O Level A Maths Tutorial 8: Coordinate Geometry

Syllabus :
• Condition for two lines to be parallel or perpendicular

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1. (i) Sketch these two lines on the xy plane.

$y = \frac{1}{2} x + 1$

$y = \frac{1}{2} x + 3$

How can you tell from the equations if the lines are parallel?

(ii) On the same graph, sketch this line.

$y = -2x + 5$

What is the angle between this graph and the two lines above?

• Midpoint of line segment

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2. A line segment joins point A(1, 3) to B(5, 9). Find the midpoint of AB.

• Area of rectilinear figure

3(a) State the meaning of a rectilinear figure.

(b) Find the area of this figure.

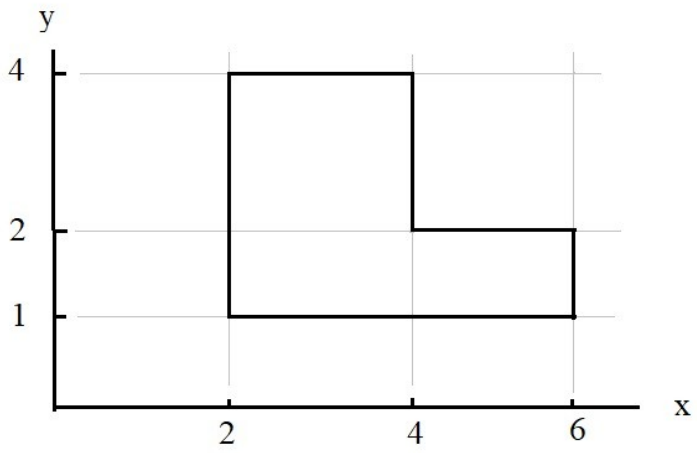

Figure 8-1

- Coordinate geometry of circles in the form:
  - $(x - a)^2 + (y - b)^2 = r^2$
  - $x^2 + y^2 + 2gx + 2fy + c = 0$

  (excluding problems involving two circles)

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4. State the radius and coordinates of the centre of the circle given by this equation.

$$(x - 2)^2 + (y + 1)^2 = 25$$

5. Find the radius and centre of this circle:

$$x^2 + 2x + y^2 - 4y + 11 = 0$$

• Transformation of given relationships, including $y = ax^n$ and $y = kb^x$ to linear form to determine the unknown constants from a straight line graph

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6.

x	1	2	3	4
y	0.5	2	4.5	8

The data above can be modelled using an equation of the form $y = ax^n$.

By using a suitable transformation, draw a straight line graph to determine a and n.