Pizitz 2011 Math Tournament
Seventh Grade Ciphering

1.1 Find the mean of the first ten natural numbers.

1.2 Solve: $5(x-3) = -2(x+4) + 8x - 15$

1.3 Evaluate: $2011^2 - 2010^2$

1.4 Find the odds of getting a Jack when choosing one card from a standard deck of cards.

1.5 Simplify: $\frac{11!9!}{8!10!}$

2.1 Solve for y. $\frac{15}{3(y-9)} = \frac{24}{12(y-15)}$

2.2 Given $f(x) = 2x^2 - 5$ and $g(x) = 4x + 3$. Find $g(f(-2))$.

2.3 Find the quotient as a simplified fraction. $0.5\overline{9} \div 0.7\overline{2}$

2.4 Evaluate $\frac{3^{19}}{9^9}$

2.5 Find the ratio of the area to the perimeter of a rectangle with length of 4 ½ inches and width of 2 ½ inches. Write the answer as a simplified fraction.

3.1 Find the surface area of a rectangular prism with side (edge) lengths of 5, 6, and 8 cm.

3.2 60 miles/hour = _____ feet/minute

3.3 If Erica can solve a problem in two hours and Amy can solve it in one hour, how many minutes would it take them to solve the problem together?

3.4 Solve for n: $1^8 + 2^5 + 3^4 + 4^3 + 5^n = 203$

3.5 Find the amount of simple interest earned for $4500 at 5.5% annual rate for 4 ½ years.

4.1 Find the slope of the line perpendicular to the graph of $\frac{5}{6}x + \frac{1}{15}y = \frac{3}{10}$

4.2 In how many distinct ways can you arrange 4 people in a circle?

4.3 Evaluate when $a = -2$, $b = -5$, and $c = 3$. $5a - 2(b^2 - c^3)$

4.4 Simplify: $3\sqrt{10} + \sqrt{75} - 2\sqrt{40} - 4\sqrt{12}$

4.5 Find the prime factorization of 3200.

Extra1 Simplify and write as a mixed number. $7\frac{2}{3} + 2\frac{1}{3} \div 5$

Extra2 Find the percent discount for a clothing item with a regular Price of $68 if the sale price is $54.40.

Extra3 Find the 80th term of the arithmetic sequence 1, 4, 7, 10, 13, ……..

Answers

1.1 5 ½ , 5.5, 11/2

1.2 x = 8, 8, or $\{8\}$

1.3 4021

1.4 1:12 , 1/12 , 1 to 12

1.5 99

2.1 y=19

2.2 15

2.3 54/65

2.4 3

2.5 45/56

3.1 236 or 236 cm^2

3.2 5280

3.3 40

3.4 2, n = 2, or $\{2\}$

3.5 $1113.75

4.1 2/25

4.2 6

4.3 -6

4.4 $-\sqrt{10} - 3\sqrt{3}$ *or* $-3\sqrt{3} - \sqrt{10}$

4.5 $2^7 \cdot 5^2$

Extra1 $8\frac{2}{15}$

Extra2 20%

Extra3 238