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**counting measure**

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Let  $(X, \mathfrak{B})$  be a measurable space. The measure  $\mu$  on  $X$  defined by

$$\mu(A) = \begin{cases} n & \text{if } A \text{ has exactly } n \text{ elements} \\ \infty & \text{otherwise.} \end{cases}$$

for all  $A \in \mathfrak{B}$  is called the *counting measure* on  $X$ . Usually this is applied when  $X$  is countable, e.g.  $\mathbb{N}$  or  $\mathbb{Z}$ .