{2}{3}$ .

2.2 Simplify:  $1.\overline{1} + 2.\overline{2} + 3.\overline{3} + 4.\overline{4} + \dots + 8.\overline{8} + 9.\overline{9}$ .

**answer:** 50.

2.3 If the diameter of sphere **A** is  $3\sqrt{3}$  and the diameter of sphere **B** is 7, what is the ratio of the surface area of sphere **A** to the surface area of sphere **B**?

**answer:** 27 : 49 or  $\frac{27}{49}$ .

2.4 If  $x = 2$  and  $y = 3$ , then what is the value of  $\frac{x^3y}{xy^2} + \frac{x}{y}$ ?

**answer:** 2.

2.5 Evaluate:  $2 \times 7 \times 5 \times 5 \times 2 \times 5 \times 7 \times 2 \times 7$ .

**answer:** 343,000.

3.1 Evaluate:  $\frac{1}{3}(18 \div 6)^3 + [(13 - 7) \div 3]$ .

**answer:** 11.

3.2 If  $f(x) = \frac{48}{x^4}$ , then find  $\frac{f(a)}{f(1/a)}$ .

**answer:**  $\frac{1}{a^8}$ .

3.3 Find the exact value of  $\sqrt{147} \cdot \sqrt{75}$ .

**answer:** 105.

3.4 Convert 47 from decimal to binary.

**answer:** 101111.

3.5 There are 10 white marbles and 8 red marbles in a bag. If one marble is drawn at random, what is the probability that it is white?

**answer:** 5/9.

4.1 Simplify:  $\frac{1}{5}(7^2 - 3^2) + 8 \div 3 \cdot 6$ .

**answer:** 24.

4.2 Find the product of the GCF and LCM of 543 and 40.

**answer:** 21,720.

4.3 What is the measure of the smaller angle formed by the minute and hour hands of a clock at 10:20?

**answer:** 170°.

4.4 Convert 2094 from base 4 to base 10.

**answer:** 168.

4.5 How many different 5-digit zip codes can have a 4 at the beginning and a 3 at the end?

**answer:** 1,000.

Alternate 1 What is the value of  $\frac{198^5}{99^5}$ ?

**answer:** 32.

Alternate 2 Find the mean of:  $\frac{5}{4}$ ,  $\frac{11}{12}$ ,  $\frac{2}{3}$ , and  $\frac{1}{2}$ .

**answer:**  $\frac{5}{6}$ .

Alternate 3 18 is 24% of what number?

**answer:** 75.