



*- for ages 10 and up -*

These printable pages will be added to as time goes along.

Solutions are in **red** on page immediately following exercises.

# Multiplying Two Digit Numbers by 11

The first step is to write the number, leaving some space between the two digits.

Then insert the sum of the number's two digits in between the two digits themselves; you will have to carry when the sum of the digits exceeds 9.

Example 1:  $36 \times 11$

- 1) 3 6
- 2)  $3+6=9$
- 3) 396

Example 2:  $78 \times 11$ .

- 1) 7 8
- 2)  $7+8=15$
- 3) 858

## Challenge:

How fast can you do these?

- 1)  $25 \times 11$
- 2)  $42 \times 11$
- 3)  $72 \times 11$
- 4)  $34 \times 11$
- 5)  $26 \times 11$
- 6)  $84 \times 11$
- 7)  $76 \times 11$
- 8)  $97 \times 11$
- 9)  $67 \times 11$
- 10)  $46 \times 11$

Use the same method but work backwards:

- 11)  $? \times 11 = 396$
- 12)  $? \times 11 = 781$
- 13)  $? \times 11 = 187$
- 14)  $? \times 11 = 385$
- 15)  $? \times 11 = 484$
- 16)  $? \times 11 = 748$
- 17)  $? \times 11 = 209$
- 18)  $? \times 11 = 638$
- 19)  $? \times 11 = 858$
- 20)  $? \times 11 = 1\ 078$



# ***Solutions to Multiplying Two Digit Numbers by 11***

- 1) 275
- 2) 462
- 3) 792
- 4) 374
- 5) 286
- 6) 924
- 7) 836
- 8) 1 067
- 9) 737
- 10) 506
- 11) 36
- 12) 71
- 13) 17
- 14) 35
- 15) 44
- 16) 68
- 17) 19
- 18) 58
- 19) 78
- 20) 98



# Squaring Two Digit Numbers ending in 5

To square a number ending in 5, first *multiply the number formed by the digit(s) in front of the 5 by the next whole number*. To that product, *affix the number 25*. The number to affix (25) is easy to remember, because  $5^2 = 25$ .

Example 1: How much is  $25^2$  ?

$$2 \times 3 = 6 \text{ Write down 6 and affix 25...} = 625$$

Example 2: How much is  $75^2$  ?

$$7 \times 8 = 56 \text{ Write down 56 and affix 25...} = 5\,625$$

## Challenge:

1. How much is  $85^2 - 35^2$  ?  $7225 - 1225 =$
  2. How much is  $45^2 + 95^2$  ?  $2025 + 9025 =$
  3. How much is  $115^2$  ? (use same method)  $11 \times 12 = 132$ ; so  $115^2 =$
  4. How much is  $195^2$  ?  $19 \times 20 = 380$ ; so  $195^2 =$
  5. How much is  $2\,995^2$  ?  $299 \times 300 = 89\,700$ ; so  $2\,995^2 =$
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# ***Solutions to Squaring Two Digit Numbers ending in 5***

***1. 6 000***

***2. 11 050***

***3. 13 225***

***4. 38 025***

***5. 8 970 025***

