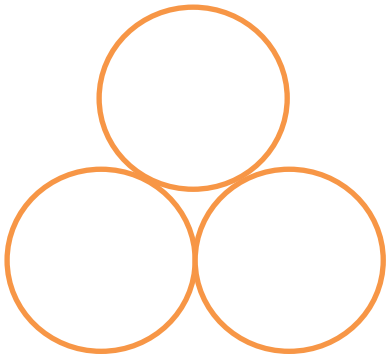
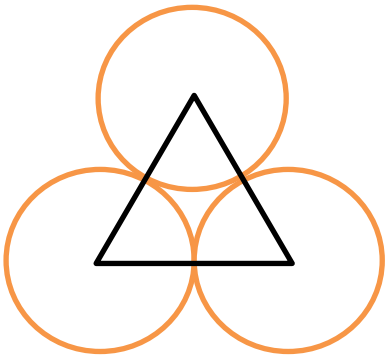
three bottle of perfume come in a special gift set. Each bottle in its own individual canister.Then the three canisters are placed in one gift set. Each canister has a radius of 5cm. and all three canisters touch each other in the gift box. what is the are of the space between the canisters?.

Solution:

We have next diagram:



Step 1: Making a connection between centers of circles.



As for as we can see each side of triangle equals to 2 radius of circle. Therefore we make a conclusion that triangle is equilateral. Each angle of it equals to 60 degree and side=2*5=10(cm)

Step 2: Calculate area of triangle.

$$S = \frac{\sqrt{3}}{4}a^2$$

a - Side of triangle

S=43.3cm^2

Step 3: Calculate area of circle's sector.

$$S = \frac{\pi r^2 \alpha}{360^\circ}$$

$\alpha - angle\ of\ triangle$ =60

$r - radius$ = 5

S=13.1(cm^2)

As for as we can see triangle has 3 sectors inside, so area of sectors = 13.1*3=39.3(cm^2)

Step 4: Calculate space between circles.

Area of triangle – area of sectors

S=43.3-39.3=4(cm^2)

Answer: 4cm^2