## SOLUTIONS OF PROBLEMS

64, giving the first rem. 4; &c. 109. The sum is 27376 in the scale of 9. 110. The dif. is 2767 in the scale of 9. 111. The prod. is 11578813 in the scale of 9. 112. 41625 254	
109. The sum is 27376 in the scale of 9.   110. The dif. is 2767 in the scale of 9.   111. The prod. is 11578813 in the scale of 9.   112. $254$	
110. The dif. is 2767 in the scale of 9.   111. The prod. is 11578813 in the scale of 9.   112. $41625$ 254	
111. The prod. is 11578813 in the scale of 9. 112. 41625 254	
112. 41625 254	
254	
000100	
9711/36	
200400	
302304	
115555	
14643006	
113. The partial prods. are 3421, 12540, 255200.	
114. The first rem. is 288.	
115. 110)1009002(3030	
330	
1000	
330	
109	
116 1 2 3 4 5 6	
110. 2 4 6 11 13 15	
6 12 15 21 24	
A 11 15 22 26 33	
5 13 21 26 34 42	
6 15 24 33 42 51	

117.  $8 = 2^3 = 1000$ ;  $10 = 2^3 + 2^1 = 1010$ ; &c.

118. This is a particular case of the general theorem established in the algebras that the sum of the digits of any whole no. (radix r) divided by r - 1 will have the same rem. as the whole no. divided by r - 1. Or, the reasoning in no. 2 may with the necessary changes be applied.

The same will be true of 2 and 3 since they are factors of 6. 119. Place the 1-lb. wt. in the scale pan with the sugar and

the 1-lb. and the 4-lb. wt. in the other scale pan.

121. Place with the quantity to be weighed the wts. 3<sup>3</sup>, 3<sup>4</sup>, 3<sup>5</sup>, and in the other pan 1, 3, 3<sup>5</sup>, 3<sup>6</sup>.

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122. Since  $6 \times 6$  ends with 6 and the successive powers of any no. ending in 6 necessarily involve the multiplication of 6 by 6.  $\therefore$  every power of a no. ending with 6 will end with 6.