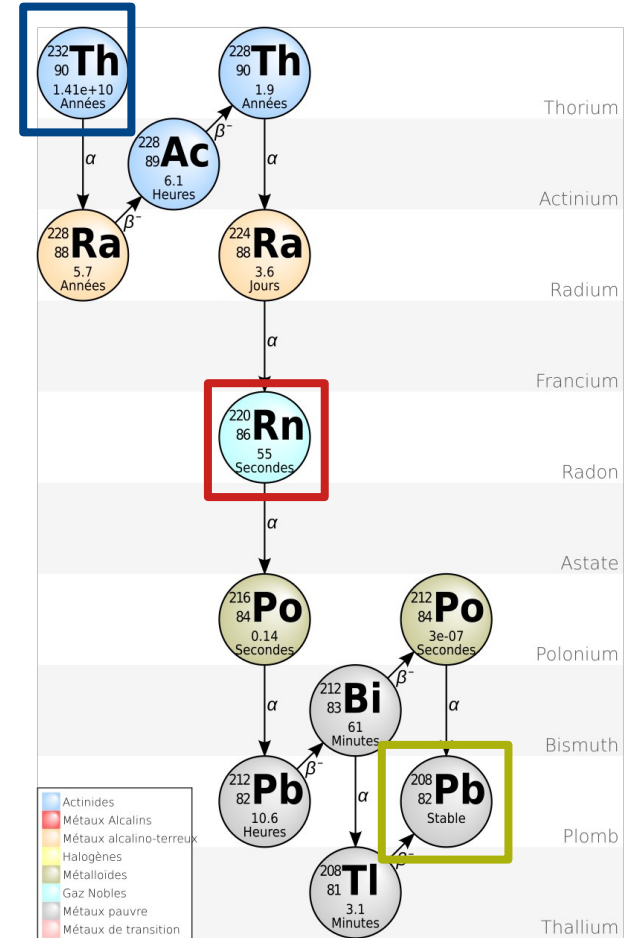


# Mesure expérimentale de la radioactivité du radon 220

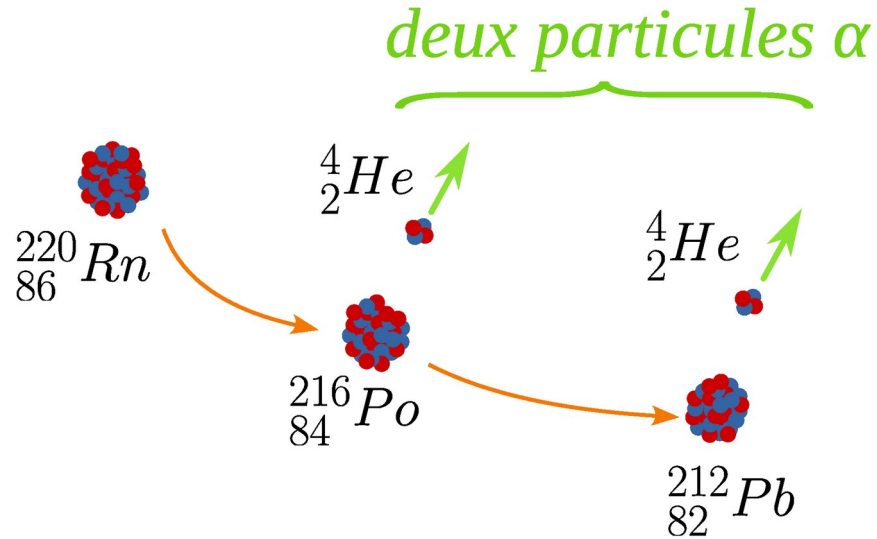
# Le radon 220

- Gaz noble  ${}^{220}_{86}\text{Rn}$
- Descendant du thorium 232
- La chaîne de désintégration se termine par la formation de plomb 208 stable



# Le radon 220

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- On va détecter les deux particules alpha des désintégrations du radon 220 et du polonium 216

# Détection des particules alpha

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La particule alpha peut voyager dans l'air sur une distance d'environ 5 cm en arrachant sur son passage des électrons aux atomes et molécules de l'atmosphère.

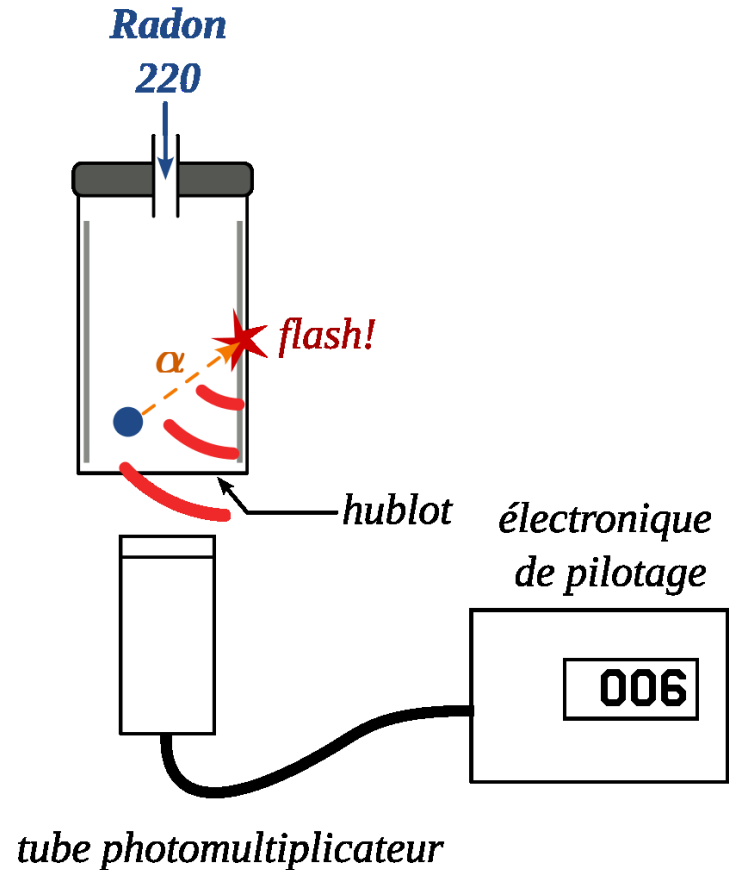
L'énergie de la particule permet ainsi d'arracher environ 100000 électrons.

