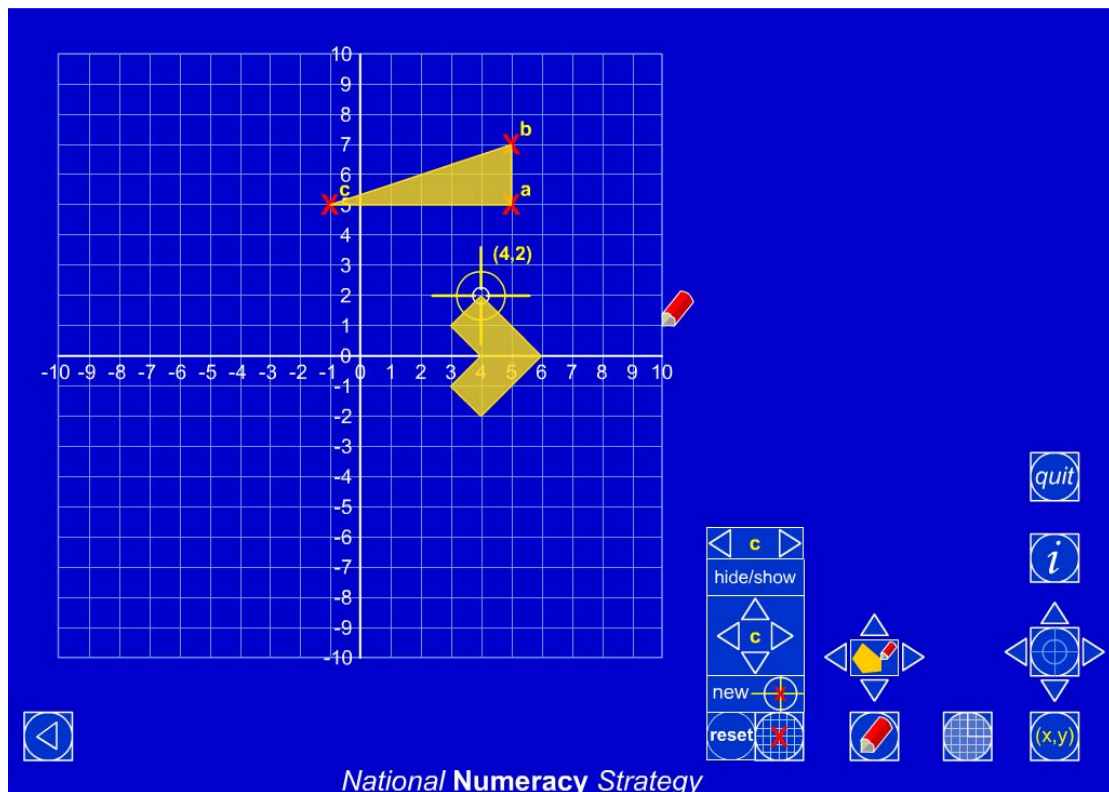





Tutorial 1 Coordinates




To show one, two or four quadrants click on the  icon. Choose the top option for the four quadrants. (You can hide the background grid if you then click on the fourth icon down). For this tutorial keep the background grid on. Click on the icon twice to see how the grid can be turned on and off.

Click on the  icon to insert and position new points. This will show the icon below.



Click on the 'new' icon . This will place a cross in the first quadrant at

$(5,5)$. The arrows  will enable you to position the cross as you choose. Move the first point (a) to a new position by clicking on the up arrow twice.

Q: What are the coordinates of this new point a?



You can show the coordinates of any point by clicking on the cross hairs and moving this over individual points using the arrows.



Confirm that these are the coordinates (5,7). Clicking on the (x,y) icon will hide and show the coordinates.

Hide the cross hairs by clicking on the icon again.

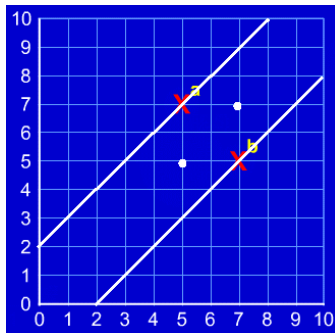


Create a new point by clicking on the new icon again. This will put a second point (b) which may appear on top of point a. Move this point b to (7,5) by using the arrow as before.

Confirm the coordinates of point b are (7,5).

Q: The third point we put on is point c. If the points a, b and c are to be the vertices of a right-angled triangle, where could we place point c?

Point c could be at either of the following coordinates: (7,7), (5,5) or indeed at any of the points on the circle with diameter **ab**, or any of the points on the lines illustrated below.



