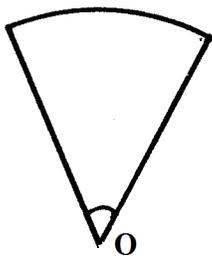


## 1. Reflection and Congruence

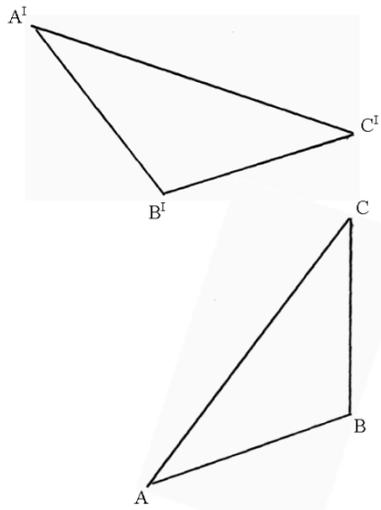
- Given that  $A'$  (3, -3) is the image of  $A$  (-1, -5) under a reflection. Find the equation of the mirror line in the form of  $ax + by + c = 0$  (4 mks)
- Three planes **A**, **B** and **C** leave an airport **P** simultaneously at 9.30a.m. Plane **A** flies on a bearing of  $070^\circ$  from **P** at a speed of 400km/h. Plane **B** flies on a bearing of  $290^\circ$  at a speed of 500km/h. Plane **C** flies on a bearing of  $162^\circ$  from **P** at a speed of 300km/h. (Use scale drawing for this question)
  - Show by scale drawing, the relative positions of the 3planes **A**, **B** and **C** three hours after leaving airport **P**. (Use scale 1cm represents 200km)
  - After 3 hours, **B** turns and head straight to the current position of **A** at the same speed it had. Determine the scale drawing, the time it takes to reach this point, to the nearest minute
  - Determine the bearing and distance of **B** from **C** after the first 3 hours of flight after leaving **P**

## 2. Rotation

- Triangle **PQR** has vertices  $P(3,2)$ ,  $Q(-1,1)$  and  $R(-3,-1)$ .
  - Draw **PQR** on the grid provided. (1mk)
  - Under a rotation the vertices of  $P^1Q^1R^1$  are  $P^1(1,4)$ ,  $Q^1(2,0)$  and  $R^1(4,-1)$ . Find the centre and angle of rotation using points **P** and **Q**. (4mks)
  - Triangle **PQR** is enlarged with scale factor 3 centre  $O(0,0)$  to give triangle  $P^2Q^2R^2$ . Draw triangle  $P^2Q^2R^2$  and state its co-ordinates. (2mks)
  - Triangle  $P^1Q^1R^1$  undergoes reflection in line  $y = -x$  to give triangle  $P^3Q^3R^3$ . Draw  $P^3Q^3R^3$  and state its coordinates. (3mks)
- The figure below shows part of a diagram of rotation symmetry order 3 about a point **O**. Complete the diagram. (3mks)



- In the figure below, triangle  $A^1B^1C^1$  is the image of triangle **ABC** under a rotation, centre **O**.



By construction, find and label the centre O of the rotation.

Hence, determine the angle of the rotation.

(3mks)

4. The ratio of the lengths of the corresponding sides of two similar rectangular water tanks is 3: 5. The volume of the smaller tank is  $8.1\text{m}^3$ . Calculate the volume of the larger tank