# Détection des particules alpha

---

Le détecteur est une surface qui émet un petit flash lumineux quand elle est frappée par une particule alpha (sulfure de zinc dopé argent).

Ce flash est mesuré par un détecteur de lumière très sensible.



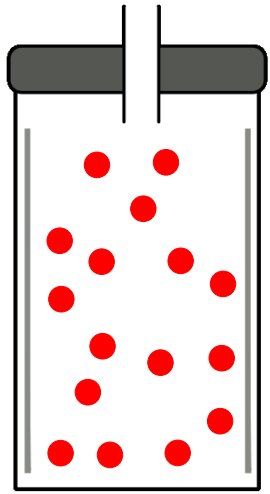
# Expérience en classe

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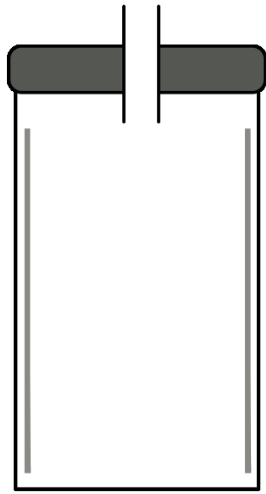
# Évolution de la population de radon 220

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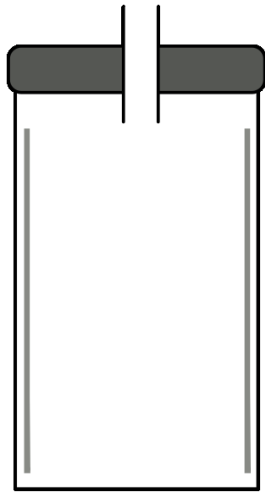
$t = 0.0 \text{ s}$

$N_0 = 16$



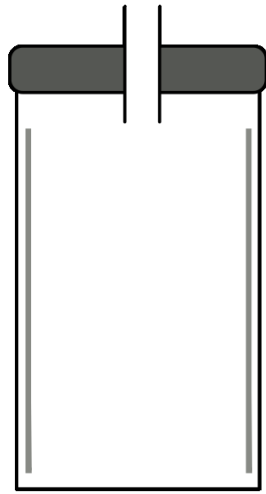
$t = 55.6 \text{ s}$

$N = \dots$



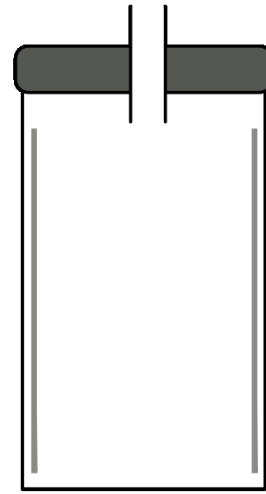
$t = 111.2 \text{ s}$

$N = \dots$



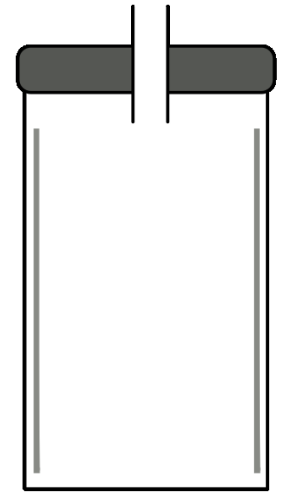
$t = 166.8 \text{ s}$

$N = \dots$



$t = 222.4 \text{ s}$

$N = \dots$

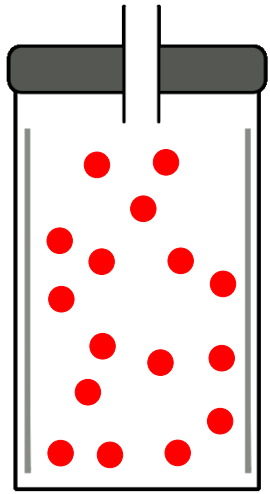


$t = 278 \text{ s}$

$N = \dots$

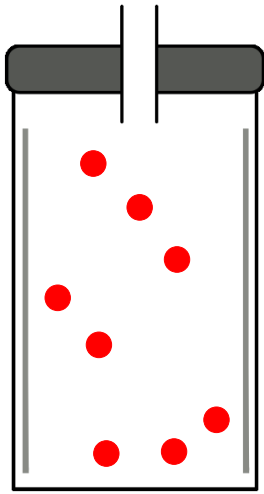
# Évolution de la population de radon 220

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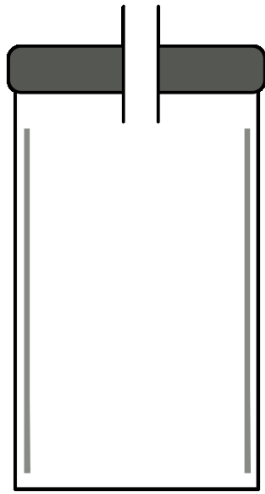
$t = 0.0 \text{ s}$

