**ROMAN NUMERALS AND VENN DIAGRAMS**

Given that I = 1, V = 5, X = 10, L = 50, C = 100, D = 500, M = 1000 and anything with a bar over it is multiplied by 1000, rewrite these numerals in either our system or Roman numerals, as necessary.

1. 12 **XII** 2. 227 **CCXXVII** 3. 36 **XXXVI** 4. 49 **XLIV** 5. 385 **CCCLXXXV**  6. 6827  **MMMMMMDCCCXXVII**

7. XVI **16** 8. XIV **15** 9. LXXXIX **89** 10. MCM **1900** 11. DCCCVII **807** 12. $\overbar{VII}CCLXIV$ **7,264**

Use the set S = {0, 1, 2, ….27, 28, 29, 30) and the Venn Diagram below to answer questions 13 through 16.

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| --- |
| 1. List the elements of $A\bigcup\_{}^{}B .$ **{3, 5, 6, 9, 10, 12, 15, 18, 20, 21, 24, 27, 30}**
 |
| 1. List the elements of $\overline{A}\bigcap\_{}^{}\overline{B} .$ **{1, 2, 4, 7, 8, 11, 13, 14, 16, 17, 19, 22, 23, 26, 29}**
 |
| 1. List the elements of $A\bigcap\_{}^{}B\bigcap\_{}^{}C .$ **{30}**
 |
| 1. List the elements of $(A\bigcap\_{}^{}C)\bigcup\_{}^{}B.$ **{3, 6, 9, 10, 12, 15, 18, 20, 21, 24, 27, 30}**
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In a given week, the Dolciani Mathematics Learning Center has approximately 1000 students who visit for tutoring. Of the visitors, 360 were statistics students, 285 took calculus, and 110 took both statistics and calculus.

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| 1. How many students were only taking statistics? **250**
 | 1. How many students were only taking calculus? **175**
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| 1. How many students signed up for statistics or calculus? **535**
 | 1. How many students that visited the center were from a course outside of statistics and calculus? **415**
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In a survey of 108 college freshmen:

25 had Brooklyn backgrounds 45 had Queens backgrounds

48 had Manhattan backgrounds 10 had Brooklyn and Manhattan backgrounds

8 had Queens and Manhattan backgrounds 6 had Brooklyn and Queens backgrounds

5 had all three backgrounds

1. How many people lived only in Queens? 22. How many people lived only in Manhattan?
2. How many people had lived in Brooklyn or Queens?
3. How many people had lived in Brooklyn and Queens?
4. How many people in Manhattan or Brooklyn or Queens?
5. How many people lived in Queens and Manhattan, but not Brooklyn?
6. How many lived in none of these boroughs?