

frattali

ITADINFO 2023 – materiale didattico

soluzione esercizio per casa

Gaetano Impoco

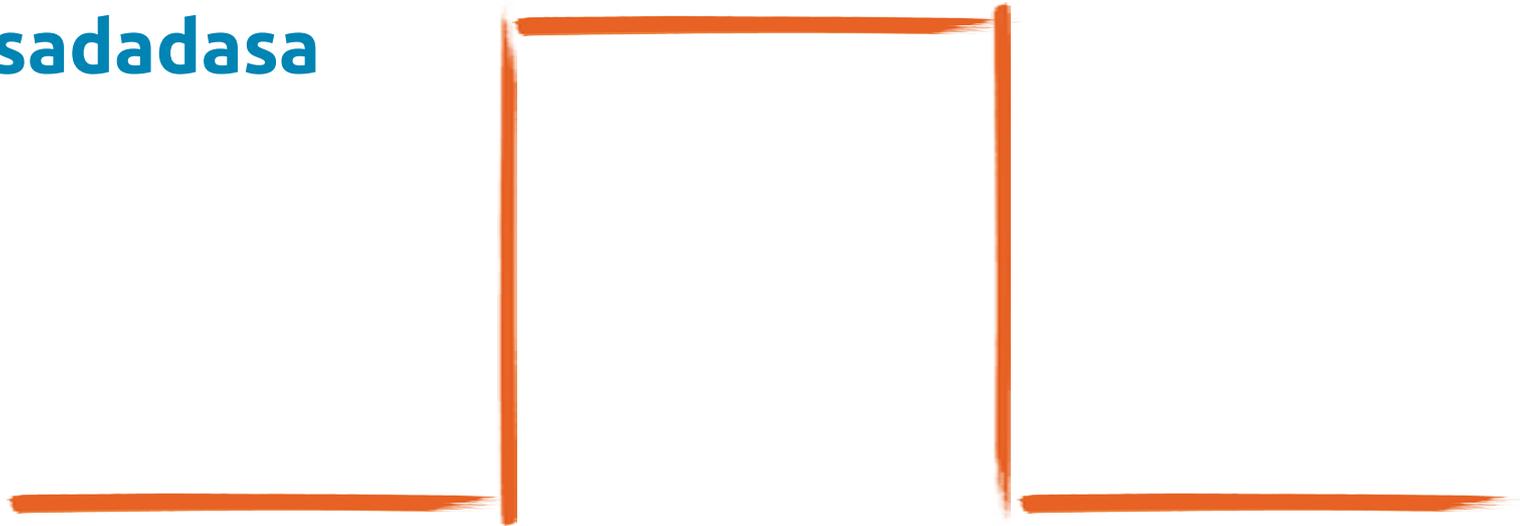
gaetano @ impoco.it

frattali

frattali

quanta strada percorre la tartaruga?

A → asadadasa



A → a

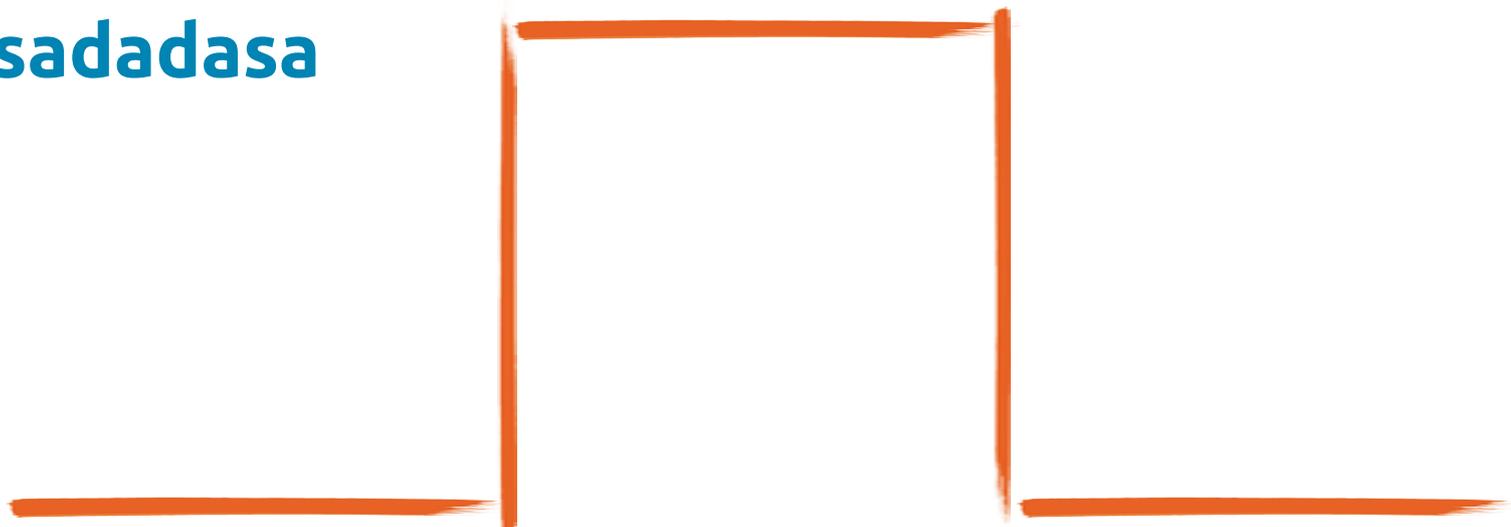


lunghezza = 1

frattali

quanta strada percorre la tartaruga?