$N_0 = 16$



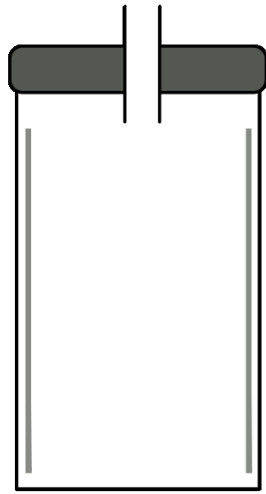
$t = 55.6 \text{ s}$

$N = 8$



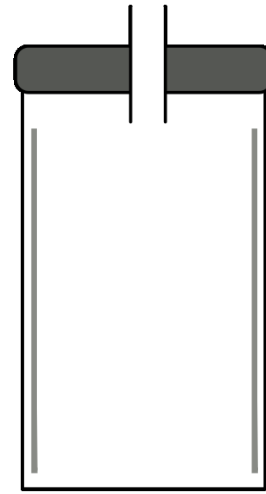
$t = 111.2 \text{ s}$

$N = \dots$



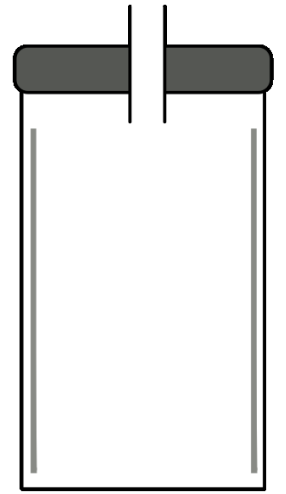
$t = 166.8 \text{ s}$

$N = \dots$



$t = 222.4 \text{ s}$

$N = \dots$

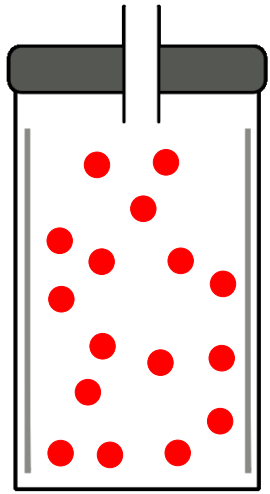


$t = 278 \text{ s}$

$N = \dots$

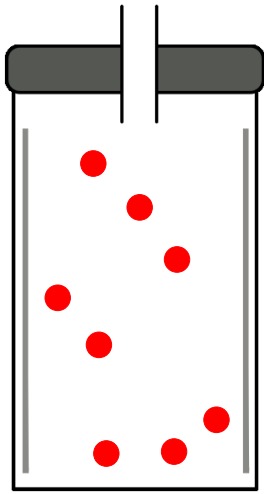
# Évolution de la population de radon 220

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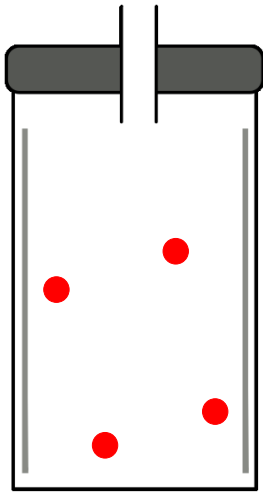
$t = 0.0 \text{ s}$

$N_0 = 16$



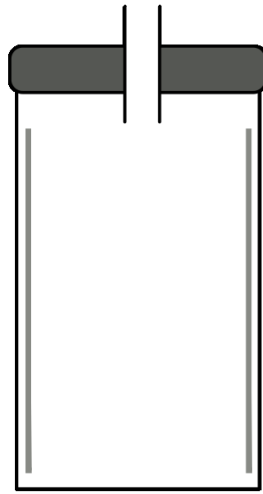
$t = 55.6 \text{ s}$

$N = 8$



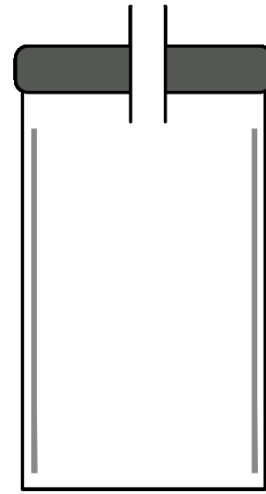
$t = 111.2 \text{ s}$

$N = 4$



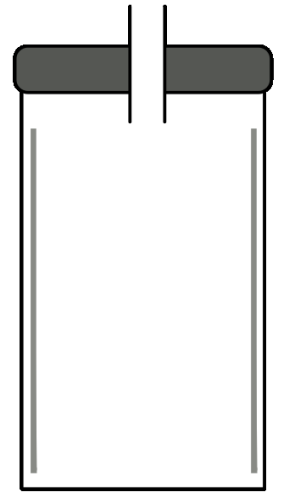
$t = 166.8 \text{ s}$

$N = \dots$



$t = 222.4 \text{ s}$

$N = \dots$

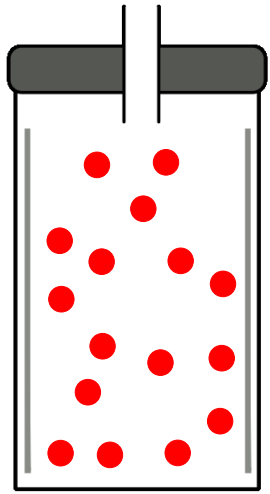


$t = 278 \text{ s}$

$N = \dots$

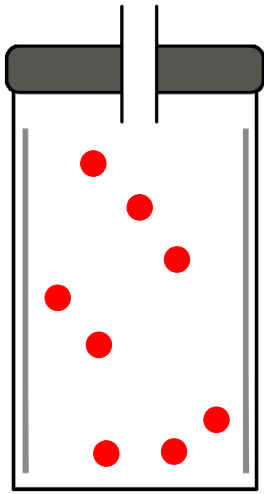
# Évolution de la population de radon 220

