WOCOMAL FRESHMAN MEET

ROUND I: WORD PROBLEMS

ANSWERS

(1 point) 1. miles

(2 points) 2._____

(3 points) 3._____

1. Mr. Whoopee drove his car from his home to Chicago at the average rate of 40 miles per hour and returned at the average rate of 45 miles per hour. If his time going exceeded his time returning by 30 minutes, how far did he live from Chicago?

2. Charlie is six years older than Chris, and the average of their ages is twice Chris's age. How old is Charlie?

3. In Scrooge's bank there were three times as many dimes as nickels and one-fifth as many quarters as dimes, and three more pennies than nickels. If there was \$20.43 in the bank, how many quarters were in the bank?

Auburn, Burncoat, Hudson

March 2, 1977 WOCOMAL FRSHMAN MEET

ROUND II: COORDINATE GEOMETRY

ANSWERS

(1 point) 1	
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(2 points) 2._____

(3 points) 3. y =

1. Find the slope of the 'line whose equation is 5x - y = 4.

2. Find the x-intercept of the line which contains the points (0, -20) and (12, -12).

3. Given: Points A(-3,-2) and B(5,2). Find the equation of the line through the midpoint of \overline{AB} and perpendicular to \overline{AB} . Write the answer in the form y = mx + b.

FRESHMAN WOCOMAL MEET

ROUND III: OPEN

March 2, 1977

AN	S	WE	RS

(1	point)	1
(2	points)	2
(3	points)	3d =

1. The sum of four consecutive integers is 54. What are the integers?

2. Simplify
$$\frac{\frac{1}{a-1}-1}{1+\frac{1}{1-a}}$$
.

3. A student on vacation d days observed that (1) it rained 7 times, morning or afternoon, (2) when it rained in the afternoon, it was clear in the morning, (3) there were 5 clear afternoons, (4) there were 6 clear mornings. Find d,

March 2, 1977 FRESHMAN WOCOMAL MEET

ROUND IV: NUMBER THEORY

ANSWERS

(1	point)	1
(2	points)	2
(3	points)	3.

1. If $x \div 2 \div 3 \div 5 \div 7$ is a whole number, what is the smallest possible value of x? (The divisions are performed from left to right beginning with the division by 2.)

2. What is the largest prime number that is a factor of 64350 ?

3. Find the sum of the greatest common factor and the least common multiple of the numbers 840 and 126.

TEAM ROUND: FACTORING

FACTOR COMPLETELY OVER THE SET OF POLYNOMIALS WITH INTEGER GOEFFICIENTS EACH CORRECT ANSWER IS WORTH TWO POINTS.

1.	$kx^3 - kxy^2$	1.
2.	$x^2 - 5x - 6$	2
3.	$4 + 400a^2 + 80a$	3
4.	$3a^{3}b - 12a^{2}b - 63ab$	4
5.	$21st^5 - 35st^4 + 7st^3$	5
6.	$2(a + 2)^2 + (a + 2) - 10$	6
7.	$2x^{2n} - 2x^n - 12$ (n is a positive integer)	7
8.	$2n^2 - c + cn - 2n$	8
9.	$2x^2 + 20xy + 50y^2 - 18w^2$	9.
10.	$T^2 OI - TICK + TOCK - C^2 K^2$	10
11.	$4y^{6} + 4 - 4y^{4} - 4y^{2}$	11
12.	Given $y^2 + ky + 14$, Find all integral values of k for which the trinomial can be factored.	12, <u>k =</u>

Auburn, Burncoat, Holy Name, Hudson, Marlborough, N. Brookfield, St. Peter-Marian, South, Southbridge, Tantasqua, Wachusett, Ware March 2, 1977 WOCOMAL FRESHMAN MEET ANSWERS

RCUND I	TEAM ROUND (2 points for each)
(1 point) 1. 180 miles	1. $kx(x + y)(x - y)$
(2 points) 2. 9	
(3 points) 3. 24	2. $(x + 1)(x - 6)$
	$3. 4(10a + 1)^2$
ROUND 11	
(1 point) 1. 5	4. $3ab(a + 3)(a - 7)$
(2 points) 2, 30 or (30,0)	5. $7st^3(3t^2 - 5t + 1)$
(3 points) 3. y = -2x + 2	6. a(2a + 9)
ROUND III	7. $2(x^{n} + 2)(x^{n} - 3)$
(1 point) 1. 12, 13, 14, 15	
(2 points) 21	8. $(2n + c)(n - 1)$
(3 points) 3. 9	9。 2(x + 5y + 3w)(x + 5y - 3w)
ROUND IV	10. (TI + CK)(TO - CK)
(1 Point) 1. 210	11. $4(y^2 + 1)(y + 1)^2(y - 1)^2$
(2 points) 2. 13	
(3 points) 3. 2562	$12. k = 9_0 - 9_0 15_0 - 15$