

Conceptual questions:

1. State the definition of Spring Constant.
2. There are two small identical springs, except that one is made out of iron, and the second out of aluminum. Which would you use in the mechanism of a pen? Why?
3. What are some uses of springs in your day-to-day?
4. If you cut a spring in half, do you increase or decrease the spring's constant?
5. State Hooke's law.
6. Why is there a negative sign on Hooke's law?

I can select the correct springs for each purpose

Connect the springs to the uses

Thick copper spring	Clicker of a pen
Thin tin spring	Bed springs
Thick steel spring	Car suspension system
Medium thickness iron spring	Windshield wipers

Exercises

7. You get a job with the Acme spring company, calibrating the springs for scales for the supermarket. You test one spring by hanging a 5 kg mass on the end and it stretches from 30 cm long to 45 cm long. What is the spring constant for that spring?
- 8.
9. The staples in a stapler are pulled into position by a spring with a spring constant of 50 N/m. When the stapler is open, the spring is 8 cm long and relaxed. When you close the stapler, the spring stretches to 15 cm long. How much force does it exert on the staples?

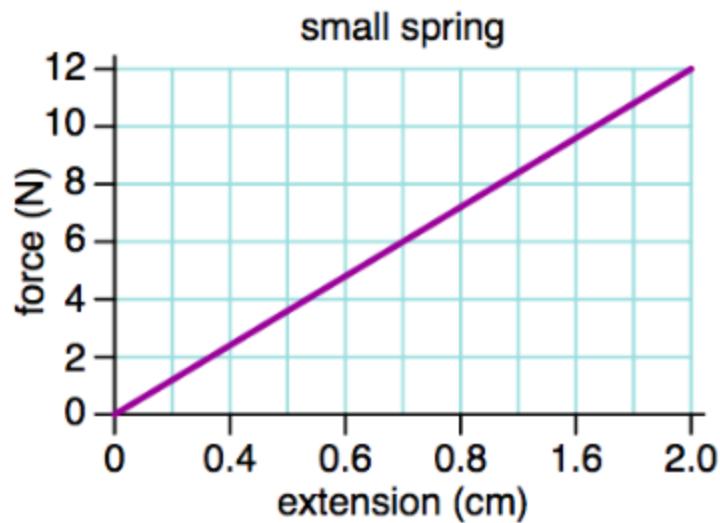
10. In a dart gun, the spring that launches the dart has a spring constant of 2400 N/m and a normal length of 5 cm. When you push the dart into the gun, it squeezes the spring until it is 3.5 cm long. How much force does the spring exert on the dart?

11. Two springs are attached to the ceiling. The first has a spring constant of 150 N/m, and the second one a spring constant of 450N/m. If masses equal to 25kg are attached to both springs, and originally they had the same length, find the height difference between the masses after the springs are in equilibrium.

12. Your car is suspended from springs to make the ride softer. If the springs stretch from 20 cm long to 10 cm long when the full weight of your 1000 kg car rests on them, what is the spring constant of the springs?

12. A spring is attached to the ceiling, it is 20cm long. A 2kg mass is attached to it and it stretches by 5cm. After that another mass equal to 5kg is attached to it, to a total of 7kg. Find the new length of the spring.

13. The graph below shows the applied force vs. the extension for a particular spring.
a. Find the spring constant.



I can use Hooke's law to calculate the spring constant or the force exerted by a spring