A → asadadasa



A → a



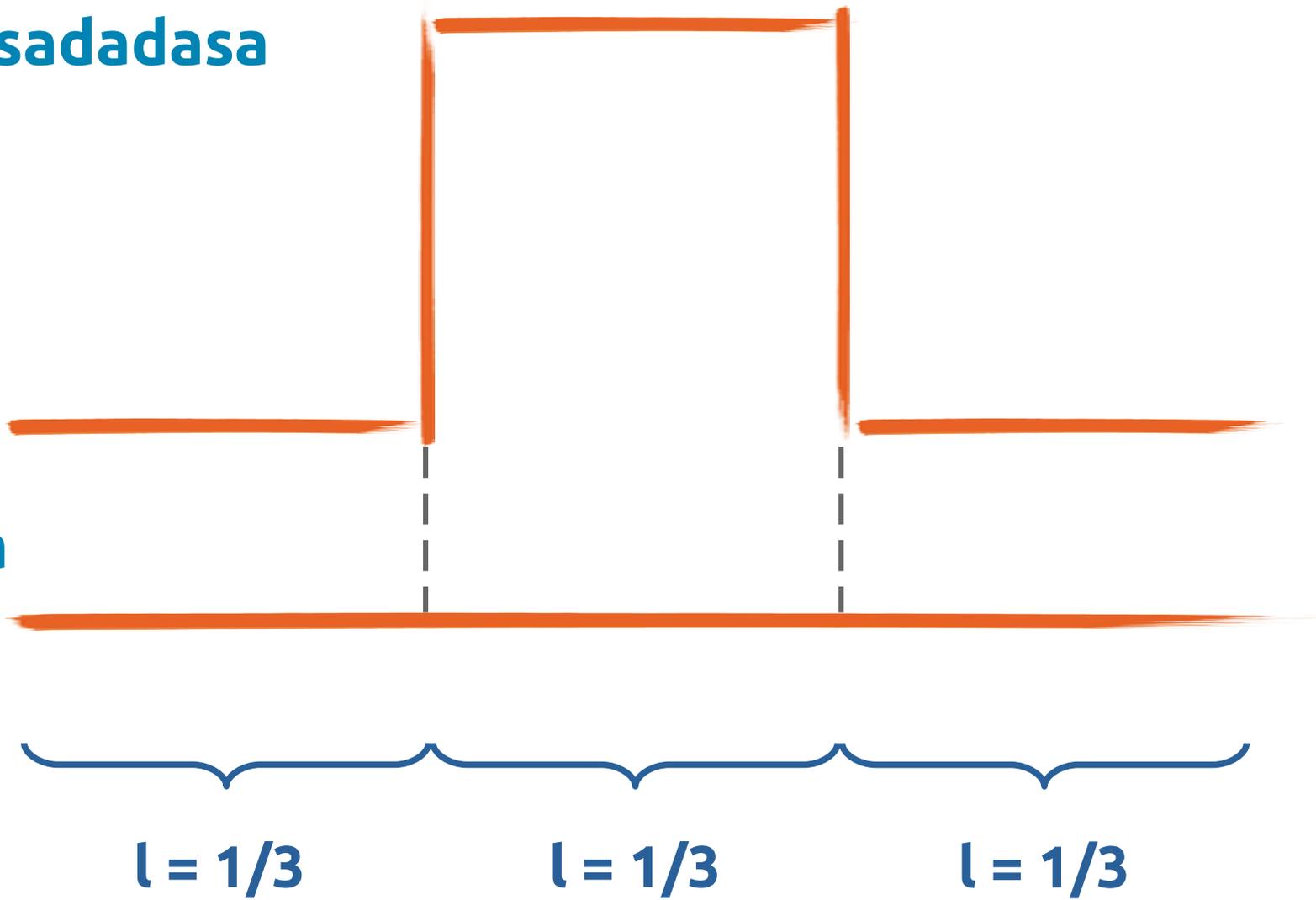
lunghezza = 1

frattali

quanta strada percorre la tartaruga?

