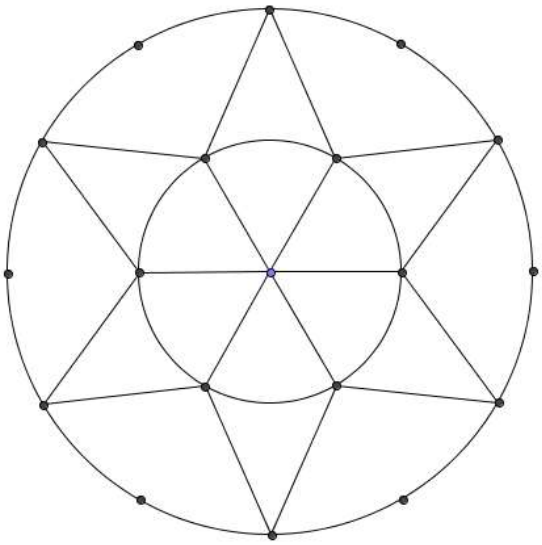
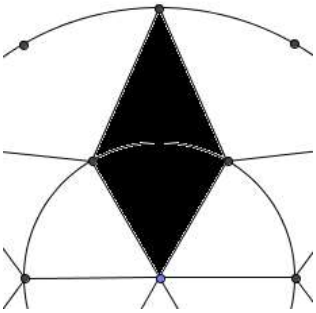
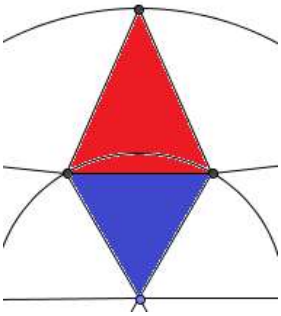
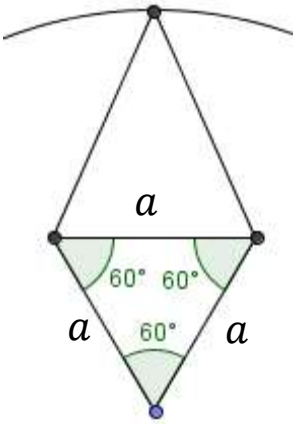
Shaded circles 1 Answer









$$2a - a\sin 60 = \frac{(4-\sqrt{3})a}{2}$$

$$a\sin 60 = \frac{\sqrt{3}}{2}a$$

Area of small triangle
$= \frac{1}{2} \times a \times \frac{\sqrt{3}}{2}a$
$= \frac{\sqrt{3}}{4}a^2$

Area of larger triangle
$= \frac{1}{2} \times a \times \frac{(4-\sqrt{3})}{2}a$
$= \frac{(4-\sqrt{3})}{4}a^2$

Area of kite
$= \frac{\sqrt{3}}{4}a^2 + \frac{(4-\sqrt{3})}{4}a^2$
$= a^2$

Area of 6 kites $= 6a^2$

Area of small circle $= \pi a^2$

Shaded area $= 6a^2 - \pi a^2 = a^2(6-\pi)$

Area of large circle $= 4\pi a^2$

Shaded proportion $= \frac{6-\pi}{4\pi}$ as a fraction. This is 22.7%