***El objetivo principal de esta experiencia es la determinación de la constante elástica de un muelle a partir del estudio de las oscilaciones de una masa colgada del mismo.***

Cuando se cuelga una masa de un muelle, esta oscilará con movimiento armónico simple debido a la presencia de una fuerza recuperadora (F = k x, donde ) que actúa siempre en sentido contrario al desplazamiento respecto de la posición de equilibrio:



(1)

1. Abre el laboratorio virtual**:** [**https://phet.colorado.edu/es/simulation/masses-and-springs**](https://phet.colorado.edu/es/simulation/masses-and-springs)
2. Carga el muelle con 50 g, 100 g y 250 g, ponlo a oscilar y, con el cronómetro, determina el tiempo que tarda en dar 5 oscilaciones. Repite la medida cinco veces para cada masa y completa la tabla.

***5 oscilaciones***

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| |  |  | | --- | --- | | **m (g)** | **t (s)** | | **50** |  | |  | |  | |  | |  | | **Media** |  | | **T (s)** |  | | **T2(s2)** |  | | |  |  | | --- | --- | | **m (g)** | **t (s)** | | **100** |  | |  | |  | |  | |  | | **Media** |  | | **T (s)** |  | | **T2(s2)** |  | | |  |  | | --- | --- | | **m (g)** | **t (s)** | | **250** |  | |  | |  | |  | |  | | **Media** |  | | **T (s)** |  | | **T2(s2)** |  | |

1. Para determinar la constante del muelle puedes hacerlo:
2. ***De*** ***forma gráfica***, teniendo en cuenta que la representación de ***T2*** frente a ***m*** deberá de dar una recta de pendiente



1. ***Analíticamente,*** Utilizando la expresión:

Calcula k para los tres valores de T y m de la tabla y considera el verdadero valor de k como el valor medio de los obtenidos.

* Gráfica de ***T2*** frente a ***m***

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* A la vista de los resultados obtenidos ***extrae conclusiones.***
* ***Prepara un informe*** con los datos obtenidos y las conclusiones extraídas.