**8.**

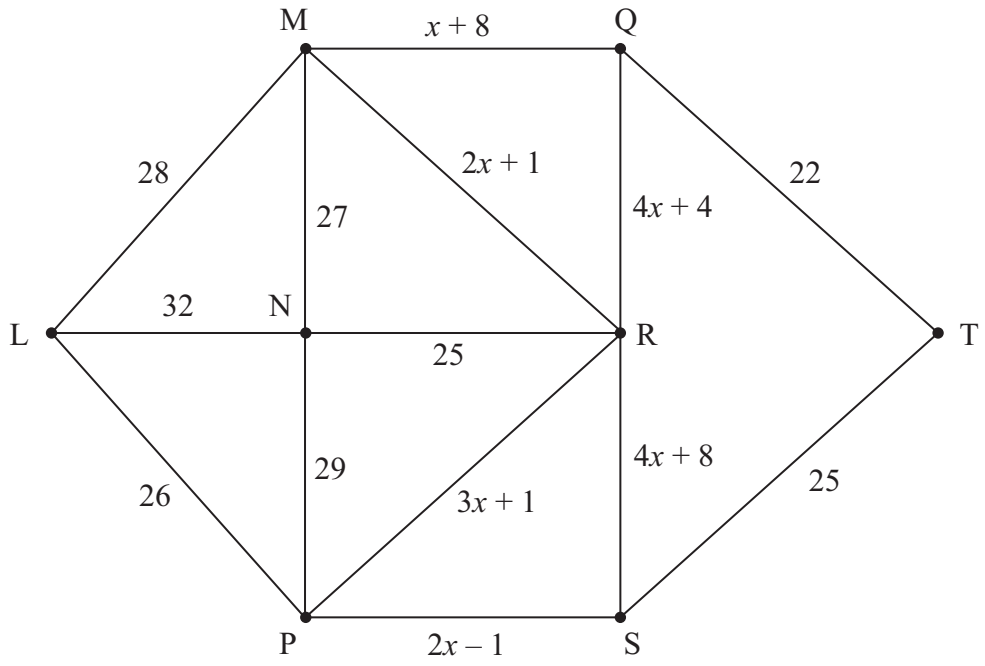



**Figure 4**

[*The total length of the network is 16x + 235*]

Figure 4 shows a network of cables between eight computer stations, L, M, N, P, Q, R, S and T. The number on each arc is the distance, in metres, between the corresponding nodes, where $x$ is an unknown value less than 12

(a) State whether LMNPRST is an example of a path, giving reasons for your answer.

**(2)**

An engineer must check every cable for damage. She must find a route of minimum length, which travels along every cable at least once, **starting** at **L** and **finishing** at **T**.

Given that each of the two possible routes repeats exactly 3 arcs,

(b) determine the range of possible values of $x$

**(5)**

Given that the two possible routes have the same length,

(c) calculate the length of the route, justifying your answer.

**(3)**

**(Total for Question 8 is 10 marks)**

**TOTAL FOR PAPER IS 75 MARKS**