

## Difference of Two Squares.

$$\textcircled{15} = 14, 16$$

$$14^2 = 196$$

$$16^2 = 256$$

$$\text{Difference} = 60$$

$$\textcircled{39} = 38, 40$$

$$38^2 = 1444$$

$$40^2 = 1600$$

$$\text{Difference} = 156$$

$$\textcircled{24} = 23, 25$$

$$23^2 = 529$$

$$25^2 = 625$$

$$\text{Difference} = 96.$$

I have noticed that the difference between the two squares is 4 times the original number that is a multiple of three.

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$$\textcircled{55} = 54, 56$$

$$54^2 = 2916$$

$$56^2 = 3136$$

$$\text{Difference} = 220$$

Similarly to the multiples of three, the difference of the squares for a multiple of 5 is also 4 times the original number.

$$\textcircled{70} = 69, 71$$

$$69^2 = 4761$$

$$71^2 = 5041$$

$$\text{Difference} = 280.$$

$$\textcircled{14} = 13, 15$$

$$13^2 = 169$$

$$15^2 = 225$$

$$\text{Difference} = 56$$

$$\textcircled{49} = 48, 50$$

$$48^2 = 2304$$

$$50^2 = 2500 \quad \text{Difference} = 196$$

$$\textcircled{91} = 90, 92$$

$$90^2 = 8100$$

$$92^2 = 8464 \quad \text{Difference} = 364$$

$$\textcircled{143} = 142, 144$$

$$142^2 = 20164$$

$$144^2 = 20736 \quad \text{Difference} = 572$$

This relationship also applies for the 7 and 13 times tables, which indicates that this relationship applies for all times tables.

Extension:

$$\textcircled{15} = 13, 17$$

$$13^2 = 169$$

$$17^2 = 289$$

$$\text{Difference} = 120$$

$$\textcircled{49} = 47, 51$$

$$47^2 = 2209$$

$$51^2 = 2601$$

$$\text{Difference} = 392$$

When you take two numbers on either side of the original number, the difference between the squares becomes a multiple of 8 times the original number. This is double 4 as the numbers are two on either side, not one.