A → asadadasa

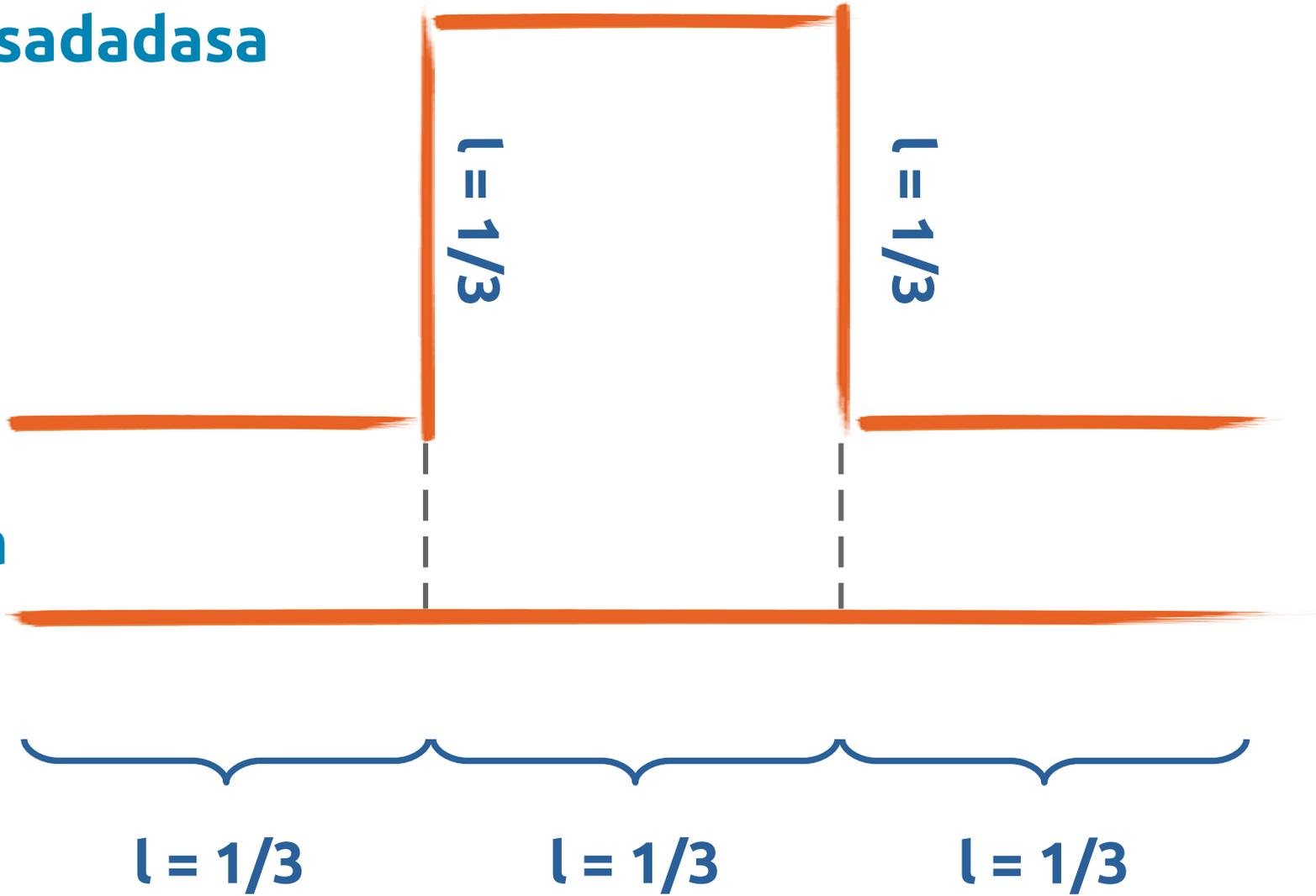
A → a



frattali

quanta strada percorre la tartaruga?

A → asadadasa

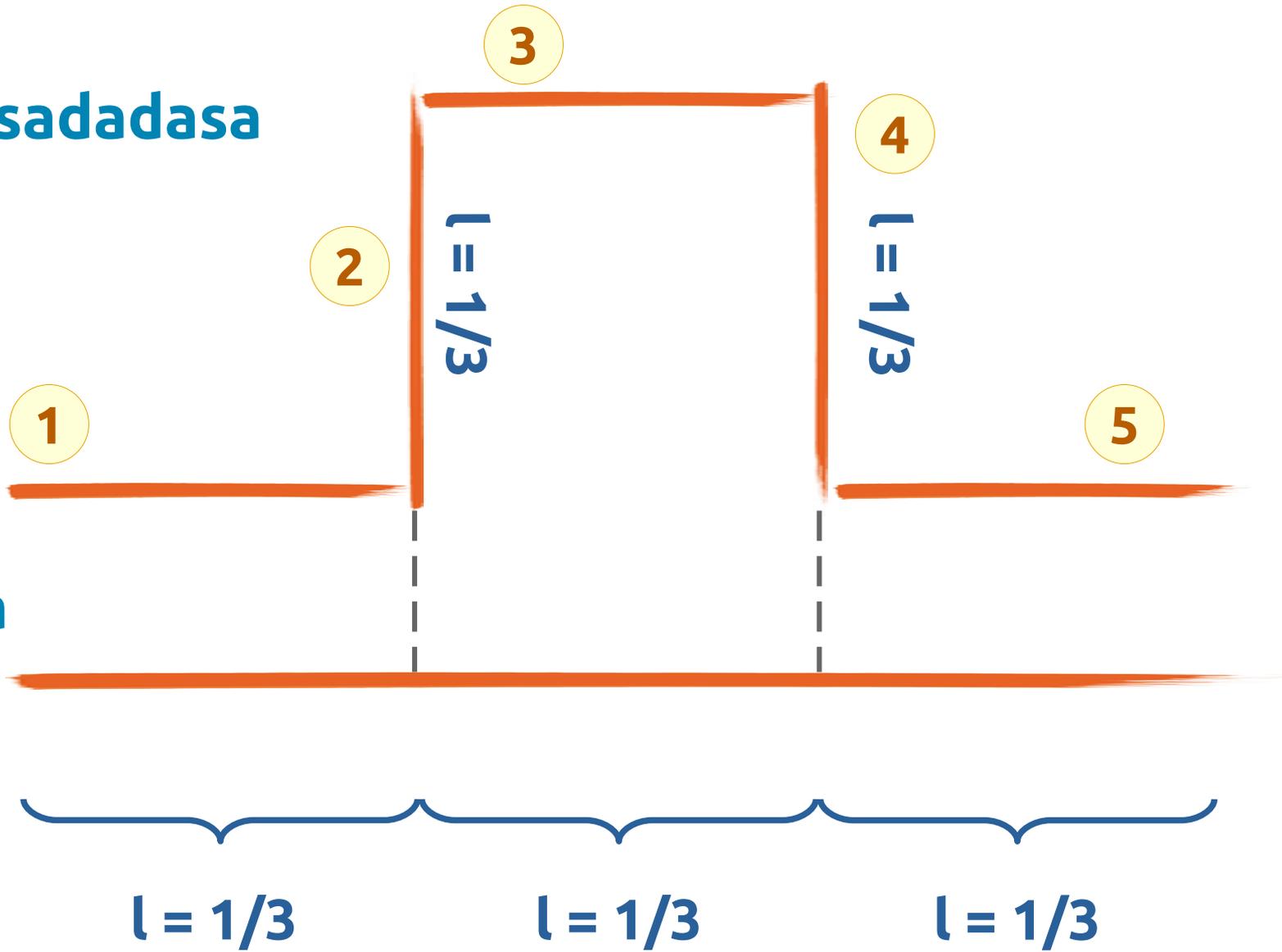


A → a

frattali

quanta strada percorre la tartaruga?