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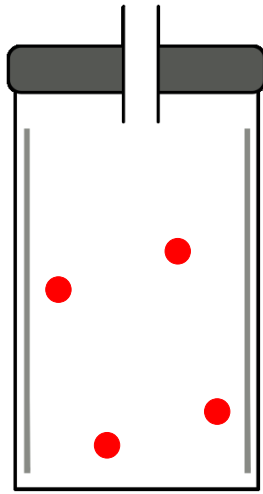
$t = 0.0 \text{ s}$

$N_0 = 16$



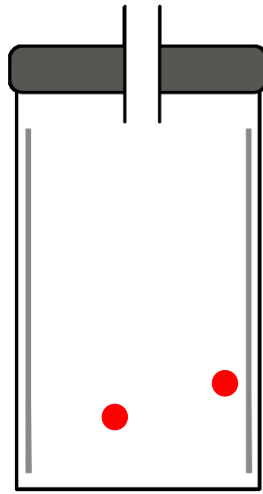
$t = 55.6 \text{ s}$

$N = 8$



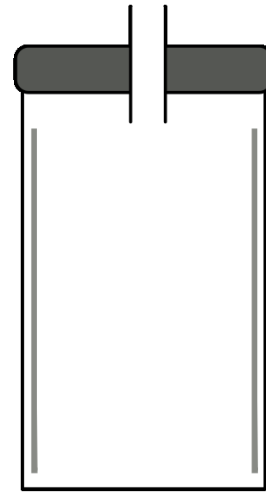
$t = 111.2 \text{ s}$

$N = 4$



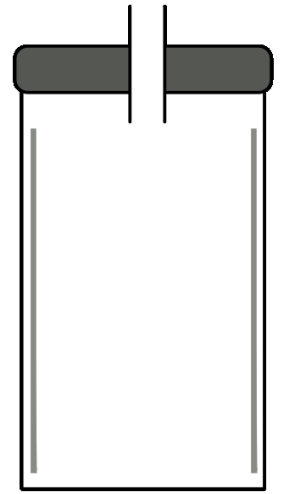
$t = 166.8 \text{ s}$

$N = 2$



$t = 222.4 \text{ s}$

$N = \dots$

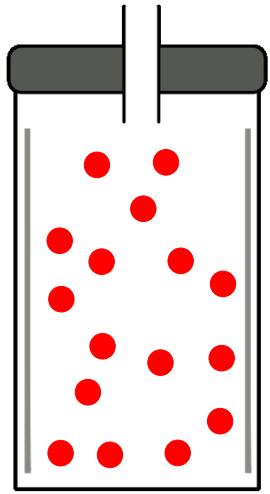


$t = 278 \text{ s}$

$N = \dots$

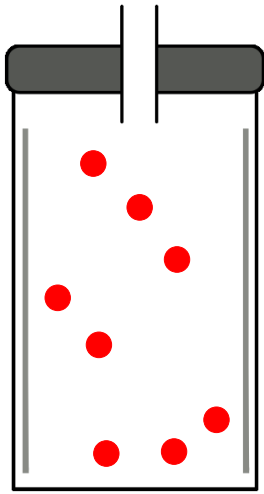
# Évolution de la population de radon 220

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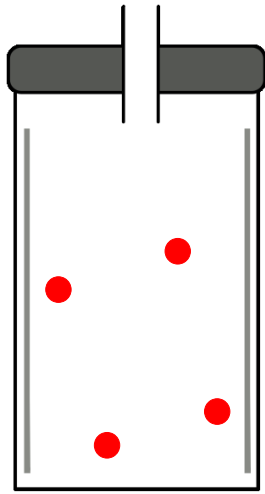
$t = 0.0 \text{ s}$

