1a) divisible by 2, since it ends in 6
not divisible by 3, since the sum of digits is 20
not divisible by 6, since it is not divisible by 3

1b) divisible by 2, since it ends in 2
divisible by 3, since the sum of digits is 36, which is 3 * 12
divisible by 6, since it is divisible by both 2 and 3

1c) not divisible by 2, since it ends in 1
not divisible by 3, since the sum of digits is 25, which is not divisible by 3
not divisible by 6, since it is not divisible by either 2 or 3

1d) divisible by 2, since it ends in 0
not divisible by 3, since the sum of digits is 23, which is not divisible by 3
not divisible by 6, since it is not divisible by 3

2a) sum = 4046895 = 837 * 1899 + 837 * 2936 = 837 * (1899 + 2936) = 837 * 4835
Thus, 4046895 is divisible by 837

difference = 867969 = 837 * 2936 – 837 * 1899 = 837 * (2936 – 1899) = 837 * 1037
Thus 867969 is divisible by 837

2b) sum = 2808624 = 1092 * 1995 + 1092 *577 = 1092 * (1995 + 577) = 1092 * 2572
Thus 2808624 is divisible by 1092

difference = 1548456 = 1092 * 1995 – 1092 *577 = 1092 * (1995 – 577) = 1092 * 1418
Thus 1548456 is divisible by 1092

3a) 12 * 683936 = 8207232 = 12 * 638 * 1072 = 638 * (12 * 1072) = 638 * 12864
Thus 8207232 is divisible by 638

12 * 683936 = 8207232 = 12 * 638 * 1072 = 1072 * (12 * 638) = 1072 * 7656
Thus 8207232 is divisible by 1072

3b) 93 * 190213 = 17689809 = 93 * 67 * 2839 = 67 * (93 * 2839) = 67 * 264027
Thus 17689809 is divisible by 67

93 * 190213 = 17689809 = 93 * 67 * 2839 = 2839 * (93 * 67) = 2839 * 6231
Thus 17689809 is divisible by 2839