

Solutions to Search Problems

Solution 1

01/01/01	02/05/10	03/06/18	13/02/26	12/03/36	12/04/48	10/06/60
02/01/02	01/10/10	02/09/18	27/01/27	09/04/36	08/06/48	06/10/60
01/02/02	11/01/11	19/01/19	09/03/27	06/06/36	06/08/48	05/12/60
03/01/03	01/11/11	20/01/20	03/09/27	04/09/36	04/12/48	21/03/63
01/03/03	12/01/12	10/02/20	28/01/28	03/12/36	07/07/49	09/07/63
04/01/04	06/02/12	05/04/20	14/02/28	19/02/38	25/02/50	07/09/63
02/02/04	04/03/12	04/05/20	07/04/28	13/03/39	10/05/50	16/04/64
01/04/04	03/04/12	02/10/20	04/07/28	20/02/40	05/10/50	08/08/64
05/01/05	02/06/12	21/01/21	29/01/29	10/04/40	17/03/51	13/05/65
01/05/05	01/12/12	07/03/21	30/01/30	08/05/40	26/02/52	22/03/66
06/01/06	13/01/13	03/07/21	15/02/30	05/08/40	13/04/52	11/06/66
03/02/06	14/01/14	22/01/22	10/03/30	04/10/40	27/02/54	06/11/66
02/03/06	07/02/14	11/02/22	06/05/30	21/02/42	18/03/54	17/04/68
01/06/06	02/07/14	02/11/22	05/06/30	14/03/42	09/06/54	23/03/69
07/01/07	15/01/15	23/01/23	03/10/30	07/06/42	06/09/54	14/05/70
01/07/07	05/03/15	24/01/24	31/01/31	06/07/42	11/05/55	10/07/70
08/01/08	03/05/15	12/02/24	16/02/32	22/02/44	05/11/55	07/10/70
04/02/08	16/01/16	08/03/24	08/04/32	11/04/44	28/02/56	24/03/72
02/04/08	08/02/16	06/04/24	04/08/32	04/11/44	14/04/56	18/04/72
01/08/08	04/04/16	04/06/24	11/03/33	15/03/45	08/07/56	12/06/72
09/01/09	02/08/16	03/08/24	03/11/33	09/05/45	07/08/56	09/08/72
03/03/09	17/01/17	02/12/24	17/02/34	05/09/45	19/03/57	08/09/72
01/09/09	18/01/18	25/01/25	07/05/35	23/02/46	20/03/60	06/12/72
10/01/10	09/02/18	05/05/25	05/07/35	24/02/48	15/04/60	25/03/75
05/02/10	06/03/18	26/01/26	18/02/36	16/03/48	12/05/60	15/05/75

19/04/76	16/05/80	21/04/84	22/04/88	10/09/90	24/04/96	09/11/99
11/07/77	10/08/80	14/06/84	11/08/88	09/10/90	16/06/96	
07/11/77	08/10/80	12/07/84	08/11/88	13/07/91	12/08/96	
26/03/78	27/03/81	07/12/84	30/03/90	23/04/92	08/12/96	
13/06/78	09/09/81	17/05/85	18/05/90	31/03/93	14/07/98	
20/04/80	28/03/84	29/03/87	15/06/90	19/05/95	11/09/99	

Solution 2

(1,2,15,16)	(1,3,14,16)	(1,4,13,16)	(1,4,14,15)	(1,5,12,16)	(1,5,13,15)	(1,6,11,16)
(1,6,12,15)	(1,6,13,14)	(1,7,10,16)	(1,7,11,15)	(1,7,12,14)	(1,8,9,16)	(1,8,10,15)
(1,8,11,14)	(1,8,12,13)	(1,9,10,14)	(1,9,11,13)	(1,10,11,12)	(2,3,13,16)	(2,3,14,15)
(2,4,12,16)	(2,4,13,15)	(2,5,11,16)	(2,5,12,15)	(2,5,13,14)	(2,6,10,16)	(2,6,11,15)
(2,6,12,14)	(2,7,9,16)	(2,7,10,15)	(2,7,11,14)	(2,7,12,13)	(2,8,9,15)	(2,8,10,14)
(2,8,11,13)	(2,9,10,13)	(2,9,11,12)	(3,4,11,16)	(3,4,12,15)	(3,4,13,14)	(3,5,10,16)
(3,5,11,15)	(3,5,12,14)	(3,6,9,16)	(3,6,10,15)	(3,6,11,14)	(3,6,12,13)	(3,7,8,16)
(3,7,9,15)	(3,7,10,14)	(3,7,11,13)	(3,8,9,14)	(3,8,10,13)	(3,8,11,12)	(3,9,10,12)
(4,5,9,16)	(4,5,10,15)	(4,5,11,14)	(4,5,12,13)	(4,6,8,16)	(4,6,9,15)	(4,6,10,14)
(4,6,11,13)	(4,7,8,15)	(4,7,9,14)	(4,7,10,13)	(4,7,11,12)	(4,8,9,13)	(4,8,10,12)
(4,9,10,11)	(5,6,7,16)	(5,6,8,15)	(5,6,9,14)	(5,6,10,13)	(5,6,11,12)	(5,7,8,14)
(5,7,9,13)	(5,7,10,12)	(5,8,9,12)	(5,8,10,11)	(6,7,8,13)	(6,7,9,12)	(6,7,10,11)
(6,8,9,11)	(7,8,9,10).					

Solution 3

Factorisations of 100: (i) 100 as a standalone factor, (ii) 50×2 , (iii) 25×4 , (iv) 20×5 , (v) 10×10 , (vi) $25 \times 2 \times 2$, (vii) $10 \times 5 \times 2$, (viii) $5 \times 5 \times 4$, (ix) $5 \times 5 \times 2 \times 2$. These should lead to the following numbers with exactly 100 factors:

- (a) 2^{99} (b) $2^{49} \times 3$ (c) $2^{24} \times 3^3$ (d) $2^{19} \times 3^4$ (e) $2^9 \times 3^9$ (f) $2^{24} \times 3 \times 5$
 (g) $2^9 \times 3^4 \times 5$ (h) $2^4 \times 3^4 \times 5^3$ (i) $2^4 \times 3^4 \times 5 \times 7$. Of these, the last one, 45360, is the least.

Solution 4

The required values of (p,q) are (5,6), (10,24), (13,30), (15,54), (17,60), (25,84) and (20,96).