

## Q9. Palmyrene numbers – Solution

Palmyrene numbers are expressed in increasing order of value from left to right, with figures that indicate 1, 5, 10 and 20:

Table 3.5. Palmyrene numerals

1	5	10	20
I	Y	↗	3
178 = III Y ↗ 333 ↗ I			

The catch is that hundreds are expressed by the symbol for ten, with the number of hundreds given *after* it (i.e. 100 is represented by ↗<sup>I</sup> while 200 is represented by ↗<sup>II</sup>).

Correspondences:

1. 1 – 178, 2 – 45, 3 – 1, 4 – 18, 5 – 83, 6 – 492, 7 – 7, 8 – 314, 9 – 4, 10 – 200.

2:

31 - I ↗ 3

94 - III ↗ 3333

145 - Y 33 ↗ I

300 - ↗ III

477 - II Y ↗ 333 ↗ III

Strategies:

In “number” questions involving symbols, the symbols are likely to be based on addition, and each symbol will probably, but not *certainly*, represent a multiple of 5 or 10. One problem, though, is that the addition might not be exactly in order of size (i.e. ones, then tens, then hundreds, or vice versa) and could be highest-to-smallest or smallest-to-highest. This problem involves a slightly different twist again.

From a common sense point of view, it’s likely that the vertical lines will represent the “1” unit (as it does in shorthand to this day), especially since one of the Hindu-Arabic numbers is 1. So No.3 will be 1, and it’s likely that No.9 will be 4 (four of the vertical lines). But when we come to 7, there is a dilemma.

It is probably made up of a five and two ones – but is it No.7 or No.10?

Let us use some logic. If the horizontal hook represents 5, and if it comes before the “ones”, then we would expect that No.1 would be a number ending in a 6 (hook plus one vertical line), and No.6 would be a number ending in a 9 (hook plus four vertical lines). But there are no numbers in the Hindu-Arabic list ending in 6 or 9.

Now let’s try the other option. If the “Y” symbol represents 5, and if No.7 is therefore 7, then the “ones” come *before* the five. If we look at the other times the “Y” symbol appears – No.’s 1, 2, 4 and 7 – this should result in two numbers ending in 8 (three vertical lines plus the “Y”), one number ending in 7 (in fact, 7 itself), and one number ending in plain 5 (No.2). If

we look at the Hindu-Arabic numbers beneath, that is exactly what we find.

So we conclude that the order is basically smallest-to-largest. It quickly follows that the horizontal hook represents 10 and the “3” symbol is 20. But what happens then?

The hook appears again, but this time with a smaller unit *after* it. Since this occurs four times (No.’s 1, 6, 8 and 10) and there are four numbers in the hundreds, we can deduce that the “ten” symbol indicates 100 when a smaller unit follows it, and that the smaller unit represents the number of hundreds.