Sunday Times Teaser 3068 – Valued Playwrights

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I have given each letter of the alphabet a different whole-number value from 1 to 26. For example, P=4, L=8, A=3 and Y=24. With my numbers I can work out the value of any word by adding up the values of its letters, for example the word PLAY has a value of 39.

It turns out that the playwrights:

BECKETT, FRAYN, PIRANDELLO, RATTIGAN, SHAKESPEARE and SHAW

all have the same prime value.

Also, COWARD, PINERO and STOPPARD have prime values.

What are those three prime numbers?

Solution by Ciaran Lewis

- Using minimum and maximum values available for letters in each name, without constraints to be established later, we can set boundaries on the Common Prime (CP) which is the sum of the letter values in a name. We see that PIRANDELLO sets a minimum of 52 and SHAW sets a maximum of 77. Then CP = 53, 59, 61, 67, 71 or 73.
- Equating SHAW and SHAKESPEARE leads to W = KESR + 2E + 7. From this identity, we see that E = 1 or 2 and that KESR values are drawn from (1,2,5,6,7 or 9). Furthermore, both 1 and 2 must be used by this quartet and if E=1, then W=23, 25 or 26 whereas if E=2, then W=25 or 26. Finally, we also see that the range of KESR totals is 14-19.
- Returning to SHAW, the maximum value of S=9 is used to show the maximum value possible is SHAW = 63. From PIRANDELLO = INDO + ER + 23, we see minimum ER is 1+2=3 and minimum INDO is 5+6+10+11=32 (both in an order to be determined) with result that the minimum value possible is PIRANDELLO = 58. Hence, CP = 59 or 61.
- With this new constraint, we return to PIRANDELLO = INDO + ER + 23 and note that the previous minimum value must be increased by 1 or 3 to match the CP options still open. E/R=1/2 uses mandatory values in KESR quartet and therefore only 5,6,7,9,10 etc values are available in INDO quartet to find the required 1 or 3 increase. By looking at consequences of various SK options there are a limited number of ways to have INDO = 33 or 35. In fact, only S/K = 6/9 with INDO from 5,7,10,11 allows CP=59 and only S/K=6/7 with INDO from 5,9,10,11 allows CP=61.
- Returning again to SHAW with S=6/7/9 we see S=6 is not viable, requiring H/W=24/26 for CP=59 and requiring H/W=26/26 for CP=61. Hence, from previous bullet, we conclude K=6 and S=7 or 9 with CP=61 or 59 resp.
- Returning to SHAKESPEARE = 2S + H + 2E + (2A + ER + K + P) = 2(E + S) + H + 19 we can test the four E+S options (i.e. 8,10,9 and 11). Only ESH=1,7,26 with CP=61 and ESH=1,9,20 or ESH=2,9,18 with CP=59 are valid.
- Returning yet again to SHAW and recalling that W options depend on E=1 or 2, we find that the only self-consistent option is for **E=1** and **SHAW = 7 + 26 + 3 + 25 = 61**.

- In summary, we now know **CP=61** with E=1, R=2, A=3, P=4, K=6, S=7, L=8, Y=24, W=25 and H=26. Furthermore, we know from above that INDO=35 and uses 5,9,10 and 11. From now on, any new letters have a value 12, 13, 14 etc.
- Considering RATTIGAN = (2T + G) + IN + 8 = 61, we have 2T+G=37, 38, 39, 40 etc. Hence IN=16, 15, 14, 13 etc. Since INDO uses 5,9,10,11 only IN=5/10 or 5/9 are possible (NB 16=5+11 uses both D value options). Now we conclude I=5 or N=5 and that D=11 with INO=24 and **PINERO = 31**.
- From BECKETT = 2T + B + C + 8 = 61, we have (for T=12) BC = 29 from values 13,14,15 etc. or (for T=13) BC =27 from values 12,14,15 etc.
- Subtracting RATTIGAN from BECKETT, we see GIN = BC. For T=12, G=14 or 15 with IN=15 or 14 we have GIN=29=BC. Hence B/C=13/16 (not 14/15 as one of these is G value). For T=13 case, there is an inconsistency in that G=12 and one of B/C is also 12.
- Updating the summary, we now know that CP=61 with E=1, R=2, A=3, P=4, I/N=5, K=6, S=7, L=8, O=9/10, D=11, T=12, B/C=13/16, Y=24, W=25 and H=26. Furthermore, we know from above that INO=24 and uses 5,9 and 10.
- From FRAYN = FN+29 = 61 we see N=5,9 or 10 requires F= 27,23 or 22 and hence N=5 is not possible. This means I=5 and O/N=9/10.
- COWARD = CO + 41 where C=13/16 and O=9/10 with CO=22,23,25 or 26. The only prime available comes from 26+41 and hence **COWARD = 67**. Also, C=16 and O=10
- Finally, **STOPPARD = 7 + 12 + 10 + 4 + 4 + 3 + 2 + 11 = 53**.