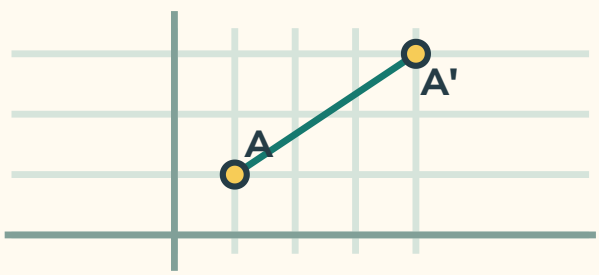
MATHS FIELD GUIDE · GRADE 5

A translation slides every point the same way

OPENING PROBLEM

Find the slide from (1,1) to (4,3).



A (1, 1)
A' (4, 3)

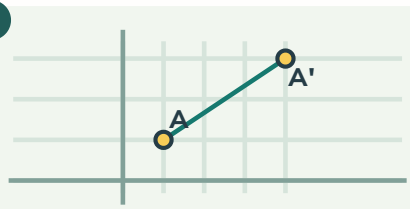
02 Check every vertex of a translation
03 Rules and worked cases
04 Move the triangle sticker
05 Compare the models
06 Read a point, a route and its image
07 Check your reasoning

ILLUSTRATED PROBLEM SHEET

Check every vertex of a translation

A translation moves every point by one identical displacement.

1

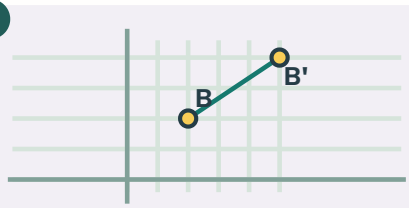


A (1, 1)
A' (4, 3)

Find the slide from (1,1) to (4,3).

Three right and two up. Distance alone would not give the direction.

2



B (2, 2)
B' (5, 4)

If B undergoes that same slide, where does it land?

At (5,4). Add three to the first coordinate and two to the second.

3

(6, 4) → (2, 3)
↓
4 left, 1 down

How do you reverse this translation?

Move four right and one up. You return to (6,4).

4

Point	Move right	Move up
A	3	1
B	3	2

Could both rows come from a single translation?

No. A moved three right and one up. B moved three right and two up.

Slide by (2,0)
the height of each point stays fixed.

Slide by (0,2)
the horizontal position stays fixed.

CHAPTER PROBLEM

Does a translation change the angles of a triangle?

No. It changes position, not size or angle relationships.

MATHS REFERENCE · GRADE 5

A translation slides every point the same way

A translation slides a shape without turning, reflecting or resizing it.

Every point moves the same distance in the same direction. The new shape is called the image.

Cases to recognise

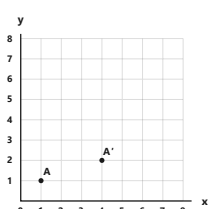
Situation	What to do and why
Translate (2,5) by right 4, down 3	The image is (6,2).
A point moves from (1,2) to (3,7)	Every other point moves two right and five up.

Read the model

Follow one vertex

Move A from (1, 1) three units right and one up.

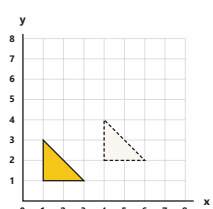
Its image A' is (4, 2). The horizontal coordinate increases by three; the vertical one by one.



Move every vertex equally

The triangle with vertices (1, 1), (3, 1), (1, 3) makes an image at (4, 2), (6, 2), (4, 4).

Each vertex moves three right and one up. Join corresponding image vertices in the same order.



translation A slide with the same move for every point.
image A shape after a transformation.
corresponding Matching original and image points.



A (1, 1)
A' (4, 3)

What translation takes A to A'?

Three units right and two up. Apply that same displacement to every point.

WORKED INVESTIGATION

Move the triangle sticker

Slide a triangle three grid units right and two up. Every vertex makes exactly the same journey.

Look at this part	What it tells you
A(1, 1)	(4, 3)
B(4, 1)	(7, 3)
C(2, 3)	(5, 5)

Work it through

AB measures three horizontal units both before and after the slide. A common movement preserves distances between points.

Catch the mistake

Moving only the top vertex changes the triangle. Check the movement of each corresponding pair of vertices.

Compare the cases

What stays the same

Side lengths, angles and orientation stay unchanged.

Corresponding sides remain parallel. A translation changes position only.

Left and down are also slides

Moving from (5, 4) two units left and one down gives (3, 3).

Subtract the horizontal and vertical moves. Keep all points within the non-negative grid in this chapter.

