1. Similarities and Enlargement

1. Two tanks are similar in shape. The capacity of the tanks are 1,000,000 litres and 512, 000 litres respectively.

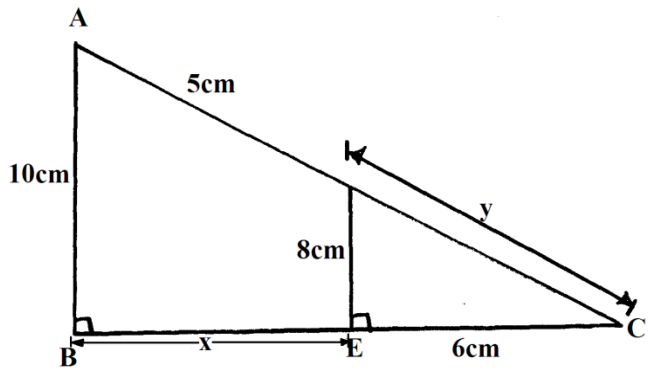
   (a) Find the height of the smallest tank if the larger is 300cm tall (4 mks)

   (b) Calculate the surface area of the larger tank if the smaller tank has a surface area of $1200m^2$ (3 mks)

   (c) Estimate the mass of the smaller tank if the mass of the larger one is 800kg (3 mks)

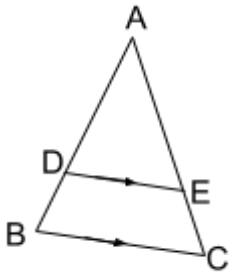
2. Under an enlargement transformation point A(1,-4) is mapped onto $A^1(2,5)$ with scale factor 3. Find the centre of enlargement. (2mks)

3. In the figure below, AB is parallel to DE. Find the value of x and y. (3mks)



4. Two similar cans have different heights 8cm and the other one 10cm. If the surface area of the larger can is $480cm^2$, find the surface area of the smaller can. (3 marks)

5. The area of triangle ADE is $15cm^2$. Given that BD:BA = 1:3, and DE is parallel to BC. Find the area of triangle ABC in the figure. (3mks)



6. Triangle ABC has vertices at A(1, 4) B(2, 6) C(2,5). Its image under an enlargement has vertices at $A^1(3,2)$ $B^1(5,6)$ $C^1(5,4)$.

   (a) Find the centre and scale factor of the enlargement. (3mks)

   (b) Triangle ABC is given a rotation of -90^0 about the origin to get $A^{11}B^{11}C^{11}$. Write down the coordinates of $A^{11}B^{11}C^{11}$. (2mks)

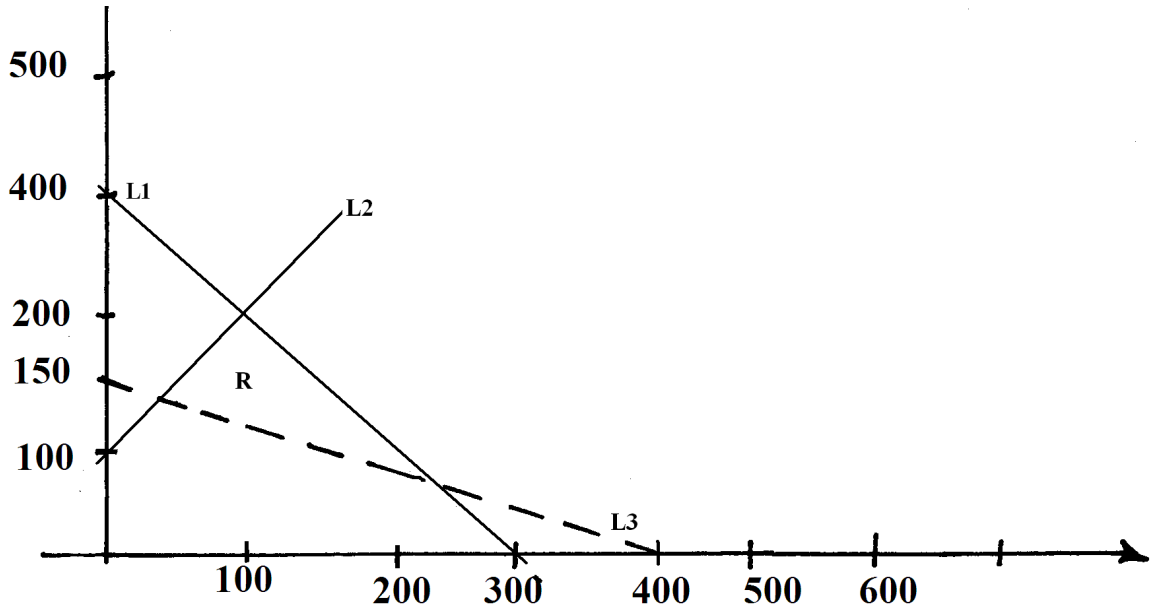
   (c) $A^{11}B^{11}C^{11}$ is reflected on the line y + x = 0 to get $A^{111}B^{111}C^{111}$. Give the coordinates of the image $A^{111}B^{111}C^{111}$. (2mks)