$N_0 = 16$



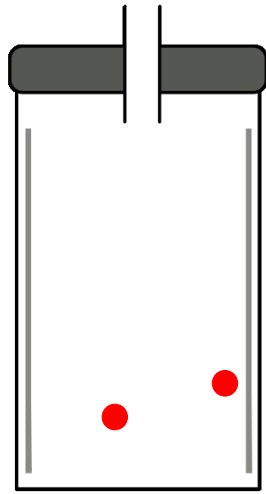
$t = 55.6 \text{ s}$

$N = \underline{8}$



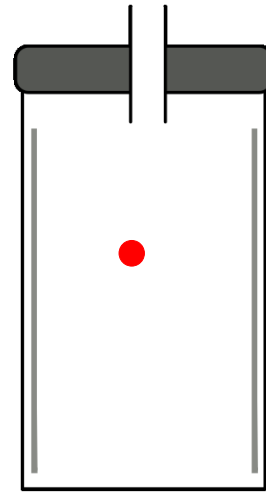
$t = 111.2 \text{ s}$

$N = \underline{4}$



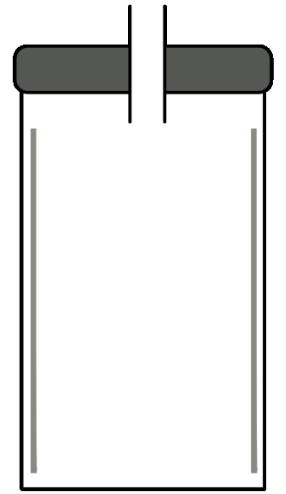
$t = 166.8 \text{ s}$

$N = \underline{2}$



$t = 222.4 \text{ s}$

$N = \underline{1}$

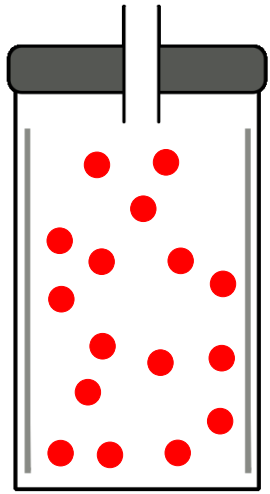


$t = 278 \text{ s}$

$N = \dots$

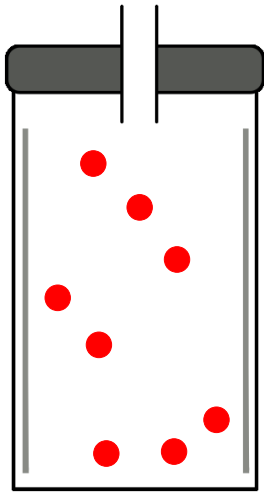
# Évolution de la population de radon 220

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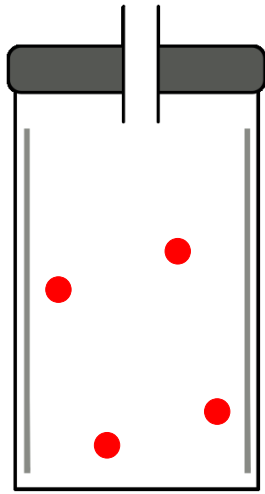
$t = 0.0 \text{ s}$

