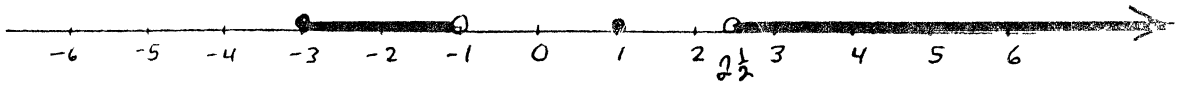
January 6, 1993 WOCOMAL FRESHMAN MEET

ROUND I: Graphing on the number line - inequalities, absolute value

Draw the graph for each problem on the number line provided.
Specify any noninteger endpoints.
Use notation like this for your graphs.



$-3 \le x < -1$ or $x = 1$ or $x > 2\frac{1}{2}$

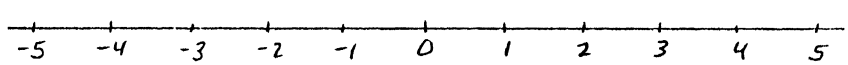
1. $3(1-x) - 1 < 8 - x$

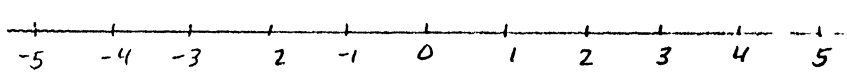
2. Integers and only integers which satisfy

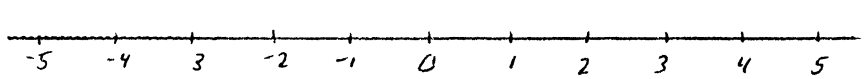
$$|2x + 1| \le 6$$

3. $\{x : |x+1| \le 3\} \cap \{x : 3x + 7 > 4\}$

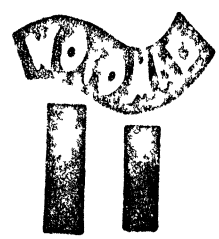
ANSWERS

(1 pt) 1. 

(2 pts) 2. 

(3 pts) 3. 

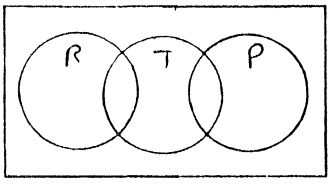
Algonquin, Bromfield, Notre Dame



January 6, 1993 WOCOMAL FRESHMAN MEET

ROUND II: Set theory

NOTE: $\bar{A}$ denotes the complement of set A.

1. 

In the Venn diagram like this in the answer section shade in $R \cup (T \cap P)$

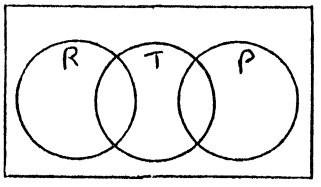
2 Let $A = \{$ all positive factors of 60 $\}$
and $B = \{$ all positive factors of 72 $\}$.

Find and list the elements of $A \cap B$.

3 Let $U = \{1, 2, 3, 4, \ldots, 15\}$,
$A = \{1, 5, 9, 10, 11, 15\}$,
$B = \{1, 2, 3, 4, 5, 6, 11\}$,
and $C = \{2, 4, 6, 8, 10, 11, 12\}$.

List the elements, in increasing order, of
$(\bar{A} \cap C) \cup (\bar{A} \cap \bar{B})$

ANSWERS

(1 pt) 1. 

(2 pts) 2. { _____ }

(3 pts) 3. { _____ }

Tahanto, West Boylston, Worcester Academy

January 6. 1993 WOCOMAL FRESHMAN MEET

ROUND III: Operations on numerical fractions and decimals

ALL ANSWERS MUST BE IN SIMPLEST EXACT FORM

1. Express $\dfrac{.0084}{\frac{2}{3}(.425-.005)}$ as a reduced fraction.

2. A motel is owned by three people. Mrs. X owns $\frac{3}{5}$ of the motel and Mr. Y owns twice as much as Mr. Z. What fraction of the motel does Mr. Z own?

3 Perform the indicated operations and simplify:

$$\left(\frac{\left(\frac{3}{4}\cdot\frac{8}{9}\right)+\frac{5}{12}}{2\frac{1}{6}}\right)\cdot\left(5.\overline{3}\right)-\left(2\frac{5}{6}\cdot\frac{32}{34}\right)$$

ANSWERS

(1 pt) 1. _____

(2 pts) 2. _____

(3 pts) 3. _____

Auburn, Hudson, Notre Dame

January 6, 1993 WOCOMAL FRESHMAN MEET

ROUND IV: Percents and percentage word problems

ALL ANSWERS MUST BE IN SIMPLEST EXACT FORM

1. If 78 is increased by 150%, what is the resulting number?

2. The Red Sox played 160 games one season. 60% of their games were victories. $33\frac{1}{3}$% of their victories were decided by one run and $37\frac{1}{2}$% of their losses were by one run. What % of their games were decided by one run?