A → asadadasa



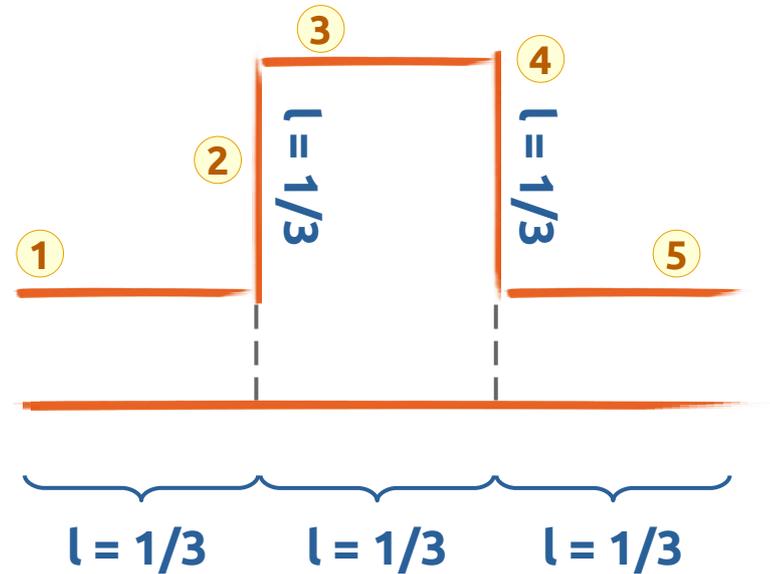
A → a

frattali

quanta strada percorre la tartaruga?

5 linee, ciascuna lunga $1/3$

→ $5/3$



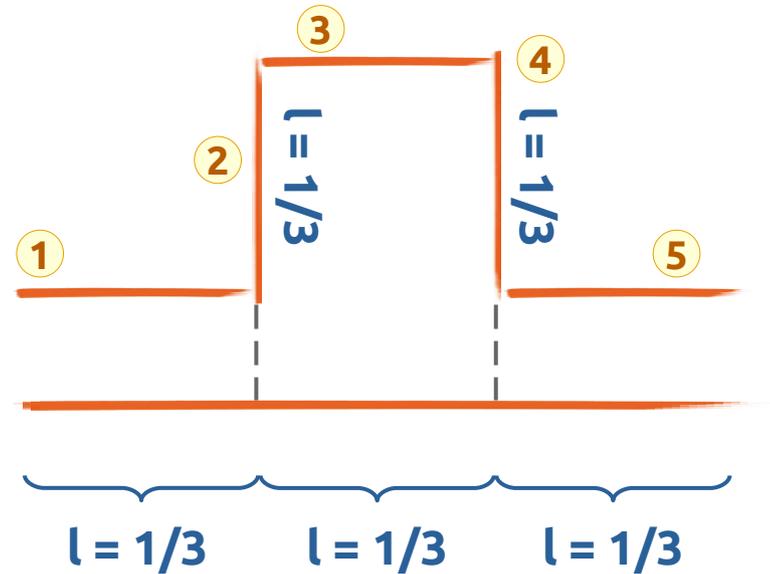
A → asadadasa

frattali

quanta strada percorre la tartaruga?

5 linee, ciascuna lunga $1/3$

→ $5/3$



A → asadadasa

① ② ③ ④ ⑤

frattali

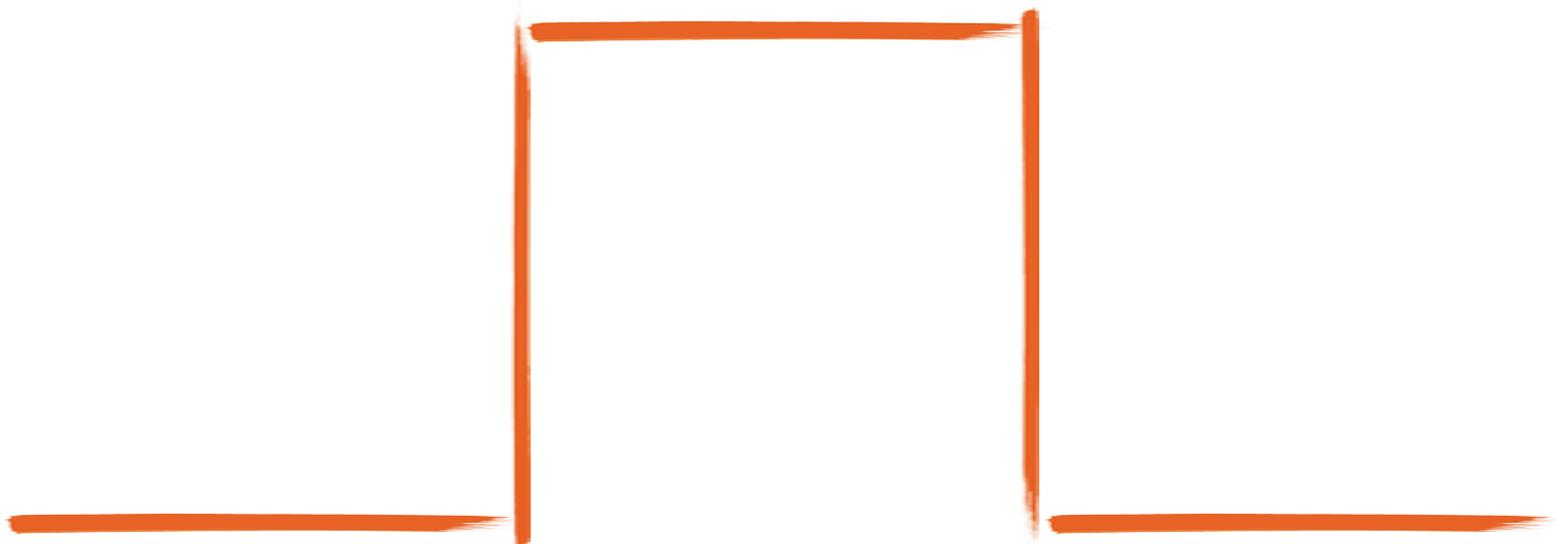
quanta strada percorre la tartaruga?

