

Number Square Corners

In the 10 x 10 number grid, a 2 x 2 square is shaded.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

If we multiply opposite corners of the shaded square, we have:

$$24 \times 33 = 792$$

$$23 \times 34 = 782$$

The difference between the products is 10.

Will this always be the case?

Can you prove it?

What would have happened if we had multiplied corners of a shaded 3 x 3 square?

What about a 4 x 4 square?

A 5 x 5 square?

Can you find a formula linking the size of the grid and the result of the product?

If we had started with a different sized grid, would your answers have been the same?

1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	32	33	34	35
36	37	38	39	40	41	42
43	44	45	46	47	48	49