(d) Find a single matrix that maps $A^{111}B^{111}C^{111}$ onto ABC. Describe this single transformation.

(3mks)

7. Give the inequalities which define the region R

a)



(6mks)

b) Under enlargement with scale factor -3, the point P(3,6) is mapped onto $P_1(7,18)$. Find the centre of this enlargement and the image of the point $Q_1(1,1)$ under the same enlargement

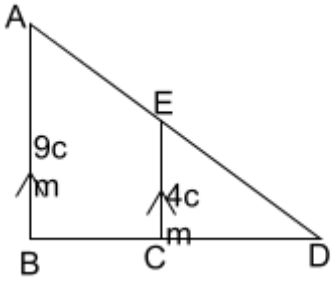
(4 mks)

8. The masses of two similar bars of soap are 343g and 1331g. If the surface area of the smaller bar is 196 cm^2. Calculate the surface are of the larger bar. (3 marks

9. The image of P(0,2) under an enlargement with a scale factor 3 is P^1 (4,6).
Find the co-ordinates of Q

10. A model of a building is made using a scale 1:500.
(a) Find the height of a room (in meteres) in the building which is 5cm long on the model?***S***
(b) A room has a floor area of $36m^2$. What is the corresponding area on the floor of the model
(c) A room has a volume of $120m^3$. What is the corresponding volume of the model in cm^3?***S***

11. In the triangle ABD, BA is parallel, to CE, given that BA= 9cm, CE = 4cm and AE =3cm, find the length of DE



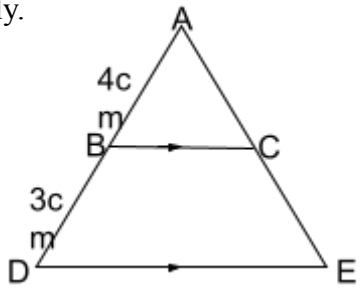
12. In the following figure, PR = 12cm, TR = 4cm and ST is parallel to QR. Given that the area of triangle PQR is $336cm^2$, find the area of quadrilateral QRTS



13. Two dogs regarded similar with the length in ratio 4:3:-
    (a) If the bigger dog has a tail 64cm long, find the length of the tail of the smaller dog
    (b) If the smaller dog requires 810g of meat per day how much meat per day does the bigger dog require

14. In the figure below, ADE is a triangle and BC is parallel to DE, AB, BD and BC are 4cm, 3cm and 8cm respectively.

    Find the length of DE



15. The surface area of two similar bottles are 12cm² and 108cm² respectively. If the larger one has a volume of 810cm³. Find the volume of the smaller one

16. Given that the area of the trapezium CDEB is 15.6 cm^2, find the length EA marked X.