$S \rightarrow (1) \quad A \rightarrow AsAdAdAsA$
 $(2) \quad A \rightarrow a$

regole: 1, 2



$$l = 5/3$$



frattali
lunghezza

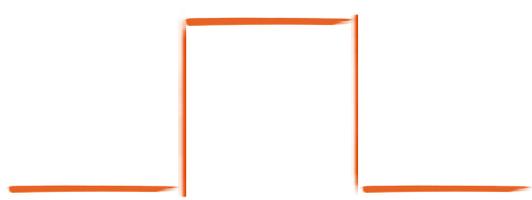
$S \rightarrow (1) \quad A \rightarrow AsAdAdAs$
 $(2) \quad A \rightarrow a$

regole: **2**



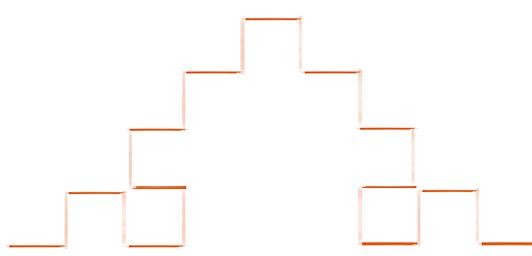
$$l = (5/3)^0$$

regole: **1, 2**



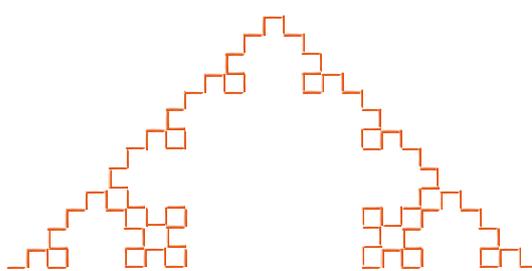
$$l = (5/3)^1$$

regole: **1, 1, 2**



$$l = (5/3)^2$$

regole: **1, 1, 1, 2**

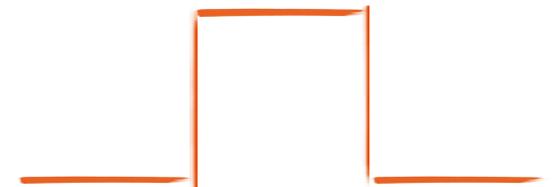


$$l = (5/3)^3$$

dimensione frattale frattale "cappello"

S → (1) **A** → **AsAdAdAsA**
 (2) **A** → **a**

$$\Sigma = \{ \mathbf{a}, \mathbf{s}, \mathbf{d} \}_{90^\circ}$$



$$\mathbf{5/3} \quad \longrightarrow \quad \frac{\log(\mathbf{5})}{\log(\mathbf{3})}$$

**dimensione
frattale**

dimensione frattale

curva di von Koch

esercizio per casa!

S → (1) **A** → **AsAddAsA**
(2) **A** → **a**

$$\Sigma = \{ \mathbf{a}, \mathbf{s}, \mathbf{d} \}_{60^\circ}$$



?



