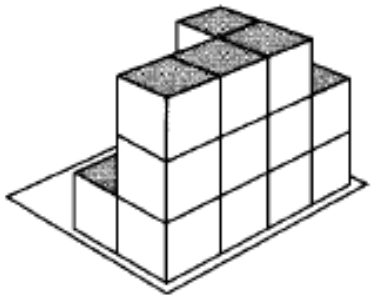
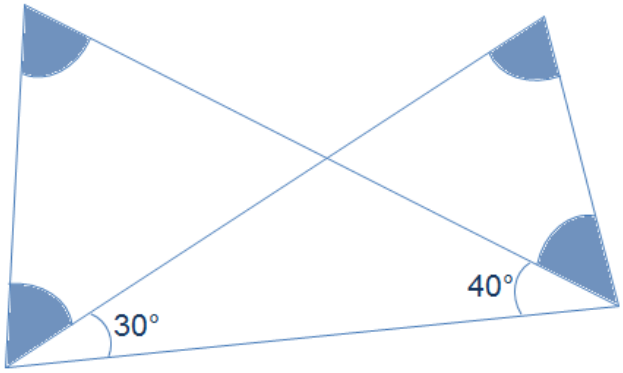
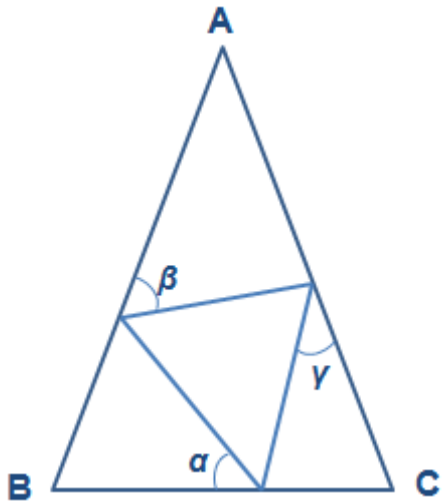
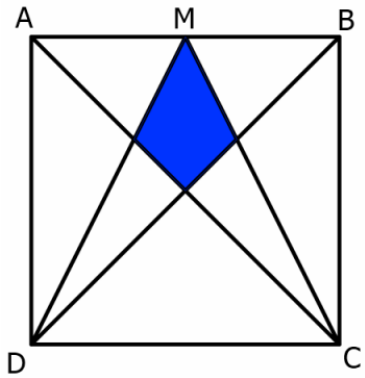
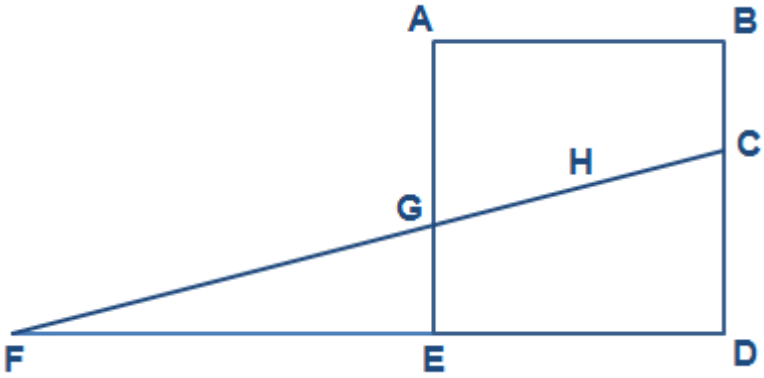
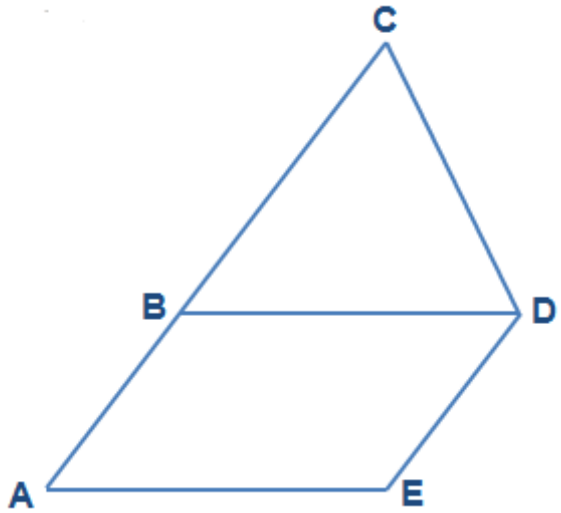
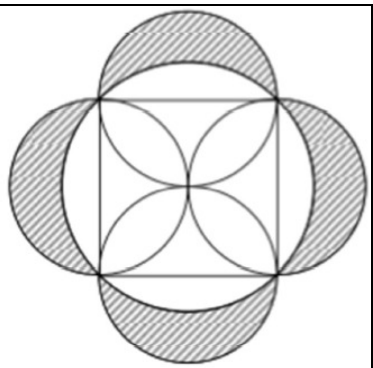
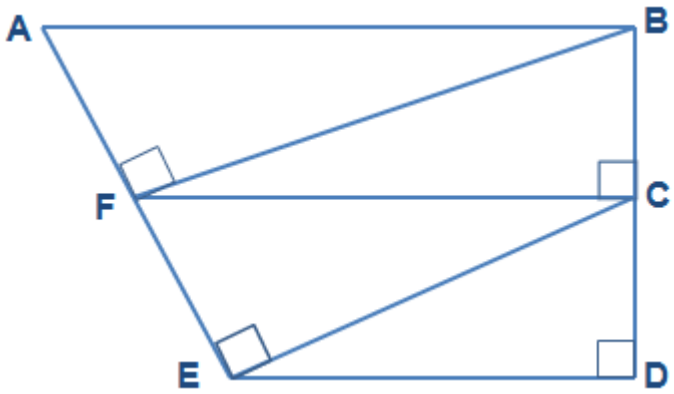
Problem Sheet 2 – Shape and Angle Problems