$N_0 = 16$



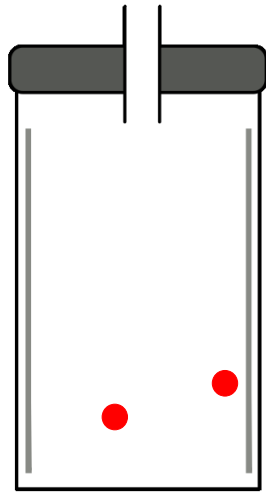
$t = 55.6 \text{ s}$

$N = 8$



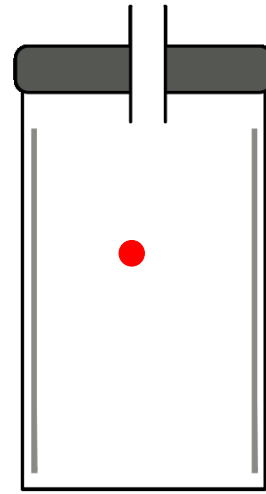
$t = 111.2 \text{ s}$

$N = 4$



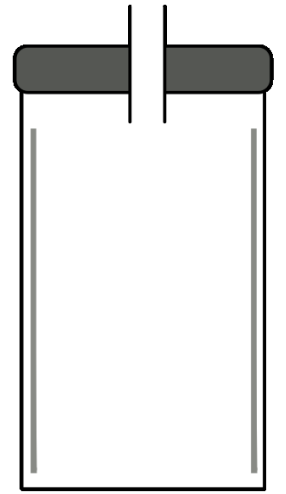
$t = 166.8 \text{ s}$

$N = 2$



$t = 222.4 \text{ s}$

$N = 1$

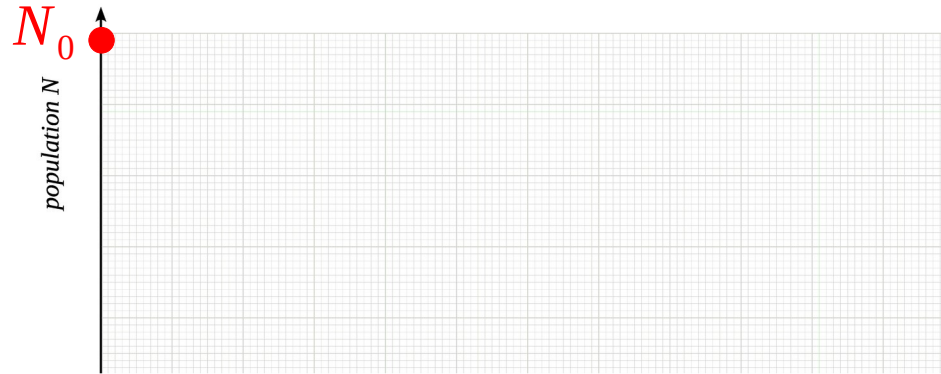


$t = 278 \text{ s}$

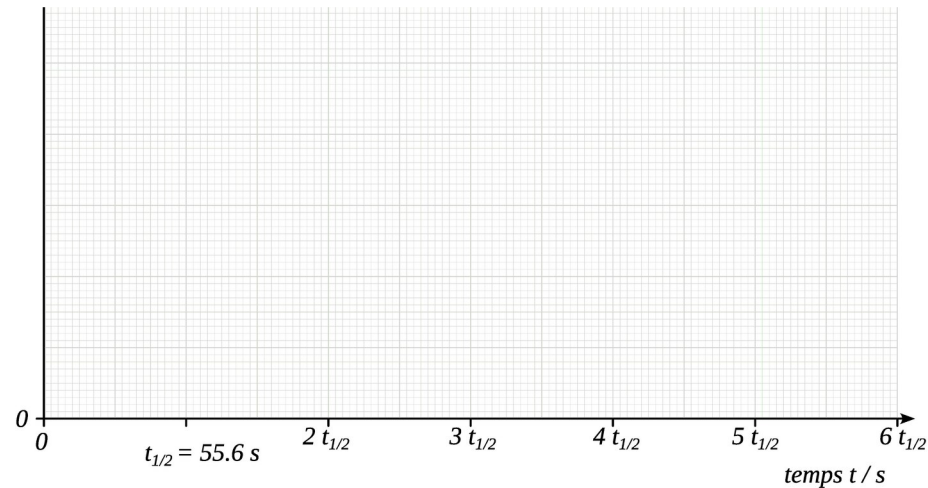
$N = 0$

# Graphe de l'évolution de la population de radon 220

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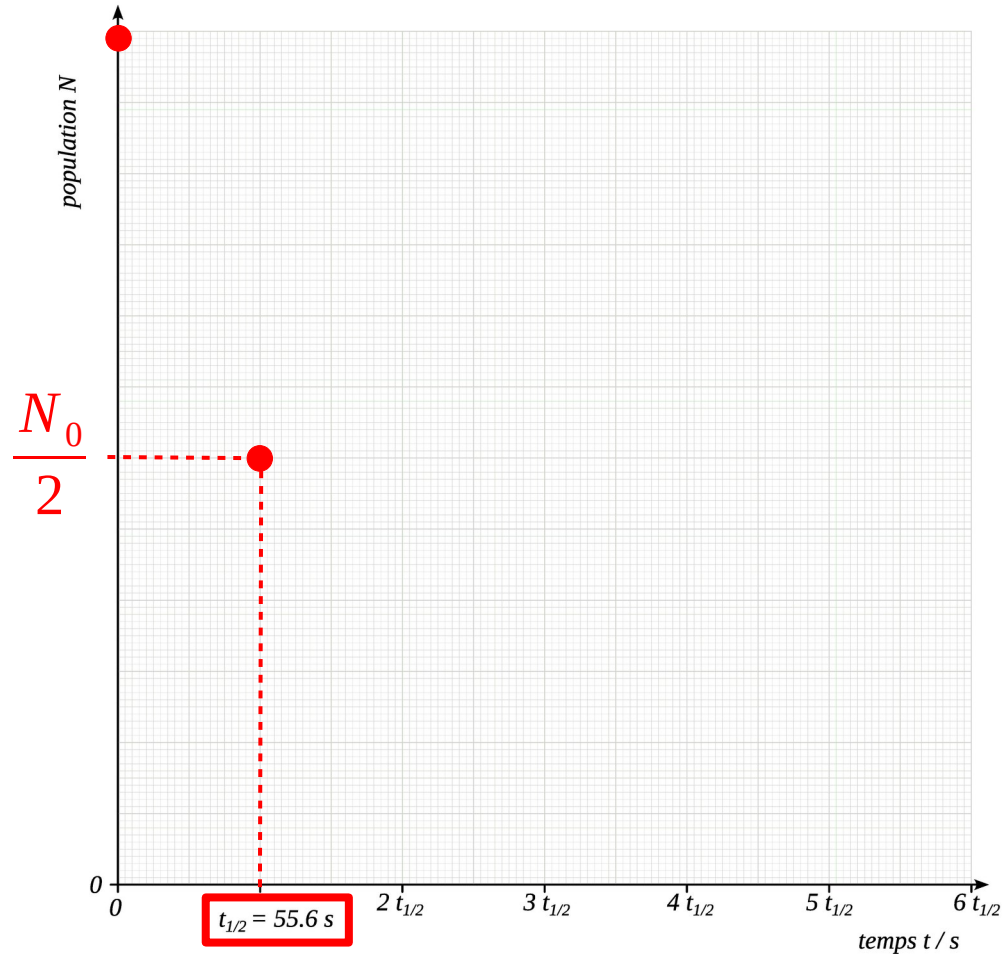


*Au bout d'une demie vie  $t_{1/2}$ , la population est divisée par 2*



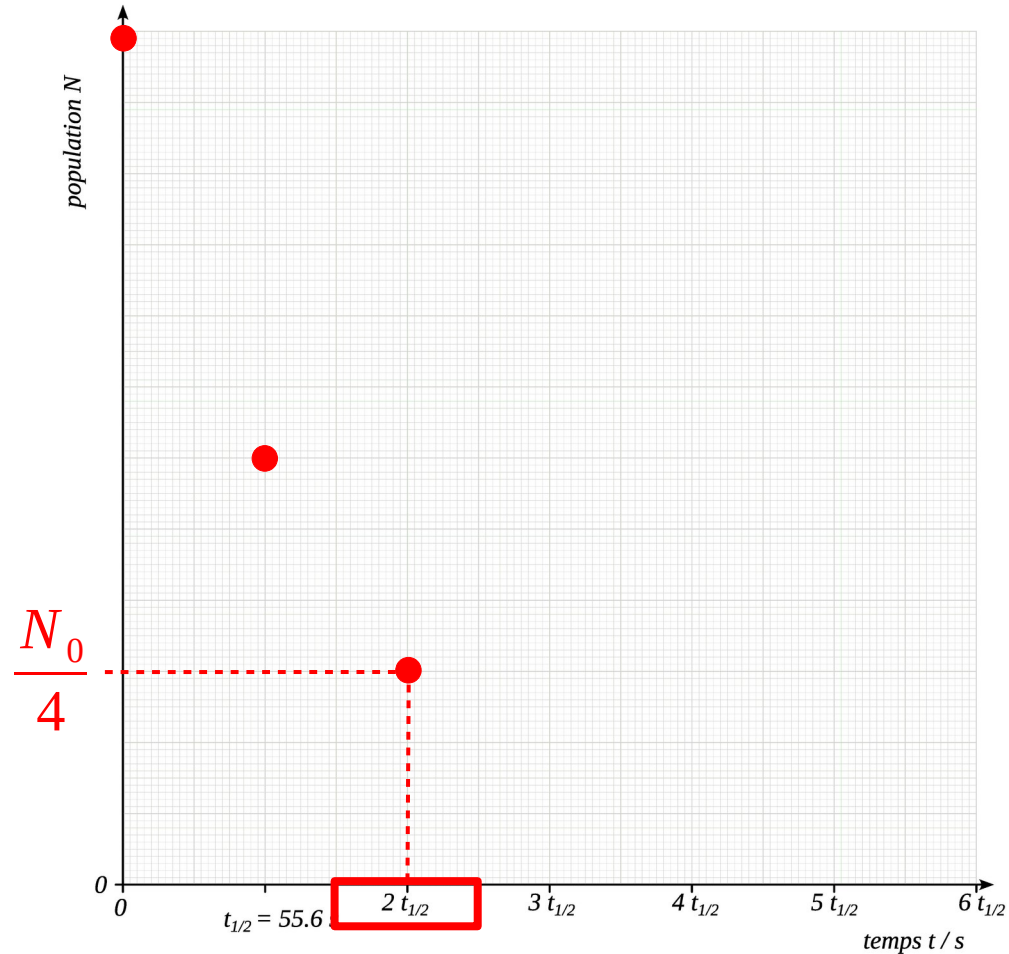
# Graphe de l'évolution de la population de radon 220