Place point c at (5,5). Click on the pencil icon. Move the pencil to a at (5,7). Now choose the pencil and shape icon second from the top. Drag the pencil to point b and click on it. Then move to point c and back to a to make the triangle shown below.


The coordinates of the vertices of our triangle are (5,7), (7,5) and (5,5). Turn off the pencil option by clicking on the pencil in the circle.

Now, using the coordinates given below, draw two other right-angled triangles.

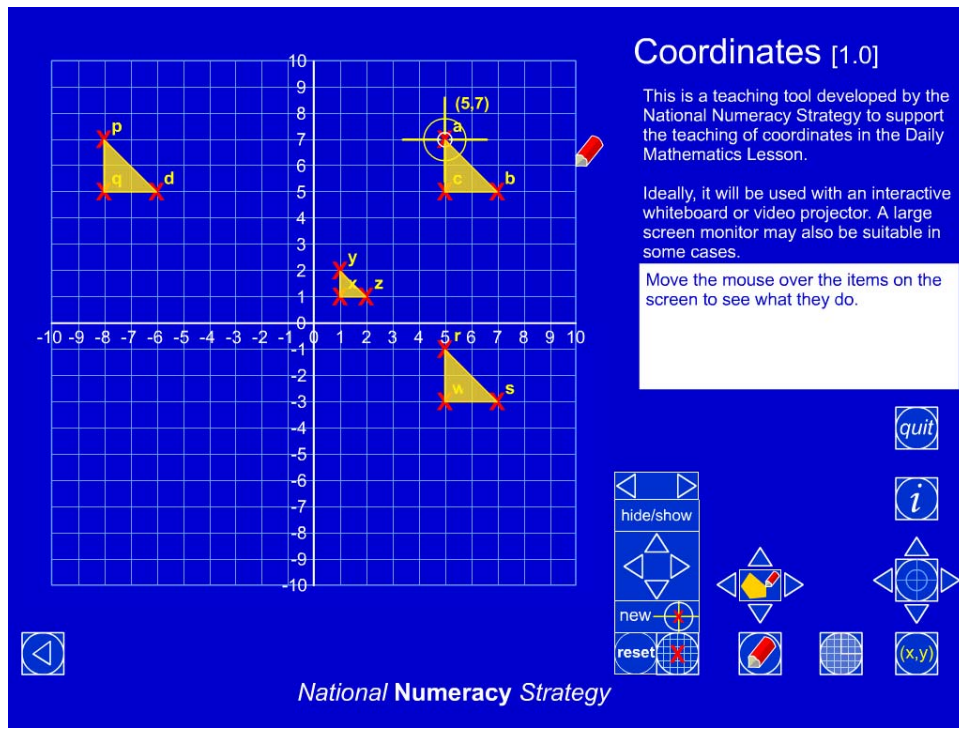
- (i) $(-6,5)$, $(-8,7)$, $(-8,5)$ for points d, p and q.
- (ii) $(5,-1)$, $(7,-3)$, $(5,-3)$ for points r, s, and w.

Q: What would we have to do to move triangle abc to triangle dpq?



To move triangle **abc** 13 squares to the left use the  icon. Clicking on the left arrow, confirm that this is a translation of -13 squares horizontally (parallel to the x axis).

Move triangle **abc** back to its original position (horizontal translation $+13$ squares).



Coordinates [1.0]

This is a teaching tool developed by the National Numeracy Strategy to support the teaching of coordinates in the Daily Mathematics Lesson.

Ideally, it will be used with an interactive whiteboard or video projector. A large screen monitor may also be suitable in some cases.

Move the mouse over the items on the screen to see what they do.

quit

hide/show

new

reset

i

(x,y)


National Numeracy Strategy

Q: What would we have to do to move triangle abc to triangle rsw?

This is a translation of -8 squares vertically (parallel to the y axis).

Confirm this translation by moving triangle **abc** down 8 squares by using the



 icon. Move triangle **abc** back to its original position (vertical translation of 8 squares).

Click on the rubber icon above the pencil to remove lines, click on the pencil to

remove the pencil, and click on  to start the program afresh.

Use the program to draw a shape and then reflect it in the axes or rotate it about the origin.

Explore the use of the different quadrants and the hiding of the grid to support children's understanding of the coordinate system. The Coordinates ITP can also be used to explore the properties of 2-D shapes and to predict translations, rotations and reflections of various shapes in the different quadrants. Interactive whiteboard tools can be used to draw mirror lines or points of rotation.