1. Indicate whether the following number has the specified factor. Explain how the appropriate divisibility test was used in each case. (18 points)

<table>
<thead>
<tr>
<th>Whole Number</th>
<th>Has 2 as a Factor</th>
<th>Has 3 as a Factor</th>
<th>Has 8 as a Factor</th>
<th>Has 9 as a Factor</th>
<th>Has 11 as a Factor</th>
<th>Has 24 as a Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>95413824</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

2. (a) Use VLF to determine the prime factorization and the prime power representation of 118800. (5 points)

   PF = ___________________________  PPR = ___________________________

   (b) How many factors does 118800 have? Explain briefly. (5 points)
3. Use a tree diagram to find all of the factors of 297. Label each terminal branch of your tree with the factor of 297 that it determines. (9 pts)

In problems 4-8 use base SIX blocks to model each of the following calculations in base SIX. Briefly explain your models. (10 points each)

4. 3 1 4  
   + 3 5 3
5. \[231\]
\[-154\]

6. \[34\]
\[\times 25\]
7. \[351 \div 3\]

8. \[244 \div 53\]
9. Use the instructional algorithm to perform two of the three calculations (subtraction, multiplication, division) in problems 5-7. Include the necessary explanation for each. (5 points each)

10. One of the following numbers is prime. Find the prime. Explain by indicating the smallest prime factor of those numbers that are not prime. (5 points)

   402   403   404   405   406   407   408   409   410   411