## 1. Problem

What is the distance between the two points $p=(2,4)$ and $q=(5,4)$ in a Cartesian coordinate system?

## Solution

The distance $d$ of $p$ and $q$ is given by $d^{2}=\left(p_{1}-q_{1}\right)^{2}+\left(p_{2}-q_{2}\right)^{2}$ (Pythagorean formula).
Hence $d=\sqrt{\left(p_{1}-q_{1}\right)^{2}+\left(p_{2}-q_{2}\right)^{2}}=\sqrt{(2-5)^{2}+(4-4)^{2}}=3$.


