1. Reflection and Congruence

1. 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)

2. Three planes **A**, **B** and **C** leave an airport **P** simultaneously at 9.30a.m. Plane **A** flies on a bearing of 070° from P at a speed of 400km/h. Plane **B** flies on a bearing of 290°at a speed of 500km/h. Plane C flies on a bearing of 162° from **P** at a speed of 300km/h. (***Use scale drawing for this questio***n)
   (a) 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)
   (b) 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
   (c) Determine the bearing and distance of **B** from **C** after the first 3 hours of flight after leaving **P**

2. Rotation

1. Triangle PQR has vertices P(3,2), Q(-1,1) and R(-3,-1).

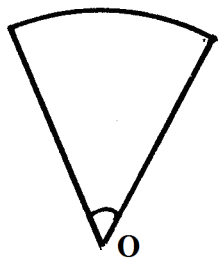
   (a) Draw PQR on the grid provided. (1mk)

   (b) 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)

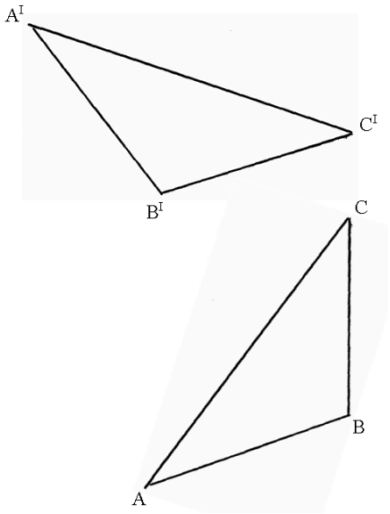
   (c) Triangle PQR is enlarged with scale factor 3 centre O(0,0) to give triangle $P^2Q^2R^2$. Draw triangle $P^2Q^2R^2$ and state its co-ordinates. (2mks)

   (d) 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)

2. The figure below shows part of a diagram of rotation symmetry order 3 about a point O. Complete the diagram. (3mks)



3. In the figure below, triangle $A^IB^IC^I$ 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 $8.1m^3$. Calculate the volume of the larger tank