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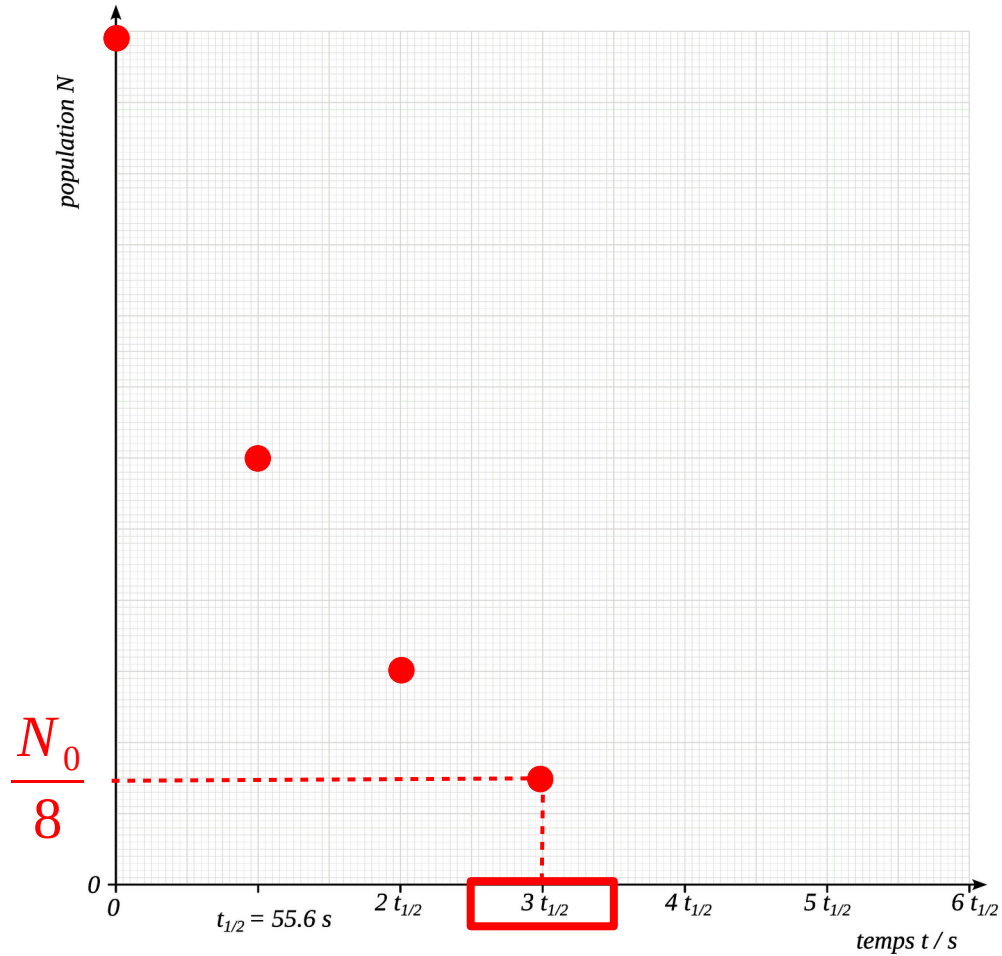


