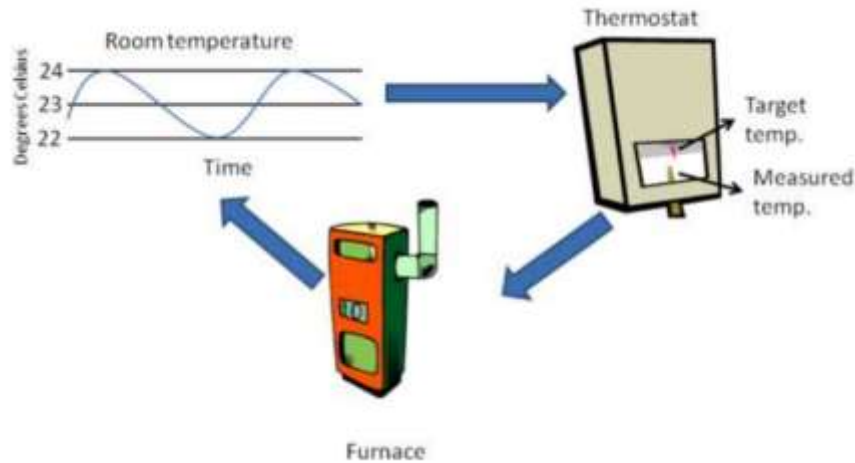


Homeostasis

Model 1. This model shows a heating system for maintaining home temperature in cold weather. Most people consider a value around 23 degrees Celsius to be comfortable.



Refer to Model 1 for the following questions:

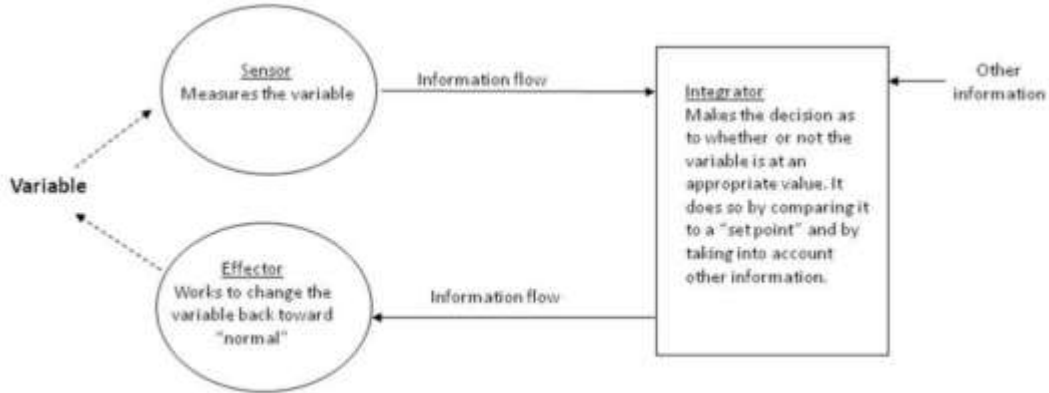
1. What is the temperature range within the house over the time period shown?
2. What two values are used by the thermostat in its functioning?
3. At what temperature does the furnace turn on? At what temperature does it turn off?
4. In this scenario, what is the most likely value of the target temperature? Explain your reasoning.
5. The overall system used to control temperature in the house is an example of negative feedback system. Using a grammatically correct sentence, write your best definition for a negative feedback system.
6. In the summer how could this loop be modified (setting or components) to keep the house around the same target temperature?

Model 2: Negative Feedback Loop

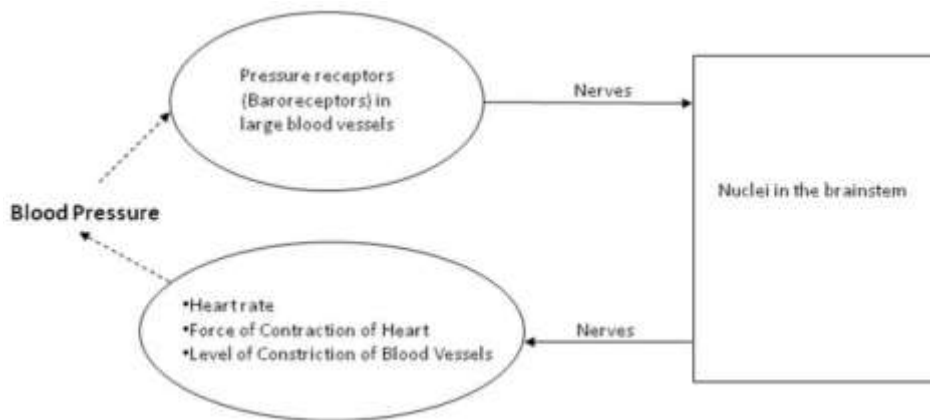
Homeostasis is an important ability associated with living organisms. It is typically carried out through a process using a negative feedback loop, similar to the loop that controls the temperature in a house.

Model 2A shows the generic components of the loop and Model 2B shows an example loop important in maintaining blood pressure.

MODEL 2A: General Homeostatic Feedback Loop



MODEL 2B: Homeostatic Feedback Loop for the Regulation of Blood Pressure



Refer to Models 1 and 2 for the following questions:

7. List the 3 components that you would expect to find in any feedback loop (2A). Refer to model 1 and indicate which item from model 1 represents each component.

Components of a feedback loop	Items from Model 1 that are representative of the component	Items from Model 2B that represents the component

Extension Questions

14. Based on your current knowledge, draw a feedback loop for the control of temperature in the body. Be as specific as possible with the structure involved. (Hint: think about the 3 components required and what those would be in the human body).

15. How would a fever change this feedback loop and how would the body respond?