

# Arithmetic Hacks

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## 1 2 digit number divided by 2

$$([a][b])/2$$

$$a \text{ even} \Rightarrow \left[\frac{a}{2}\right]\left[\frac{b}{2}\right]$$

$$b \text{ even} \Rightarrow \left[\frac{a-1}{2}\right]\left[\frac{10+b}{2}\right]$$

## 2 examples

$$26/2 = [2/2][6/2] = 13$$

$$34/2 = \left[\frac{3-1}{2}\right]\left[\frac{10+4}{2}\right] = \left[\frac{2}{2}\right]\left[\frac{14}{2}\right] = 17$$

## 3 $[a][9] \times 3$

$$[a][9] \times 3 = [(a+1) \times 3][0] - b$$

## 4 examples

$$19 \times 3 = [(1+1) \times 3][0] - 3 = 60 - 3 = 57$$

$$29 \times 3 = [(2+1) \times 3][0] - 3 = 90 - 3 = 87$$