When comparing:
- Systematic

Terms to use:
Instead of cold blooded: ectothermic
- maintain their body temperatures by using external surroundings, temperature still fluctuate
Instead of warm blooded: endothermic
- able to maintain **thermal equilibrium** and body temperatures do not fluctuate

Physiological
- perspiring to bring down body temperature
- snakes darken themselves to absorb more heat. Middle of day: lighten themselves
- mainly endothermic organisms

Behavioural:
- using a fan, taking a shower
- mainly ectothermic organisms

if you are endothermic organism, you remain active and can survive better than one that hibernates because you can be alert

<u>Cell Membrane</u>
cool stuff

<u>Facilitated diffusion</u>
Uses carrier protein and channel protein\

Channel proteins provide open channels for molecules to move in from high concentration to low concentration
Carrier proteins recognise certain particles, changes its shape, binds to it, brings substance into cell

<u>Active processes</u>
Active transport
- Endocytosis
- Exocytosis (releasing substances into environment)
- Pinocytosis (for small amounts of liquid, so very small vesicles. “drinking”)
- Phagocytosis (pseudopodia in white blood cell)
- Needs energy because its carrying substances against concentration gradient, from low to high

Feedback loop
- Negative feedback
    - Examples
        - Rate of breathing
        - Body temperature (Thermoregulation)
        - Amount of water in the body (Osmoregulation)

                - Too much water, RBC will expand and may burst
                - Too little water, RBC will shrivel up and crenate.
                - Control centre: hypothalamus
                - Secretes ADH (anti diuretic hormone) which sends signals to kidneys to absorb more water back into blood stream to increase water potential (hot weather) OR release more water and release less into blood stream (cold weather)
            - Glucose concentration in blood
                - Pancreas produces different hormones: insulin (reduce sugar in blood) or glucagon (increase sugar in blood)
                - Insulin converts glucose into glycogen to be stored in muscles (inability to produce insulin results in diabetes)
                - Glucagon converts glycogen in muscles to glucose for respiration
            - Menstrual cycle (Hormonal control)
- Positive feedback
    - Enhancement or amplification of input
        - eg.
            - Oxytocin for giving birth
            - Histamine for rashes (more you scratch, the more released due to damaged cells which makes it swell and itchy). Histamine makes the area swell to dilute the toxins
            - Blood clotting (platelets and adhere onto site and release chemicals to attract more platelets
            - Forms thread like substances to stop RBC from flowing out and bacteria from coming in.

Homeostatic control system consists of

- Detector or receptor
- Control centre
- Effector