Understanding Cartesian plane and co-ordinates

Mana Maths

Te reo Māori terms

papa taunga
cartesian plane
Open in Te Aka

taunga
coordinate
Open in Te Aka

tuaka pae
x-axis
Open in Te Aka

tuaka pou
y-axis
Open in Te Aka

Understanding Cartesian plane and co-ordinates — Foundation

1. Write the co-ordinates of point A if you move 2 right and 3 up from the origin.

2. Write the co-ordinates of point B if you move 4 left and 2 up from the origin.

3. Write the co-ordinates of point C if you move 1 right and 3 down from the origin.

4. Plot the point $P(3, 2)$.

5. Plot the point $Q(-4, 1)$.

6. Plot the point $R(0, -5)$.

7. Plot the point $S(-2, -3)$.

8. Name the axis used first when writing a point in (x, y) form.

9. Name the axis used second when writing a point in (x, y) form.

10. A point is written as $(4, -2)$. How many units do you move in the y direction?

11. A point is written as $(-3, 5)$. Do you move left or right first? Then up or down?

12. Write the co-ordinates of a point 4 units up on the y-axis.

13. Write the co-ordinates of a point 5 units left on the x-axis.

14. Write the co-ordinates of a point 2 units down on the y-axis.

15. Which point is 2 units to the right and 4 units up from the origin? Write it in (x, y) form.

16. Which point is 5 units to the left and 1 unit down from the origin? Write it in (x, y) form.

Understanding Cartesian plane and co-ordinates — Proficient

1. Write the co-ordinates of point A if it is 4 right and 3 up. Then name the quadrant.

2. Write the co-ordinates of point B if it is 3 left and 4 up. Then name the quadrant.

3. Write the co-ordinates of point C if it is 2 left and 5 down. Then name the quadrant.

4. Write the co-ordinates of point D if it is 5 right and 1 down. Then name the quadrant.

5. Plot and label the points $P(2, 5), Q(-4, 2), R(-1, -3)$ and $S(3, -4)$.

6. A point starts at $(2, 1)$. It moves 3 units left and 4 units up. What are the new co-ordinates?

7. A point starts at $(-5, 3)$. It moves 6 units right and 5 units down. What are the new co-ordinates?

8. If a point is on the x-axis, what must its y-value be?

9. If a point is on the y-axis, what must its x-value be?

10. Write these points in order from left to right: $A(-4, 1), B(2, 4), C(3, -3), D(-1, -2)$.

11. Which point is exactly 4 units from the origin on the y-axis? Write both possibilities.

12. Which point is exactly 3 units from the origin on the x-axis? Write both possibilities.

13. Sam says $(2, -5)$ means down 2 and right 5. Explain Sam's mistake.

14. Plot $A(-3, 0), B(0, 4)$ and $C(3, 0)$. What are the co-ordinates of the vertex on the y-axis?

15. Write one point in each quadrant. Use integers only.

Understanding Cartesian plane and co-ordinates — Excellence

1. Write the co-ordinates of point A if it is 4 left and 5 up. Then describe its location using a quadrant.

2. Write the co-ordinates of point B if it is on the y-axis and 4 down.

3. Write the co-ordinates of point C if it is 3 right and 2 down. Then describe its location using a quadrant.

4. Write the co-ordinates of point D if it is on the x-axis and 1 left.

5. Plot $A(-4, 3)$, $B(4, 3)$, $C(4, -3)$ and $D(-4, -3)$. Join them in order. What shape is formed?

6. Point P is at $(2, -1)$. Point Q has the same x-value but the opposite y-value. Write the co-ordinates of Q.

7. Point M is at $(-3, 4)$. Point N has the opposite x-value but the same y-value. Write the co-ordinates of N.

8. Two points lie on the horizontal line through $(0, 2)$. One is 5 units left of the y-axis and one is 4 units right of the y-axis. Write both co-ordinates.

9. Two points lie on the vertical line through $(-1, 0)$. One is 3 units above the x-axis and one is 4 units below the x-axis. Write both co-ordinates.

10. Which pair has the same distance from the origin along an axis: $A(-5, 0)$, $B(0, 5)$, $C(4, 0)$, $D(0, -4)$?

11. Explain why "Y to the Sky" helps students place the point $(-2, 5)$ correctly.

12. One point is 3 units right and 2 units down from the origin. Another is 3 units left and 2 units up from the origin. Write both co-ordinates and name their quadrants.

13. Plot $E(-2, 4)$, $F(2, 4)$, $G(2, -1)$ and $H(-2, -1)$. Which side lengths can you read directly from the grid?

14. Make up one point in Quadrant II and one point in Quadrant IV that have the same distance from the x-axis.

15. Make up three different points whose x-values add to 0.

16. Explain the difference between $(4, 0)$ and $(0, 4)$.

17. A student writes $(-3, 2)$ as $(2, -3)$. Describe exactly how the location changes on the grid.

18. Write one point that is on an axis but not at the origin, and explain how you know it is on an axis.

19. Plot any four points that make a rectangle with sides parallel to the axes. Write the co-ordinates of your four points.