Shifting Times Tables - Solution

a) 8, 13, 18, 23, 28	Times table: 5	Shift: 3
b) 27, 41, 55, 69, 83	Times table: 14	Shift: 13
c) 79, 191, 37, 51, 205	Times table: 14	Shift: 9
d) 104, 454, 254, 604, 704	Times table: 50	Shift: 4
e) 127, 414, 332, 619, 373	Times table: 41	Shift: 4

What can you say if the numbers are all odd?
The times table will be even and the shift will be odd.

What about if they are all even?
Both the table and the shift will be even.

Or a mixture of odd and even?
The table will be odd and the shift can be odd or even.

What can you say if the units digits are all identical?
The table must be a multiple of ten.

What if there are only two different units digits?
The table is probably a multiple of five.

What can you say if the difference between two numbers is prime?
The table will be that prime number.

What can you say if the difference between two numbers is composite (not prime)?
The table could be either the composite number or any of its factors.

Can you explain how you worked out the table and shift each time, and why your method will always work?
First, arrange all the given numbers in order, smallest to largest. Then find the difference between each number and the next one. The table is the highest common factor of all the differences, and the shift is the table number subtracted as many times as possible from the lowest given number whilst staying positive.
This always works because if the table number is higher than the HCF then it won't get all the numbers given, and the shift works because it is simply how much higher than the first multiple the sequence given is.