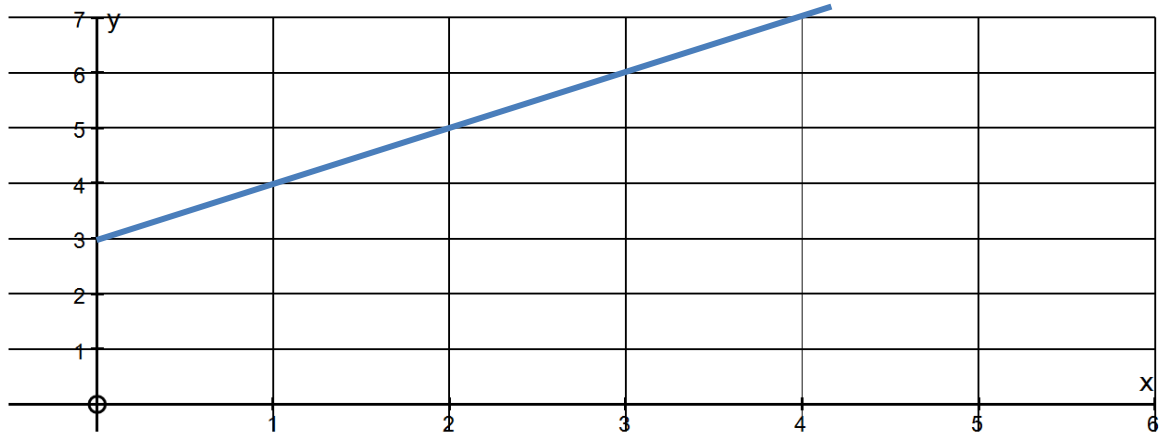
STEP GRAPHS (teacher notes)

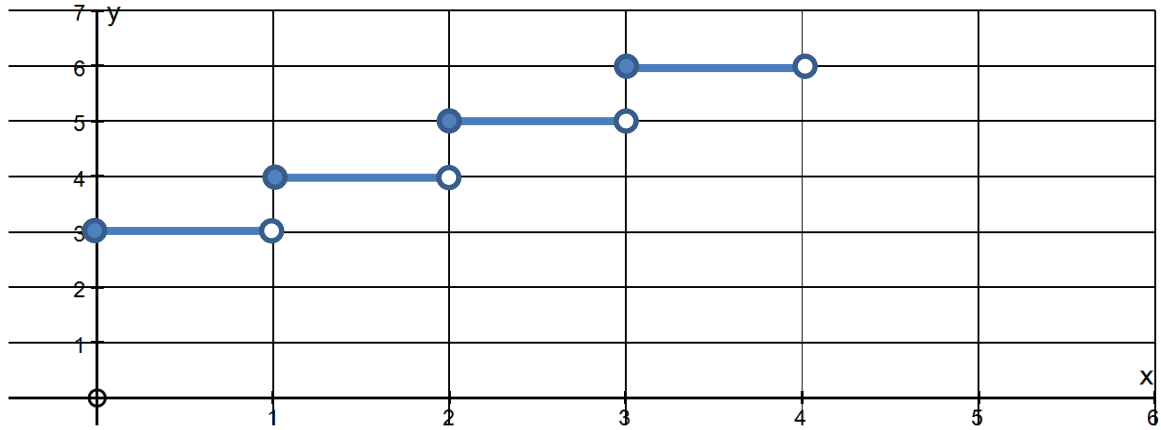
Suppose the cost of a taxi consists of a flat fee of $3 followed by a $1 fee for every km travelled.

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.

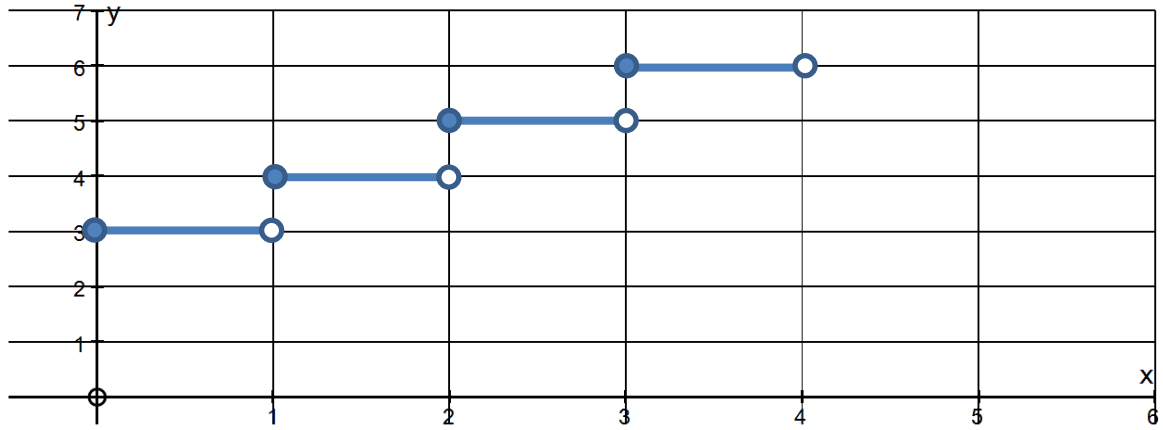


The general convention is that a FULL CIRCLE ● includes the point and an OPEN CIRCLE ○ excludes the point.

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* $0 \leq x < 1$

$y = 4$ *if* $1 \leq x < 2$

$y = 5$ *if* $2 \leq x < 3$

$y = 6$ *if* $3 \leq x < 4$