$\log(?)$

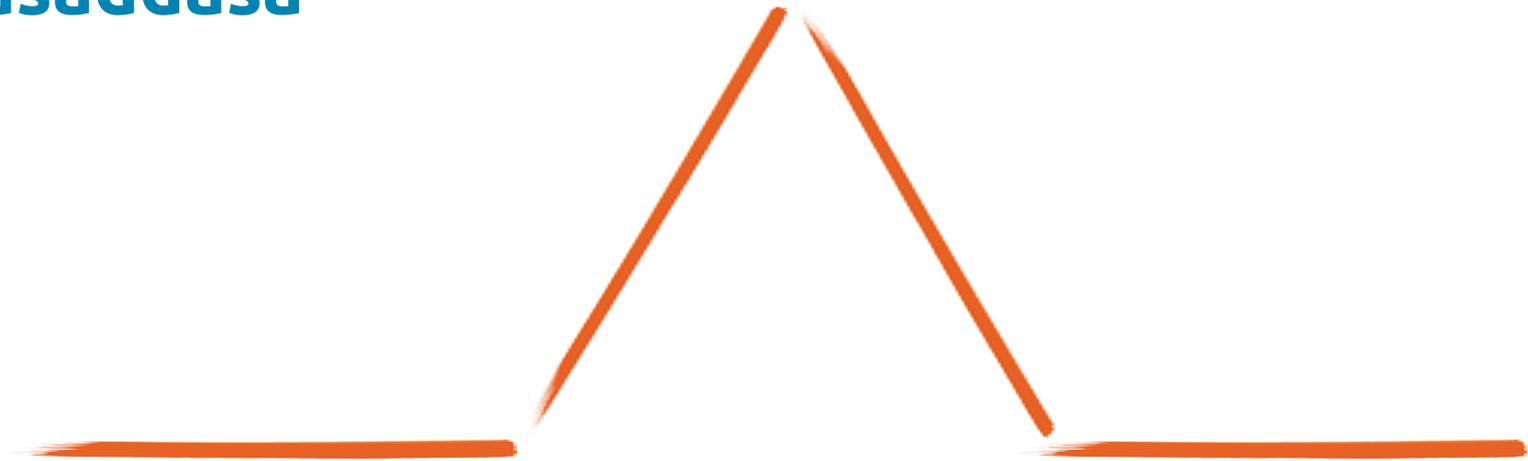


$\log(?)$

**dimensione
frattale**

dimensione frattale curva di von Koch – soluzione

A → asaddasa



A → a

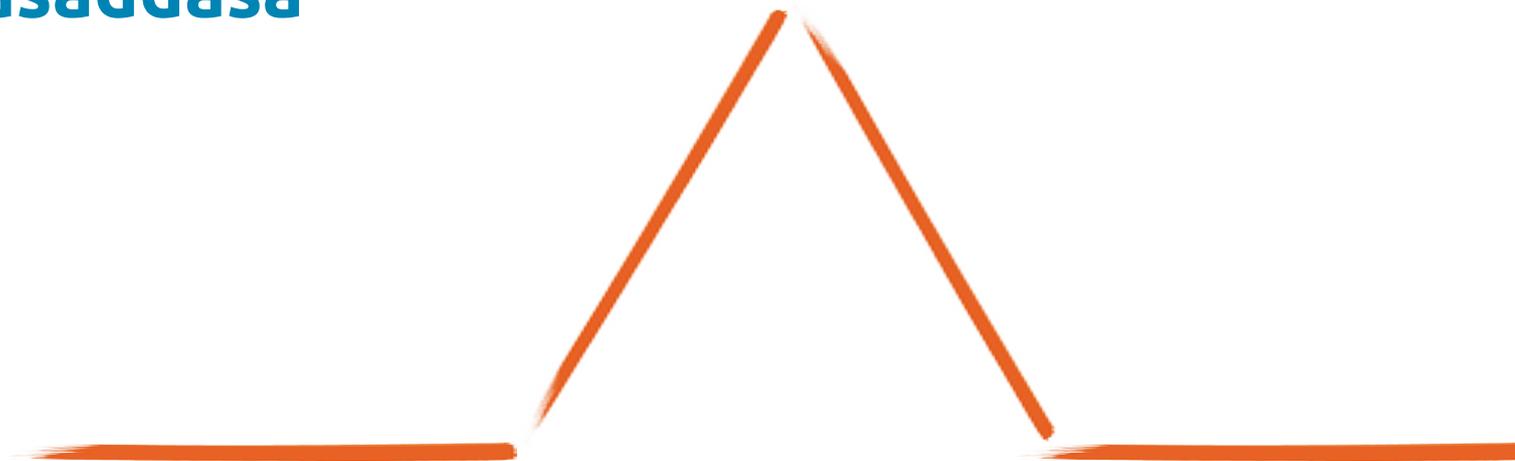


lunghezza = 1

dimensione frattale

curva di von Koch – soluzione

A → **asaddasa**



A → **a**

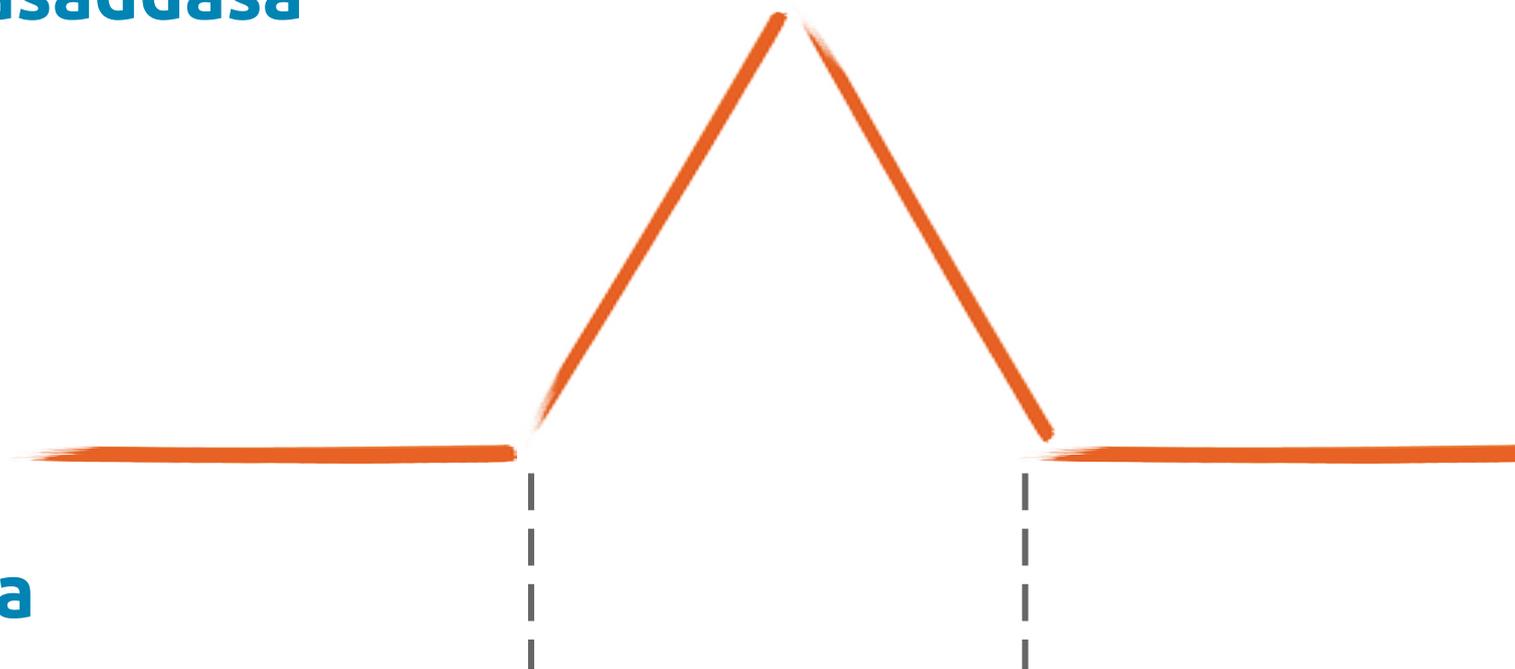


lunghezza = 1

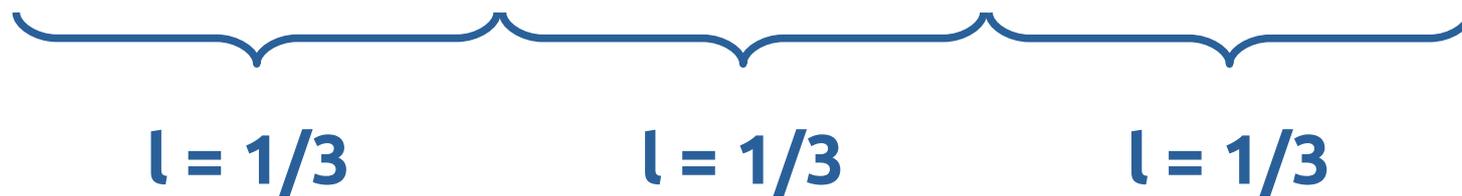
dimensione frattale

curva di von Koch – soluzione

A → asaddasa



A → a



$l = 1/3$

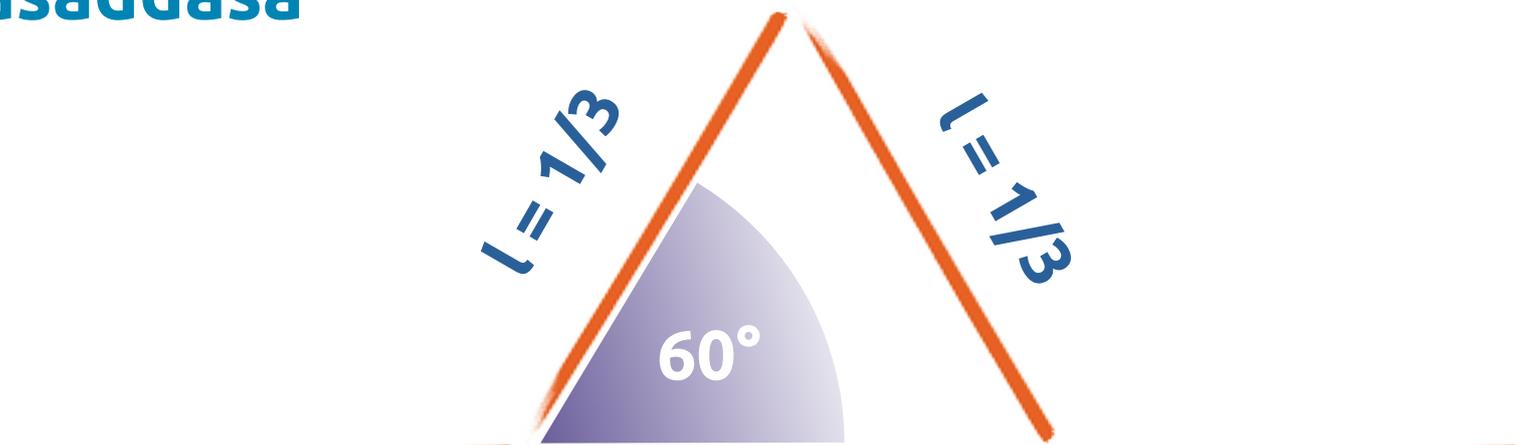
$l = 1/3$

$l = 1/3$

dimensione frattale

