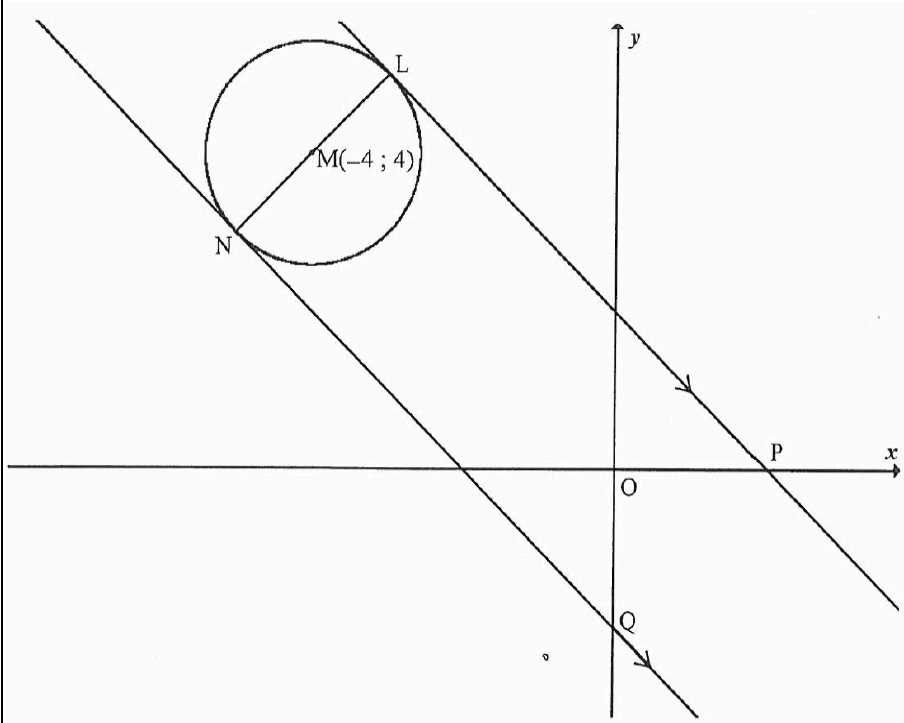


COIN IN SLOT



The line LP with equation $y + x - 2 = 0$ is a tangent at L to the circle with centre M(-4, 4). LN is a diameter of the circle. LP is parallel to NQ where P is on the x-axis and Q is on the y-axis.

Find:

- the equation of the line LN;
- the coordinates of L;
- the equation of the circle;
- the coordinates of N;
- the equation of NQ.
- The length of the diameter is doubled and the circle is translated 6 units to the right. Find the equation of the new circle?

Help

It may help you to realise that each part of the answer is a stepping stone to the next part.

Extension

Reflect the diagram in the x-axis. Then answer the corresponding questions for your new diagram.