# Graphe de l'évolution de la population de radon 220

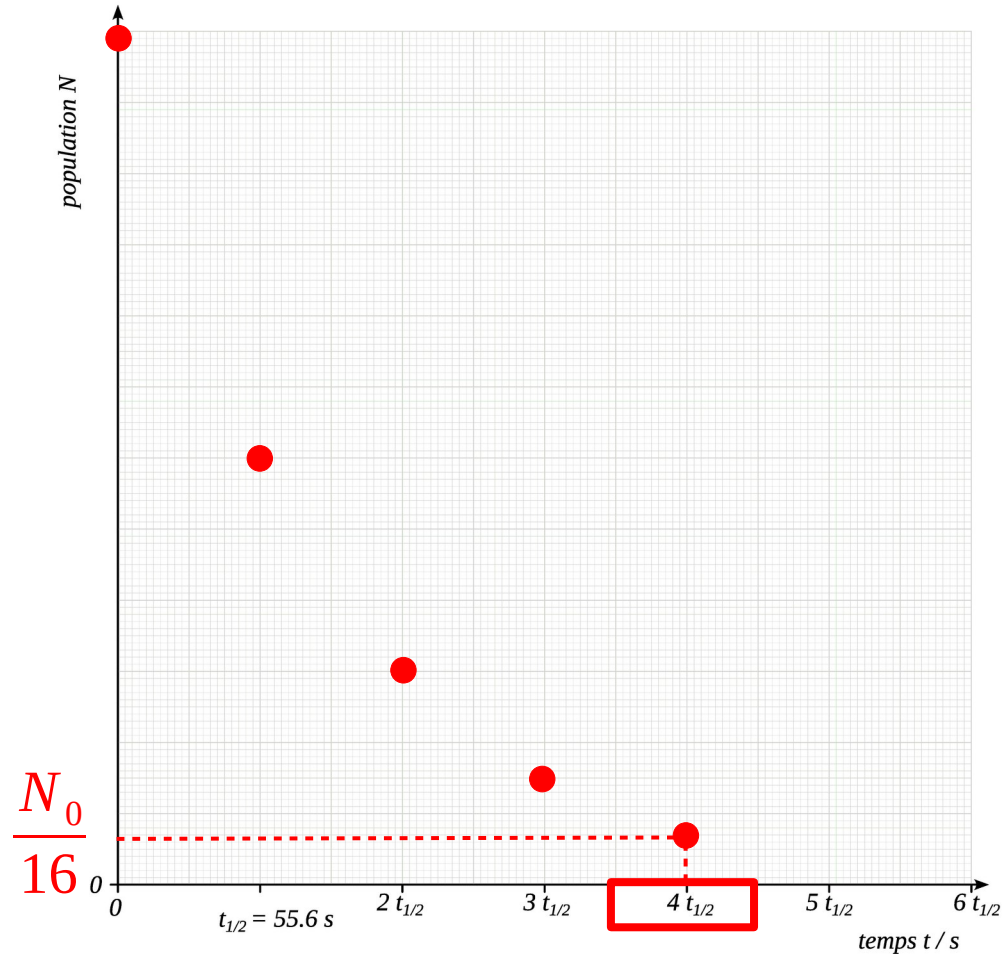
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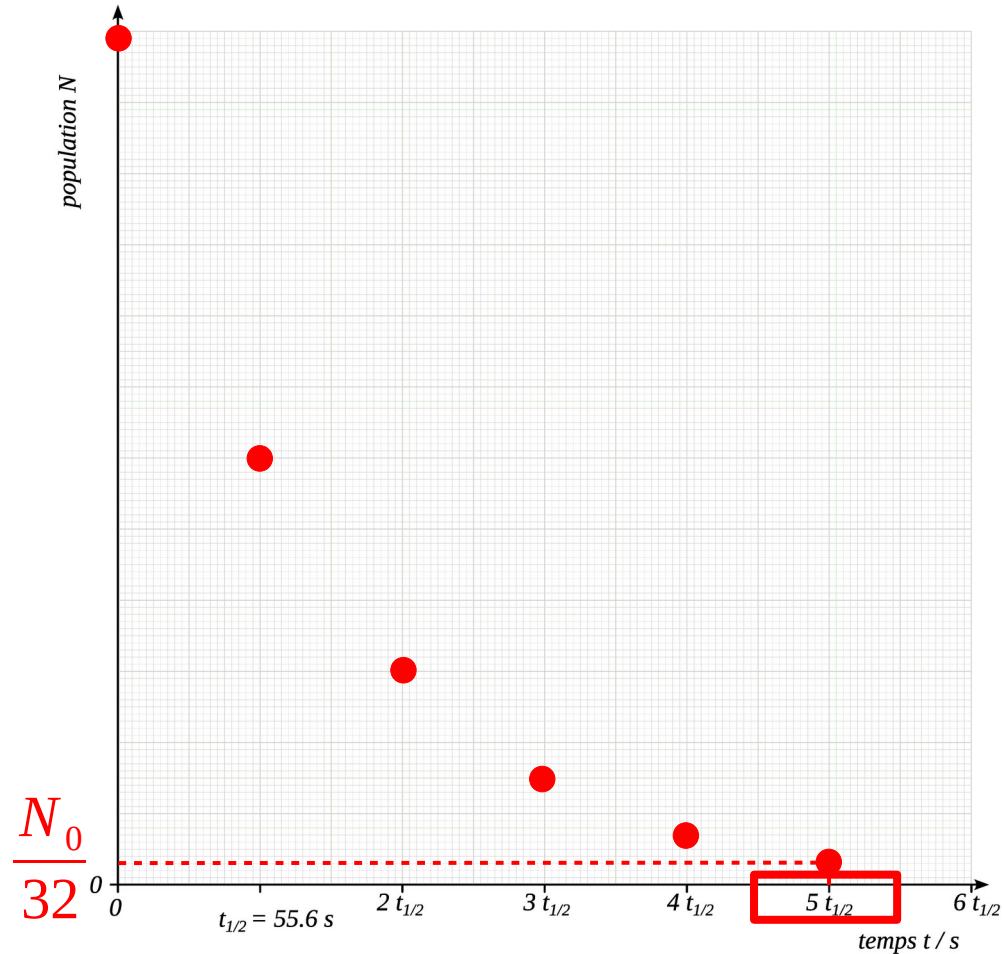
# Graphe de l'évolution de la population de radon 220



# Graphe de l'évolution de la population de radon 220



# Graphe de l'évolution de la population de radon 220



# Graphe de l'évolution de la population de radon 220

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