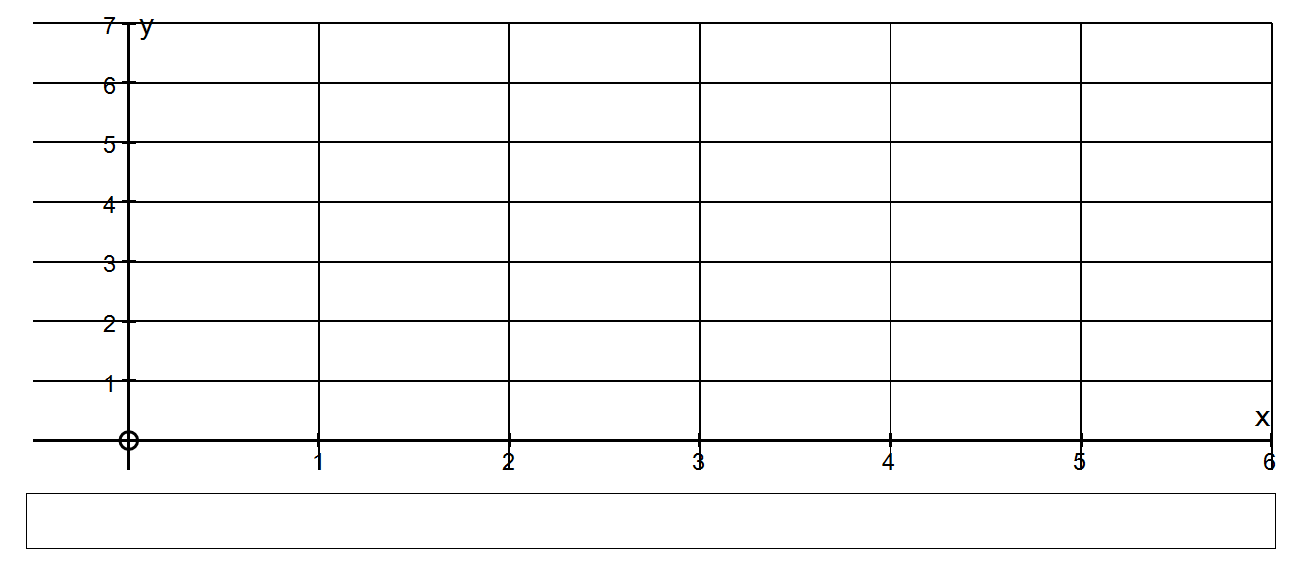
**STEP GRAPHS (teacher notes)**

Suppose the cost of a taxi consists of a flat fee of $3 followed by a $1 fee for every km travelled.

|  |  |
| --- | --- |
| *x = Number of km* | *y = Cost* |
| *0* | *3* |
| *1* | *4* |
| *2* | *5* |
| *3* | *6* |

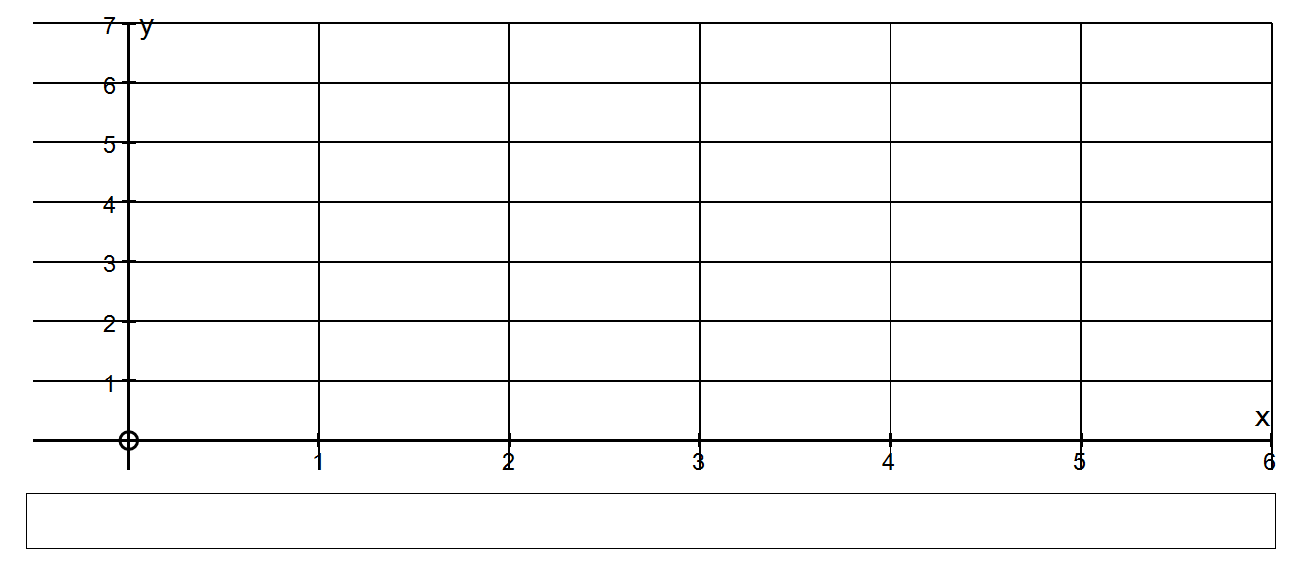
We would probably expect that this graph shows this information:



But the cost does not increase smoothly with a gradient of 1.

The cost of a ride up to but not including 1 km = $3

The cost SUDDENLY jumps to $4 at 1 km and stays there until the 2 km mark is reached.



The general convention is that a FULL CIRCLE includes the point and

an OPEN CIRCLE excludes the point.

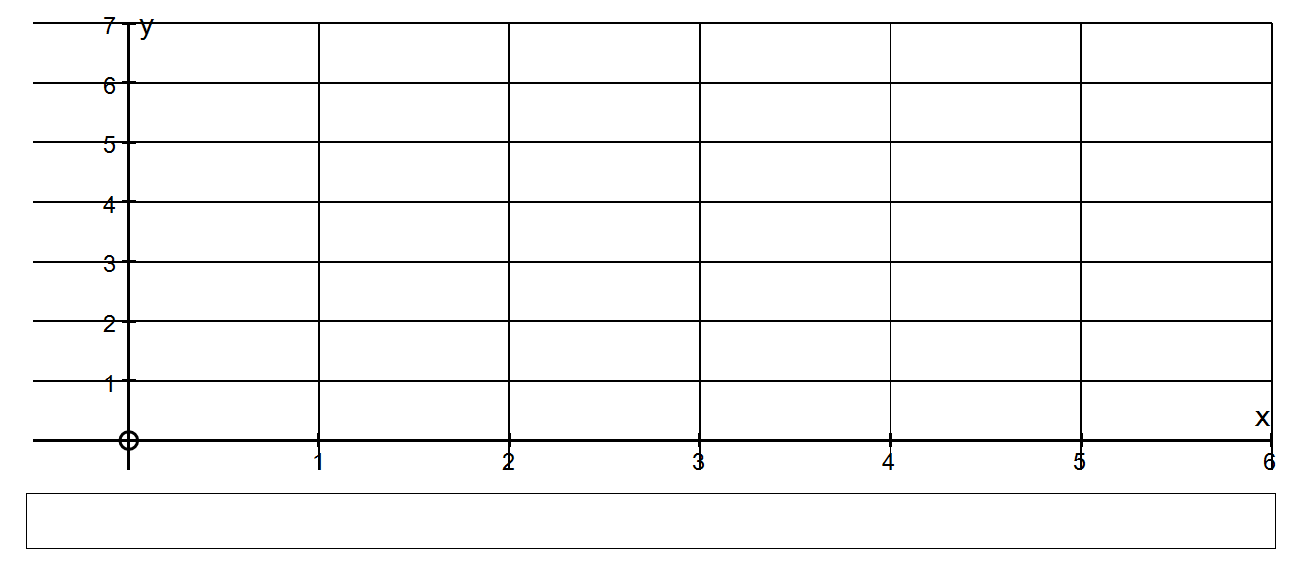
***At x = 2.9 km the cost is y = $5***

***At x = 3.0 km the cost is y = $6***

***At x = 3.1 km the cost is y = $6***

This is called a STEP FUNCTION or STEP GRAPH and most costs must follow this idea.

Describe this step function using equations and domains.



***SOLUTION***

***y = 3 if 0 ≤ x < 1***

***y = 4 if 1 ≤ x < 2***

***y = 5 if 2 ≤ x < 3***

***y = 6 if 3 ≤ x < 4***