

# Real numbers and their decimal expansions

## Short trick

$$0.\overline{4} = \frac{4}{9}$$

$$0.\overline{6} = \frac{6}{9} = \frac{2}{3}$$

$$0.\overline{47} = \frac{47}{99}$$

$$x = 0.\overline{4} = 0.444\dots \quad \text{--- (1)}$$

$$10x = 4.44\dots \quad \text{--- (2)}$$

Subtract (1) from (2)

$$10x - x = 4.44\dots - 0.44\dots$$

$$9x = 4$$

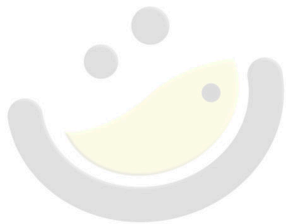
$$x = \frac{4}{9}$$



$$0.\overline{001} = \frac{1}{999}$$

$$0.2\overline{35} = \frac{233}{990}$$

$$1.\overline{27} = \frac{126}{99} = \frac{42}{33} = \frac{14}{11}$$



OMG! MATHS }  
The poetry of logical ideas.



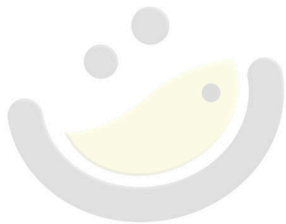
\* The sum of  $0.\bar{3}$  and  $0.\bar{2}$  is

(a)  $\frac{5}{99}$

(b)  $\frac{5}{9}$

(c)  $\frac{5}{10}$

(d)  $\frac{5}{100}$



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Express  $0.4\bar{7}$  in  $\frac{p}{q}$ .



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