# National 5 Mathematics
# Formal Homework 14

**You must not use a calculator for questions 1 – 4:**

1. Factorise: $x^2 - 2x - 15$ **2**

2. A formula is given as $P = R^3 b - 5$.
   Change the subject of the formula to $R$. **3**

3. Solve the equation: $x(3x - 4) = 3(x^2 - 2x + 2)$ **3**

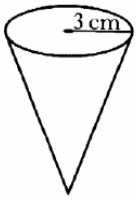
4. Find the equation of the line joining the points (-2,5) and (3,15)
   Give the equation in its simplest form. **3**

**You may now use a calculator for questions 5 – 6**

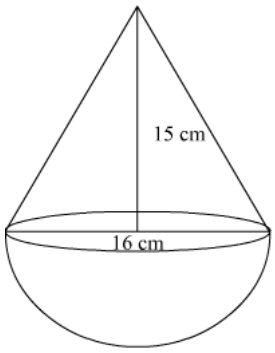
5. A water container is in the shape of a cylinder with radius 20 cm and height 50 cm.

   a) Calculate the volume of the container to two significant figures. **3**

   b) Liquid from the full container can fill 800 cups, in the shape of cones, each of radius 3cm.
   What will be the height of each cone? **4**




6. A floating emergency beacon is deployed when a boat is in distress.
   It is made from a hollow plastic hemisphere and a cone.
   The cone has a diameter of 16cm and a height of 15 cm.
   Calculate the total volume of the beacon.




**4**

**Total : 22 marks**