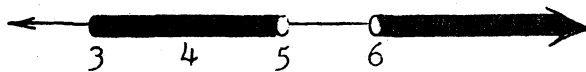


January 13, 1982

WOCOMAL FRESHMAN MEET

ROUND I: GRAPHING ON THE NUMBER LINE

ON THE NUMBER LINES BELOW DRAW THE GRAPHS OF THE SOLUTIONS OVER THE SET OF REAL NUMBERS FOR THE FOLLOWING OPEN SENTENCES. USE THIS NOTATION FOR $3 \leq x < 5$ or $x > 6$:

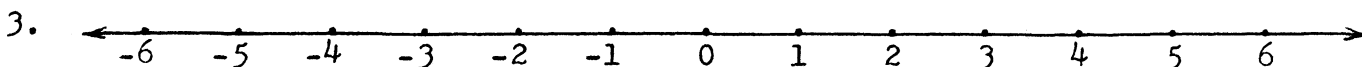
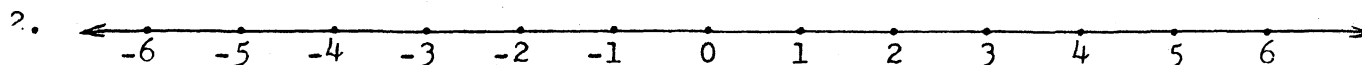
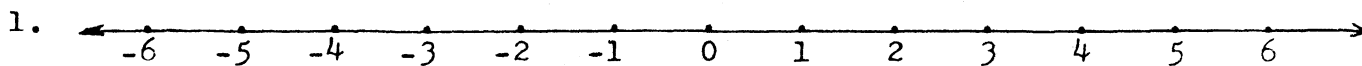


(1 point) 1. $-5 \leq x - 3 < 1$.

(2 points) 2. $|x - 4| \geq 3x + 8$.

(3 points) 3. $\{x: -3 < 1 - 2x < \frac{1}{2}\} \cap \{x: |x + 1| > 2\}$.

ANSWERS:

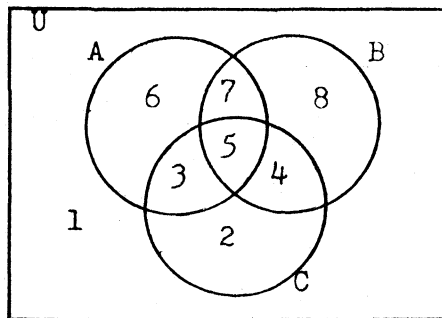


Hudson, Hudson Catholic

ROUND II: SET THEORY

1. What is the number of subsets that can be formed from $\{a, b, c, d, e, f\}$?

2. In the Venn diagram what region is determined by $\overline{(A \cap B)} \cap C$, where \bar{S} indicates the complement of set S? For your answer write the set of numbers contained in this region.



3. Pythagorus High School has a strong tradition in varsity football, basketball, and track. 40 students play football, 30 play basketball, and 50 run track. 6 students play all three sports, 10 students play basketball and football, 12 play only basketball, and 86 different students are involved in these three sports. How many students play only football?

ANSWERS: (1 point) 1. _____

(2 points) 2. { _____ }

(3 points) 3. _____

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WOCOMAL FRESHMAN MEET

ROUND IV: OPERATIONS ON NUMERICAL FRACTIONS & DECIMALS

ALL ANSWERS MUST BE IN SIMPLEST EXACT FORM

1. Simplify and express your answer as a reduced improper fraction with integer numerator and integer denominator;

$$\frac{.009}{.03} + \frac{.05}{.01} + \frac{.004}{.02}$$

2. Simplify; $\frac{\frac{1}{2}}{1 + \frac{1}{2}} + \frac{\frac{1}{3}}{1 + \frac{1}{3}} + \frac{\frac{1}{4}}{1 + \frac{1}{4}} + \frac{\frac{1}{5}}{1 + \frac{1}{5}}$.

3. Simplify; $\frac{\frac{1}{3} + \frac{1}{6} + \frac{1}{12} + \frac{1}{24} + \frac{1}{48} + .0208\bar{3}}{\bar{3}}$

ANSWERS: (1 point) 1. _____

(2 points) 2. _____

(3 points) 3. _____

Southbridge, Tantasqua, Worcester Academy

January 13, 1982

WOCOMAL FRESHMAN MEET

TEAM ROUND: PERCENT AND PERCENTAGE WORD PROBLEMS

EXPRESS EACH ANSWER IN SIMPLEST EXACT FORM

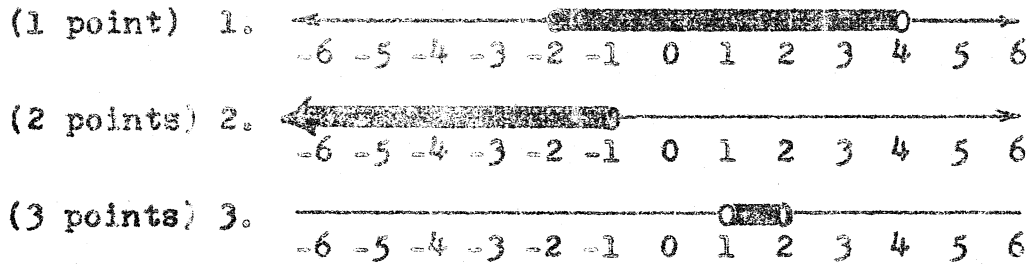
ANSWERS
(3 points each)

1. 80 is what percent of 64? 1. %
2. Rectangle A has 6% more length than rectangle B and 5% less width. What percentage more area has rectangle A? 2. %
3. How much money should I invest at 8% per year to yield the same yearly income as \$1500 invested at 12% per year? 3. \$
4. A football team has won 5 out of 7 games played. If there are 8 games remaining, how many more games must be won to give the team a season record of at least 60% games won out of all the games played? 4.
5. What is 75% of .01% of 10% of 400,000? 5.
6. By selling a boat for \$279 the owner lost 10% of its cost. How much should he have charged to have made a profit of 10% of his original investment? 6. \$
7. What percent of error is permissible if the measure of a diameter of a bearing being constructed in a machine shop is specified as $2.5" \pm .005"$? 7. %
8. How much profit is made if an article costing a merchant \$16 is priced at \$32 and marked down 16%? 8. \$

Bromfield, Hudson Catholic, Marlboro, St. Peter-Marian,
Shepherd Hill, Southbridge, Tantasqua, Worcester Academy

ROUND I

TEAM ROUND
3 points each



1. 125%

2. 0.7%

3. \$2250

ROUND II

(1 point) 1. 64

(2 points) 2. {2, 3, 4}

(3 points) 3. 20

4. 4

ROUND III

(1 point) 1. Dover

(2 points) 2. 14, 15, 16

(3 points) 3. 1792

5. 3

6. \$341

7. 0.2%

ROUND IV

(1 point) 1. $\frac{11}{2}$

(2 points) 2. $\frac{19}{20}$

(3 points) 3. $\frac{1}{2}$

8. \$10.88