

## 6.5 Key Concepts 2 First Differences for Linear Relations Worked Example

**Example:** Use first differences to determine whether the relation shown in the table is linear or non-linear.

<b>x</b>	<b>y</b>	<b>First Differences</b>
-1	-2	
1	1	3
3	4	3
5	7	3

**Solution:** Calculate the first differences. Since the first differences have a constant value of 3, the relation is linear.

**Practice:**

1. Use first differences to determine whether the relation shown in the table is linear or non-linear.

<b>x</b>	<b>y</b>
-1	-5
1	-1
3	2
5	4

2. Use first differences to determine whether the relation shown in the table is linear or non-linear.

<b>x</b>	<b>y</b>
-1	-7
1	-1
3	5
5	11

Answers: 1. non-linear 2. linear