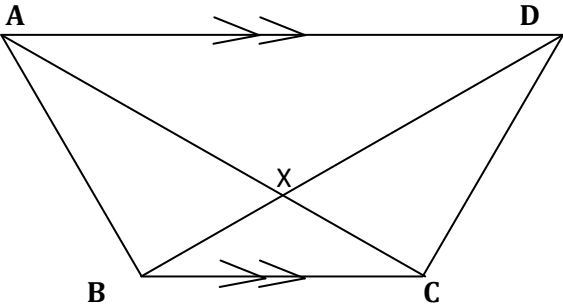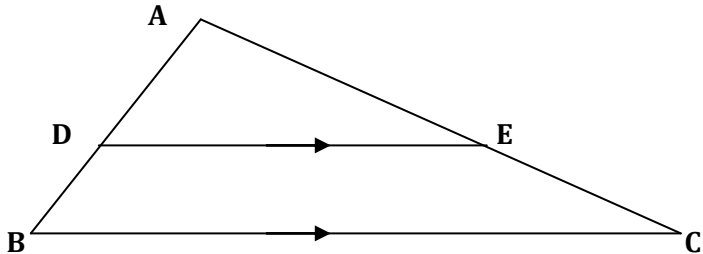NAME _____ INDEX NUMBER _____

SCHOOL_____ DATE _____

SIMILARITY AND CONGRUENCY

KCSE 1989 – 2012 Form 2 Mathematics	Working Space
1. **1989 Q15 P2** In the figure below, **ABCD** is a cyclic quadrilateral and BC is parallel to AD. Show that triangle ABX is congruent to triangle DXC. (4 marks) 	
2 **1990 Q7 P2** In the triangle ABC shown below DE is parallel to BC. If AE = 3cm and EC = 2cm, determine the ratio of the triangle ADE to that of the triangle ABC. (2 marks) 	

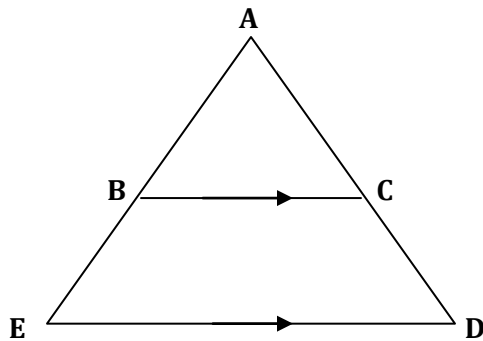|	
3	**1991 Q6 P1** In the figure below AD // BC. AC and BD intersect at E. Given that AE: EC = 1:5 and BD =12 cm, calculate the length of DE. (3 marks)	

A △——→ D

E

B ——→ C
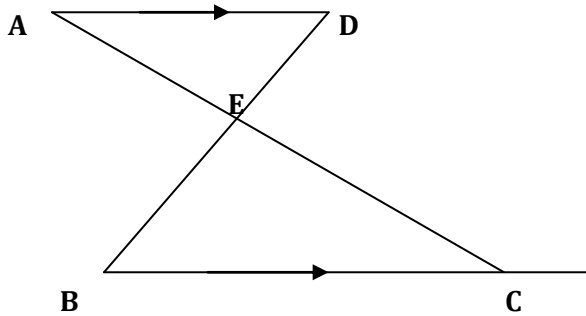
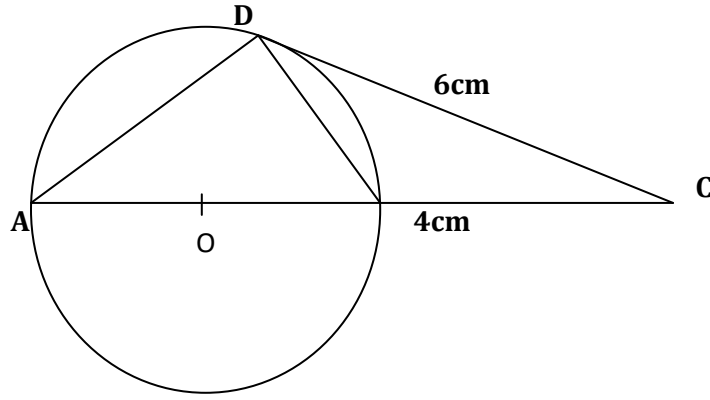|	
4	**1992 Q5 P1** In the figure above, triangle ABC is similar to triangle AED and BC // ED. Given that the ratio AB: AE = 2:5, find the ratio of the area of triangle ABC to that of the trapezium BCDE. (3 marks)	

