

**MATHCOUNTS**  
**Target Round**  
**2000**

1. Use the digits 2, 4, 5, and 7 each once to create two prime numbers. What is the smallest possible product of two prime numbers created from these?

1. \_\_\_\_\_

2. The elements of the ordered triple  $(a, b, c)$  are different positive integers less than 5. What is the probability that  $a < b < c$ ? Express your answer as a common fraction.

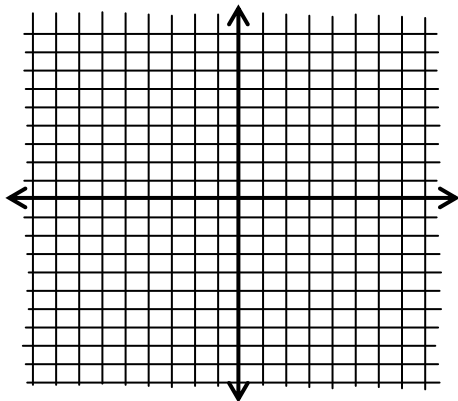
2. \_\_\_\_\_

3. If a motorist increases her speed by 8 miles per hour, she will cover a distance of 120 miles in 30 fewer minutes. What is her original rate of speed in miles per hour?

3. \_\_\_\_\_

4. What is the number of square units in the area of the pentagon whose vertices are  $(1,1)$ ,  $(3,-1)$ ,  $(6,2)$ ,  $(5,6)$ , and  $(2,5)$

4. \_\_\_\_\_



5. Set  $M$  consists of the positive odd integers less than 92 which are multiples of 3 or 5. What is the sum of all of the elements in  $M$ ?

5. \_\_\_\_\_

6. An ice cream cone has a radius 1 inch and height 4 inches. What is the number of inches in the radius of a sphere of ice cream with the same volume as the cone?

6. \_\_\_\_\_

7. Solve for  $x$ :  $(2^{4x+8})(4^{2x+3}) = 8^{2x+6}$

7. \_\_\_\_\_

8. The total number of degrees in the sum of the angles of two regular polygons is 1980. The sum of the number of diagonals in the two is 34. What is the positive difference between the number of sides of the two polygons?

8. \_\_\_\_\_