

When we work equivalent resistance problems, we usually start analysis at the side of the circuit opposite the terminals.

We can identify that the $2\text{k}\Omega$, $6\text{k}\Omega$, and $3\text{k}\Omega$ resistors are in parallel since they all share the same pair of nodes. We know that the equivalent conductance of resistors connected in parallel is the sum of their individual conductances. We are interested in the resistance, so we can take the reciprocal of the equivalent conductance to find equivalent resistance. That gives us $2\text{k}\Omega$.

Similarly, the three $6\text{k}\Omega$ resistors are in parallel connection since they have the same voltage across their terminals. Note that the resistance of the equivalent resistor is always smaller than the resistance of the smallest resistor in the parallel connection. The three resistances in parallel can be reduced to an equivalent resistance by dividing the resistance of a single resistor by three. That gives $2\text{k}\Omega$. You can check that this method works by combining them as parallel resistors are traditionally combined.

So far the circuit has been reduced to four resistors. We can see that the four resistors are in series since they share the same current. The series resistances add together, so the circuit can be replaced by the single $14\text{k}\Omega$ resistor.