curva di von Koch – soluzione

A → **asaddasa**



A → **a**



$l = 1/3$

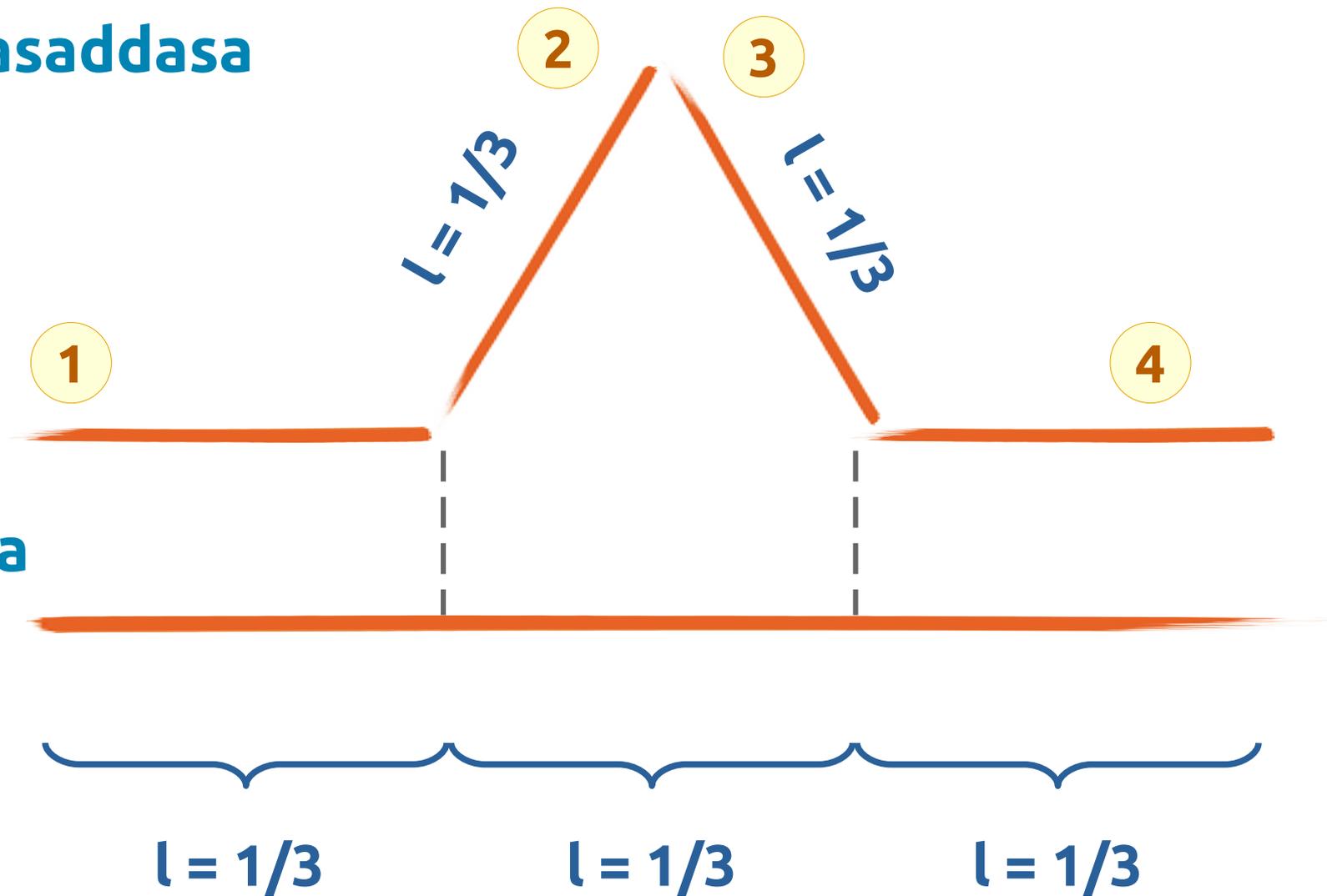
$l = 1/3$

$l = 1/3$

dimensione frattale

curva di von Koch – soluzione

A → asaddasa



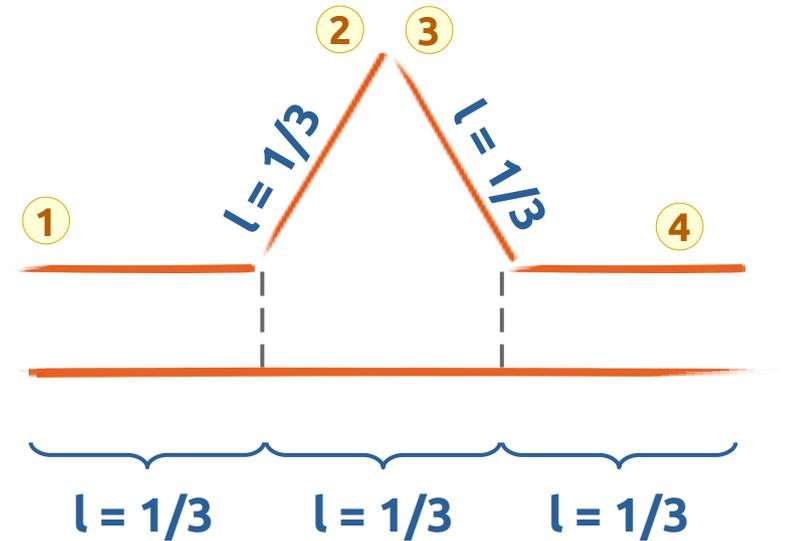
A → a

dimensione frattale

curva di von Koch – soluzione

4 linee, ciascuna lunga $1/3$

→ $4/3$



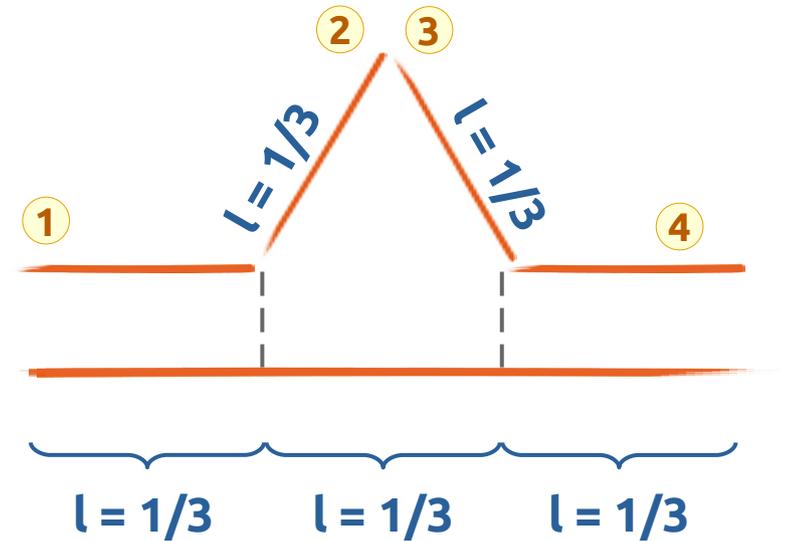
A → asaddasa

dimensione frattale

curva di von Koch – soluzione

4 linee, ciascuna lunga $1/3$

→ $4/3$



A → **asaddasa**

① ② ③ ④

frattali
lunghezza

$S \rightarrow (1) \quad A \rightarrow AsAddAsA$
