

# Translations of Functions

Use this worksheet after reading the lesson to practise the key ideas and prove you can meet the success criteria.

Name \_\_\_\_\_

Date \_\_\_\_\_

Class \_\_\_\_\_

## 1. Key Ideas

When you drag an app icon across your phone screen, nothing about the icon itself changes — it simply moves. The same thing happens with functions. A translation slides the entire graph up, down, left, or right without stretching or flipping it.

- $f(x) + k$  shifts the graph vertically
- Why horizontal shifts behave "backwards" from intuition

## 2. Success Criteria

By the end, you should be able to:

- $f(x) + k$  shifts the graph vertically
- $f(x - h)$  shifts the graph horizontally
- Translations do not change the shape of the graph

## 3. Key Terms

### Function

A relation where each input has exactly one output.

### Domain

The set of all possible input values for a function.

### Range

The set of all possible output values for a function.

### Inverse Function

A function that reverses the effect of the original function.

### Quadratic

A polynomial of degree 2, in the form  $ax^2 + bx + c$ .

### Discriminant

The expression  $b^2 - 4ac$  that determines the nature of quadratic roots.

## 4. Activity: Build the Lesson Map

Use the lesson to complete the table. Keep answers brief but specific.

Prompt	Your answer
Main concept	
Important example	
Common mistake to avoid	
How this links to the next lesson	

## 5. Short Answer Questions

1. Explain this lesson goal in your own words: " $f(x) + k$  shifts the graph vertically". Use one specific example from the lesson.

**BAND 3** **2 MARKS**

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2. Apply this idea to a new example: " $f(x - h)$  shifts the graph horizontally". Show your reasoning clearly.

**BAND 4** **3 MARKS**

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3. Analyse why this idea matters for understanding Translations of Functions: "Translations do not change the shape of the graph".

**BAND 5** **4 MARKS**

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## 6. Extend: Apply the Idea

BAND 5/6

5 MARKS

**A student gives a memorised answer about Translations of Functions but does not use evidence or reasoning.**

Improve the answer by writing a stronger response that uses accurate terminology, a relevant example and a clear explanation.

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## 7. Multiple Choice

1. What is the best first step when answering a question about Translations of Functions?

- A. Identify the key concept being tested
- B. Write every fact from memory
- C. Ignore the command word
- D. Skip examples and evidence

2. Which answer would show stronger understanding of Translations of Functions?

- A. An answer with accurate terms and reasoning
- B. A copied definition only
- C. A single-word response
- D. An answer with no example

3. What should you do if a question asks you to explain?

- A. Link the idea to a reason or cause
- B. List unrelated facts
- C. Only draw a diagram
- D. Write the shortest possible answer

## 8. Success Criteria Proof

Finish with evidence that you can do each success criterion.

### SUCCESS CRITERION 1

Prove that you can:  $f(x) + k$  shifts the graph vertically

**BAND 3** **2 MARKS**

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### SUCCESS CRITERION 2

Prove that you can:  $f(x - h)$  shifts the graph horizontally

**BAND 4** **3 MARKS**

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### SUCCESS CRITERION 3

Prove that you can: Translations do not change the shape of the graph

**BAND 5** **4 MARKS**

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One thing I still need help with:

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