

April 8th

How many two-digit numbers are there that are three times the product of their digits?

Two digit number "ab" = $10a + b$

Therefore we are looking for integer solutions for

$$10a + b = 3ab$$

Hence

$$3ab - b = 10a$$

Therefore

$$b = \frac{10a}{3a - 1}$$

The only integer solutions (ignoring $a=b=0$)

$$a = 1, b = 5$$

$$a = 2, b = 4$$

Therefore there are two : 15 and 24