Solution: Suppose the two-digit number is ab, so that it is equal to $10a+b$

When the number is reversed, it is ba, and is equal to $10b+a$.

From the given information, we can write the following formula:

$$\frac{ab+1}{2} = ba \quad \Rightarrow \quad \frac{10a+b+1}{2} = 10b+a \quad \Rightarrow \quad 10a+b+1 = 20b+2a$$

$$\Rightarrow \quad 8a+1 = 19b$$

$\because$ $\overline{ab}$ is a two-digit number

$\therefore$ a and b are both one-digit integers

$\therefore$ The possible values for a and b are $0, 1, 2, 3, 4, 5, 6, 7, 8, 9$

(only for b)

$\because$ $8a$ is an even number whatever the value

$\therefore$ $8a+1$ is an odd number

$\therefore$ $19b$ is an odd number, b is an odd number

$\therefore$ The possible values for b are $1, 3, 5, 7, 9$

$\because$ The biggest value for a is 9

$\therefore$ The biggest value for $8a+1 = 8\times9+1 = 73$

$\frac{73}{19} = 3 \ldots 16$

$\therefore$ The biggest value for b is 3

$\therefore$ The possible values for b are 1 and 3.

$\because$ When $b=1$, $19b=19$, $19-1=18 \Rightarrow 18$ is not a multiple of 8

$\therefore$ $b \neq 1$

$\because$ When $b=3$, $19b=57$, $57-1=56 \Rightarrow 56$ is a multiple of (7×8)

$\therefore$ $b=3$

$\therefore$ $a=7$

$\therefore$ $ab=73$

Sherry Shen