3 A new train goes 20% further in 20% less time than an old train. By what % is the average speed of the new train greater than that of the old train?

ANSWERS

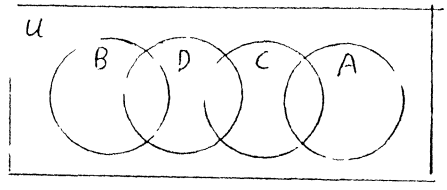
(1 pt) 1. _____

January 6, 1993 WOCOMAL FRESHMAN MEET

TEAM ROUND: Topics of previous rounds and open

ALL ANSWERS MUST BE IN SIMPLEST EXACT FORM AND ON THE SEPARATE TEAM ANSWER SHEET 3 points each

1. Graph $|x-1| > x-1$ on the number-line on the answer sheet.

2. 

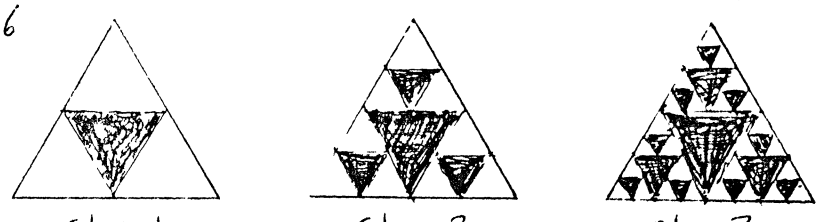
On the answer sheet shade the region for $[(A \cup B) \cap (C \cup D)] \cap \bar{C}$.

3. Simplify $\dfrac{\frac{2}{3}-\frac{2}{9}}{\frac{2}{3}+\frac{2}{7}} \div \dfrac{\frac{4}{5}+\frac{5}{6}}{\frac{5}{6}+\frac{5}{8}}$

4. At a certain college 99% of the 1000 students are women, but only 98% of the students living on campus are women. If some women and all the men live on campus, how many students do not live on campus?

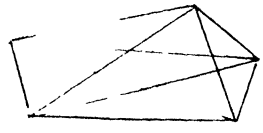
4 _____

5. A 9 ft by 15 ft room has a 10 ft high ceiling, 2 doors 3 ft by 8 ft each, and 3 windows 3 ft by 6 ft each. If wall paper sells for $16.50 a roll, each roll covers 80 sq ft of surface, and it may be cut as needed without concern for matching a pattern, how much will the paper cost? (Rolls are sold as whole rolls only.)

6. 

At step 6 how many triangles will be shaded?

7. An 8 by 8 checkerboard contains 64 1 by 1 squares. What is the total number of squares on an 8 by 8 checkerboard?

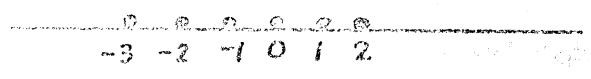
8. 
How many triangles are in this plane figure?

Algonquin, Auburn, Quaboag, Shrewsbury, South, West Boylston

Jan. 5, 1993 WOODMAL FRESHMAN MEET/ ANSWERS

ROUND I # line graphs

1. 1pt 

2. 2pts 

3. 3pts 

ROUND II sets

1. 1pt 

2. 2pts {1, 2, 3, 4, 6, 12}

3. 3pts {2, 4, 6, 7, 8, 12, 13, 14}

Need increasing order in 3. list

ROUND III fractions decimals

1. 1pt $\frac{3}{100}$

2. 2pts $\frac{2}{15}$

3. 3pts 0

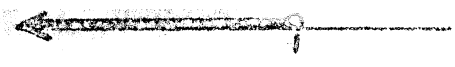
ROUND IV %

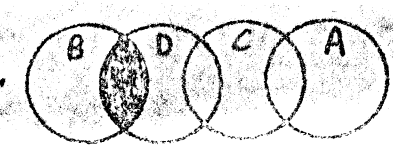
1. 1pt 175

2. 2pts 35%

3. 3pts 50%

TEAM ROUND 3pts each

1. 

2. 

3. $\frac{5}{12}$

4. 500

5. $82.50

6. 364

7. 204

8. 35