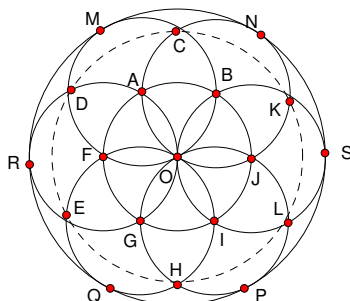


The figure consists of seven congruent circles. The radius of the circles is 2. Answer the following questions.



1.  $AB$  is the radius of the circle with center  $B$ .  $\boxed{2}$
2.  $\triangle OAB$  is equilateral since all the sides are radii of circles in the figure.  $\boxed{\sqrt{3}}$
3. Quadrilateral  $OACB$  is formed by two congruent equilateral triangles,  $\triangle OAB \cong \triangle CAB$ . This makes  $OC$  the same as twice the altitude of one of those triangles.  $\boxed{2\sqrt{3}}$
4. This polygon consists of six equilateral triangles, all congruent to  $\triangle OAB$ , which has area  $\sqrt{3}$ .  $\boxed{6\sqrt{3}}$
5. The quadrilateral  $ABJO$  is formed by two congruent equilateral triangles,  $\triangle OAB \cong \triangle OBJ$ .  $\triangle AOJ$  is half of this quadrilateral, and so has the same area as one of the equilateral triangles.  $\boxed{\sqrt{3}}$
6.  $\overline{DH}$  is formed by three radii of circles in the figure.  $DC = OC$ .  $\boxed{12\sqrt{3}}$
7.  $FQ = MF = OC$  so  $MQ = 2OC$  and  $\triangle MSQ$  is clearly equilateral.  $\boxed{12\sqrt{3}}$
8. This circle has radius 4.  $\boxed{16\pi}$
9. We've shown that the triangles in the circles are equilateral so  $MC = CN = 2$ .  $\boxed{4}$
10. The polygon consists of six congruent equilateral triangles with side length 4.  $\boxed{24\sqrt{3}}$