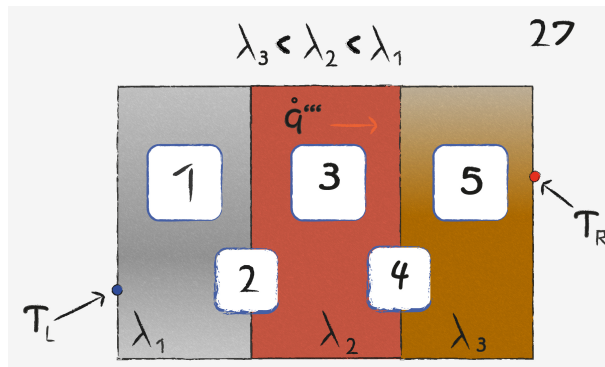


# Heat Conduction: Task 27



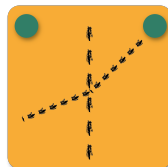
The image describes a rectangular body with three different heat conductivities and homogeneous heat production in the middle part with heat flowing from left to right. The temperature on the right side is higher than on the left side.

1



According to Fourier's law. At constant area and heat conductivity the temperature gradient decreases linearly from right to left.

2



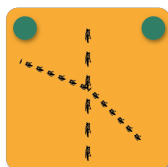
$\lambda_2$  is smaller than  $\lambda_1$  which means the Temperature gradient in 2 is steeper than in 1.

3



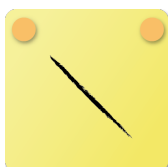
Due to the heat production and the heat flow from the right side, there must be a maximum in the 2nd area and because the thermal resistance of 1st area is smaller than that of the 3rd area (  $\lambda_1$  is larger than  $\lambda_3$ ) so the heat flow in the direction of area 1 is larger and therefore the temperature gradient is steeper to the left side

4



$\lambda_3$  is smaller than  $\lambda_2$  which means the Temperature gradient in 3 is steeper than in 2.

5



According to Fourier's law. At constant area and heat conductivity the temperature gradient decreases linearly from left to right (heat flows from left to right as shown in the image).