1	**The solid shown rests on a flat surface. It is made from 1cm cubes placed, but not glued, together. Some of the cubes may be hidden. What is the minimum number of cubes required to make such a solid?** 	www.ukmt.org.uk/
2	**In the diagram below what is the sum of the four shaded angles?** 	
3	**In the diagram, triangle *ABC* is isosceles, with *AB* = *AC*. The inscribed triangle is equilateral. Find an expression for angle *α* in terms of angles *β* and *γ*.** 	www.ukmt.org.uk/

4	***ABCD*** **is a square.** ***M*** **is the midpoint of the side** ***AB*****.** **By constructing the lines** ***AC*****,** ***MC*****,** ***BD*** **and** ***MD*****, the blue shaded quadrilateral is formed. What fraction of the total area is shaded?** 	www.nrich.maths.org
5	***ABDE*** **is a square with centre** ***H*****. The base of the square** ***DE*** **is extended so that it meets the straight line** ***CF*** **which passes through** ***H*****.**  **If** ***BC*** **= 3cm and** ***CD*** **= 4cm find the area of the triangle** ***CDF*****.**	
6	**In the diagram** ***ABDE*** **is a parallelogram and** ***ABC*** **is a straight line,** ***AB*** **=** ***x*** **cm,** ***BC*** **=** ***BD*** **=** ***y*** **cm.**  **If the area of the triangle** ***BCD*** **is** ***Q*** **cm^2, what is the area of the parallelogram?**	www.ukmt.org.uk/

7	**Each side of the square in the diagram has a circle drawn on it, with the side as its diameter. The square is also inscribed in a circle as shown. Find the ratio of the total area of the shaded crescents to the square.** 	
8	**A trapezium *ABDE* is divided into four right-angled triangles, as shown.**  **In the right angled triangle *CDE*, *CD* = 1 unit and *DE* = 2 units. Calculate the area of trapezium *ABDE*, giving your answer as a mixed number in its simplest form.**	
9	**The diagram shows two concentric circles. The straight line shown just touches the smaller circle. Can you work out the shaded area?**