A

B ——→ C

E ——→ D

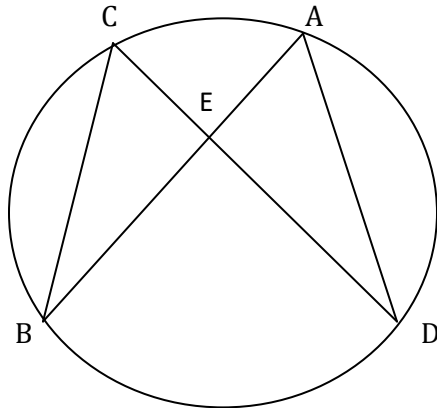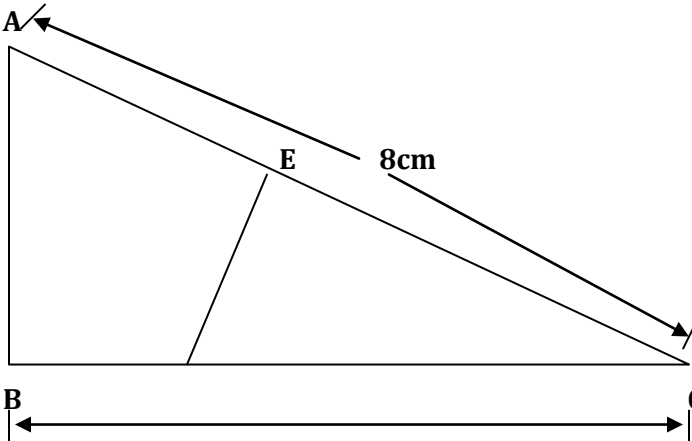|		

5	**1992 Q21 P1**
	In the figure given below (not drawn to scale) DC is a tangent to the circle centre O. AOBC is a straight line.
	
	(a) Show that ΔADC is similar to Δ DBC.
	(b) Given that BC = 4cm AND DC = 6cm, calculate
	   (i) the length of AB (3 marks)
	   (ii)the size of angle ACD (2 marks)	

6	**1992 Q15 P2** In the figure below, the chord AB and CD intersect at E. Show that ΔAED is similar to ΔBEC. (3 marks)	

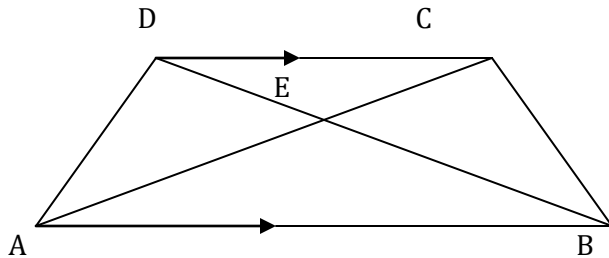|		Working Space
7	**1993 Q16 P1** In the triangle ABC below AC=8cm, BC=5cm and angle BCA = 30^0. Point D divides BC in the ratio 1:4 and point E divides AC in the ratio 2:3. Find the area of the quadrilateral ABDE (3 marks) 	
8	**1993 Q2 P2** A football tube in the form of a sphere is inflated so that its radius increases in the ratio of 4:3. Find the ratio in which the volume is increased (2 marks)	