 $(2) \quad A \rightarrow a$

regole: **2**



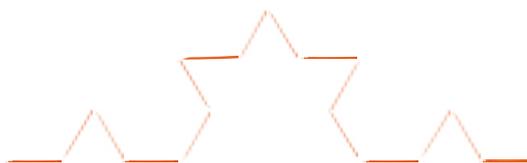
$$l = (4/3)^0$$

regole: **1, 2**



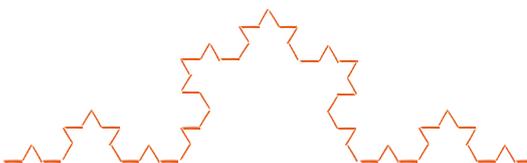
$$l = (4/3)^1$$

regole: **1, 1, 2**



$$l = (4/3)^2$$

regole: **1, 1, 1, 2**



$$l = (4/3)^3$$

frattali

dimensione frattale

$$\begin{aligned} S &\rightarrow (1) \quad A \rightarrow AsAddAsA \\ &\quad (2) \quad A \rightarrow a \end{aligned}$$

$$\Sigma = \{ a, s, d \}_{60^\circ}$$



$4/3$



$\log(4)$



$\log(3)$

dimensione
frattale

Grazie per la vostra pazienza!



Gaetano Impoco – **gaetano @ impoco.it**