Change one condition

To return the sticker, move each new vertex three left and two down. The inverse slide undoes both coordinate changes.



P (-3, 2)
P' (3, 2)

Where is the mirror line?

The y-axis. It bisects the horizontal segment between the two points at right angles.

A TRANSLATION SLIDES EVERY POINT THE SAME WAY

Compare the models

Catch an uneven move

If one vertex moves three right and another moves only two right, the shape can stretch.

That is not one translation. Check every corresponding pair.

Undo a translation

To undo three right and one up, move three left and one down.

The reverse slide takes every image point back to its original position.

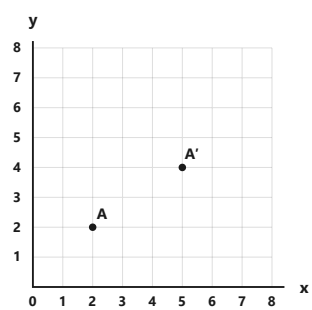
Use it to repeat a design

A repeated tile pattern may use equal slides.

The gap and direction must stay consistent if each tile is the image under the same translation.

Explain your reasoning

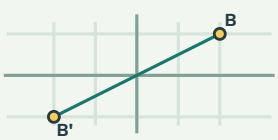
A slides to A'. Describe the translation.



Three units right and two units up.

Two more worked cases

Situation	Reasoning
Undo a slide left 3 and up 4	Slide right three and down four to recover the original.
Triangle points move by different amounts	That transformation may change side lengths. A translation gives all points the same displacement.



B (2, 1)
B' (-2, -1)

Which turn about the origin works?

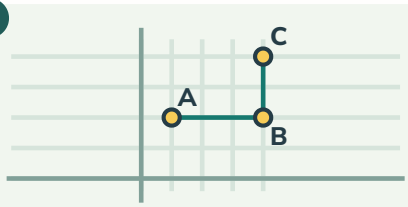
A half-turn. Both coordinates change sign.

ILLUSTRATED PROBLEM SHEET

Read a point, a route and its image

Read horizontal position first and vertical position second.

1

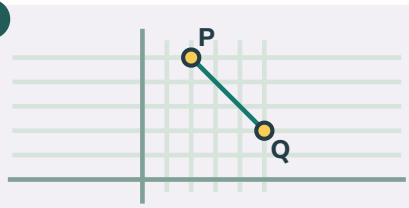


A (1, 2)
B (4, 2)
C (4, 4)

Describe A to C via B.

Go three right, then two up. The total route length is five grid units.

2

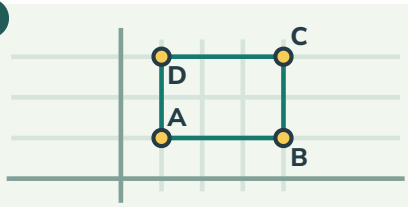


P (2, 5)
Q (5, 2)

Are the points the same if the coordinates swap?

No. Each has its horizontal and vertical distances exchanged.

3

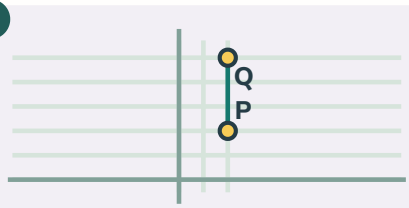


A (1, 1)
B (4, 1)
C (4, 3)
D (1, 3)

How can you recognise this rectangle?

Opposite sides have the same lengths. Horizontal and vertical neighbours meet at right angles.

4



P (2, 2)
Q (2, 5)

Must both coordinates change when a point moves?

No. A vertical move keeps x fixed and adds three to y.

All points on x = 3
a vertical line.

All points on y = 3
a horizontal line.

CHAPTER PROBLEM

One vertex moves two right, another moves four right. Is that a single translation?

No. Every vertex needs the same move.

QUESTION BANK · FOLD OR COVER THE RIGHT COLUMN

Check your reasoning

Try the problem	Solution and reasoning
01 Does a translated triangle turn to face a different direction?	No. All corresponding sides remain parallel and equal in length.
02 What point is five right and two down from (1, 4)?	(6, 2). Add five to x and subtract two from y.
03 A moves from (2, 5) to (6, 4). Under the same translation where does B(1, 2) land?	A moved four right and one down. Applying the same move to B gives (5, 1).
04 A translation sends (4,8) to (1,6). Where does (7,5) go?	Move three left and two down to (4,3).
05 Can a translation turn an upward arrow to point left?	No. All points slide equally, so its direction is preserved.



C (0, 2)
D (0, 4)

Reflect this segment in the y-axis. Where does it go?

Every point is already on the mirror. The segment stays in place.

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