4

		Working Space
9	**1994 Q9 P9** A container of height 30cm has a capacity of 1.5 litres. What is the height of a similar container of capacity 3.0 m^3? (3 marks)	
10	**1995 Q7 P2** 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 m^3. Calculate the volume of the larger tank. (3 marks)	
11	**1996 Q10 P2** Pieces of soap are packed in a cuboid container measuring 36cm by 24cm by 18cm. Each piece of soap is similar to the container. If the linear scale factor between the container and the soap is $1/6$, find the volume of each piece of soap. (2 marks)	

|	
12	**2002 Q15 P2** In the diagram below, ABCD is a trapezium with AB parallel to DC. The diagonals AC and BD intersect at E. D C E A B a) Giving reasons show that triangle ABE is similar to triangle CDE. b) Giving that AB = 3DC, find the ratio of DB to EB. (2 marks)
13	**2005 Q8 P2** The volumes of two similar solid cylinders are 4752 cm^3 and 1408 cm^3. If the area of the curved surface of the smaller cylinder is 352 cm^2, find the area of the curved surface of the larger cylinder. (4 marks)

©Pyramid Assignments   0722614502/0733494581   All subjects, All topics available

14	**2009 Q21 P1**	
	A glass in the form of a frustum of a cone, is represented by the diagram below. The glass contains water to a height of 9 cm. The bottom of the glass is a circle of radius 2 cm while the surface of the water is a circle of radius 6 cm.	
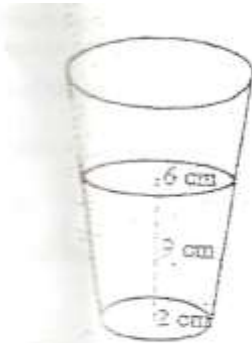
(a) Calculate the volume of the water in the glass.

(b) When a special marble is submerged into the water in the glass, the water   level rises by 1 cm.

Calculate :

   (i) the volume of the marble   (4 marks)
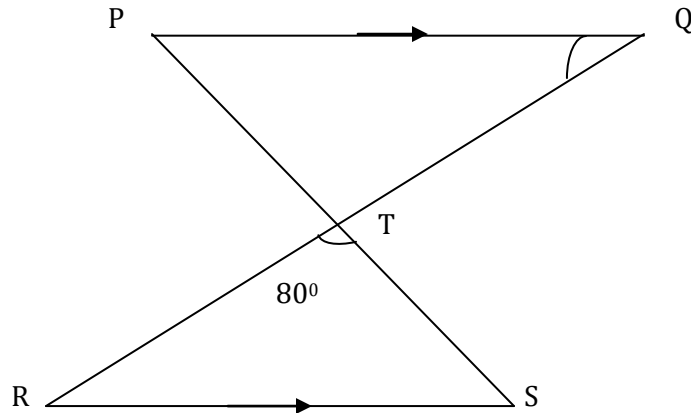
   (ii) the radius of the marble   (3 marks)

15	**2011 Q 16 P1**	
	A small cone of height 8 cm is cut off from a bigger cone to leave a frustum of height 16cm. If the volume of the smaller cone is 160cm3, find the volume of the frustum	

(3 marks)

16 | **2012 Q24 P1**
In the figure below, PQ is parallel to RS. The lines PS and RQ intersect at T. RQ = 10 cm, RT: TQ = 3.2, angle PQT= 40^0 and angle RTS = 80^0.

P $\quad$ Q

T

80^0

R $\quad$ S

(a) Find the length of RT. $\qquad$ (2 marks)
(b) Determine, correct 2significant figures:
   (i) The perpendicular distance between
       PQ and RS; $\qquad$ (2 marks)
   (ii) The length of TS $\qquad$ (2 marks)
(c) Using the cosine rule, find the length of RS
   correct to 2significant figures. $\qquad$ (2 marks)
(d) Calculate correct to one decimal place, the
   area of triangle RTS. $\qquad$ (2 marks)