

March 5, 1980

WOCOMAL FRESHMAN MEET

ROUND I: ALGEBRAIC WORD PROBLEMS - MOTION, MIXTURE, AGE, COIN,
ANGLE, INTEGER

1. Find three consecutive integers whose sum is 17 more than the largest integer.
2. Bob's father is 5 years less than three times as old as Bob. When Bob was born, his father was 25. How old is Bob?
3. An automobile is to travel from town T to city C and return. The distance from T to C is m miles. For the first two hours of the trip the automobile travels at a rate of x miles per hour. At what rate must it travel the remaining distance to complete the trip in four hours?

ANSWERS: (1 point) 1. _____

(2 points) 2. _____

(3 points) 3. _____

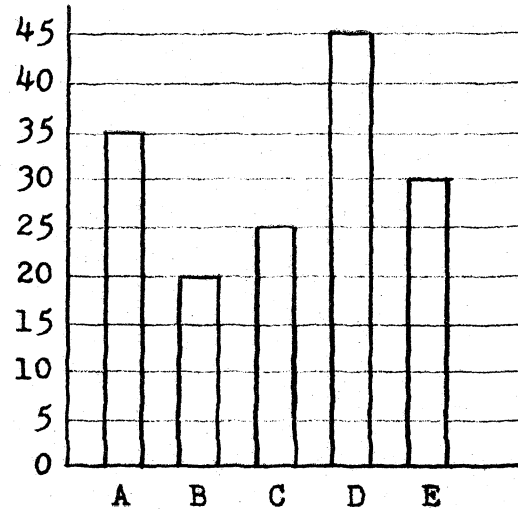
Bromfield, Hudson, Quaboag

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WOCOMAL FRESHMAN MEET

ROUND II: STATISTICS - MEAN, MEDIAN, MODE, GRAPHS

1. Find the mean of the data given in the graph



2. In a list of five integer measurements, the low is 2, the high is 7, the mean is 4 and the mode is 3. In increasing order, what are the five measurements?
3. Find the mean of a , b , and c , if the mean of the following set of scores is 75: 88, 66, 85, 47, a , 75, b , c , 78, 86, 93.

ANSWERS: (1 point) 1. _____

(2 points) 2. _____

(3 points) 3. _____

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ROUND III: OPEN

1. Given the function $f(x) = \begin{cases} x, & \text{if } x > 0 \\ 0, & \text{if } x = 0 \\ -x, & \text{if } x < 0 \end{cases}$

and a domain set $A = \{-2, -1, 0, 3, 10\}$. State the range.

2. Find a number in base 3 which is equal to $(123)_7$.

3. A man plants 12 rows of beans, each 10 meters long. The plants in each row are spaced 50 centimeters apart. If the first and last plants in each row are 25 centimeters from the ends of the row, what is the total number of plants in the garden?

ANSWERS: (1 point) 1. _____

(2 points) 2. $(\underline{\hspace{2cm}})_3$

(3 points) 3. _____

Hudson, Marlboro, South

March 5, 1980

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ROUND IV: OPERATIONS ON POLYNOMIALS

1. From the sum of $x^3 + x^2 + 3$ and $2x^3 + x^2 - 5x$ subtract $-5x + 3$.

2. Find the volume of a cube in simplified polynomial form if each edge has length $2x + 5$.

3. Find k so that $x - 3$ will be a factor of $x^3 - 2x^2 + kx - 3$.

ANSWERS: (1 point) 1. _____

(2 points) 2. _____

(3 points) 3. _____

Shrewsbury, Tantasqua, Wachusett

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WOCOMAL FRESHMAN MEET

TEAM ROUND: FACTORING

EACH QUESTION COUNTS THREE POINTS

FACTOR COMPLETELY AND SIMPLIFY EACH FACTOR WHEN POSSIBLE.

1. $3x^2 + 21x + 36$

1. _____

2. $x^2 - 4x - y^2 + 4$

2. _____

3. $3x^2 + 4x - 3xy - 4y$

3. _____

4. $12(x + 2)^2 + 11(x + 2) - 15$

4. _____

5. $3x^4y - 24x^3y + 48x^2y$

5. _____

6. $a^2 - b^2 + 2bc - c^2$

6. _____

7. $32x^4 - 144x^2 + 162$

7. _____

8. $a^2 - 2ab + b^2 + 9a - 9b + 20$

8. _____

Auburn, Bromfield, Shepherd Hill, Southbridge,
Tantasqua, Worcester Academy

March 5, 1980

WECOMAL FRESHMAN MEET ANSWERS

ROUND I

(1 point) 1. 8, 9, 10

(2 points) 2. 15

(3 points) 3. $\frac{m-x}{2}$

ROUND II

(1 point) 1. 31

(2 points) 2. 2, 3, 3, 5, 7

(3 points) 3. 69

ROUND III

(1 point) 1. {2, 1, 0, 3, 10}

(2 points) 2. (2110)₃

(3 points) 3. 240

ROUND IV

(1 point) 1. $3x^3 + 2x^2$

(2 points) 2. $8x^3 + 60x^2 + 150x + 125$

(3 points) 3. $k = -2$

TEAM ROUND

THREE POINTS EACH

1. $3(x+3)(x+4)$

2. $(x-2+y)(x-2-y)$

3. $(3x+4)(x-y)$

4. $(4x+5)(3x+11)$

5. $3x^2y(x-4)^2$

6. $(a+b-c)(a-b+c)$

7. $2(2x+3)^2(2x-3)^2$

8. $(a-b+4)(a-b+5)$