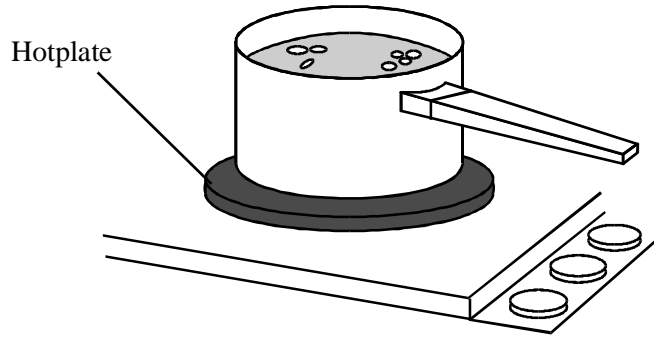


The drawing shows water being heated in a metal saucepan.



- (a) Explain, in terms of the particles in the metal, how heat energy is transferred through the base of the saucepan.

.....
.....
.....
.....

(2)

- (b) Energy is transferred through the water by convection currents. Explain what happens to cause a convection current in the water. The answer has been started for you.

As heat energy is transferred through the saucepan, the water particles at the bottom

.....
.....
.....
.....
.....
.....

(3)

- (a) ions / electrons gain (kinetic) energy 1
accept atom / particles / molecules for ion
accept ions vibrate faster
accept ions vibrate with a bigger amplitude
accept ions vibrate more
do not accept ions move faster
- (free) electrons transfer energy by collision with ions
or
energy transferred by collisions between vibrating ions 1
- (b) move faster or take up more space 1
*do **not** accept start to move / vibrate*
- (warmer) water expands **or** becomes less
dense (than cooler water) 1
*do **not** accept answers in terms of particles*
expanding
- warm water rises (through colder water)
or colder water falls to take its place 1
- (c) transfer of energy by waves / infrared (radiation) 1
accept rays for waves
*do **not** accept transfer of energy by electromagnetic*
waves
ignore reference to heat