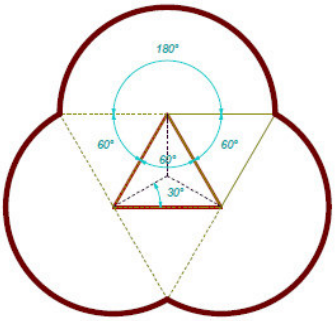
**FLOWERS AND PETALS**

1. If an equilateral triangle is rotating around an equilteral triangle, then the perimeter of a sigle petal is the same as a half of a circle. Because the petals are three, the perimetre equal's to:

$$\text{Perimeter}_3 = p_3 = 3 \cdot \frac{180}{360} \cdot 2\pi r$$

$$\text{Perimeter}_3 = p_3 = \frac{9}{3}\ \pi r = 3\pi r$$

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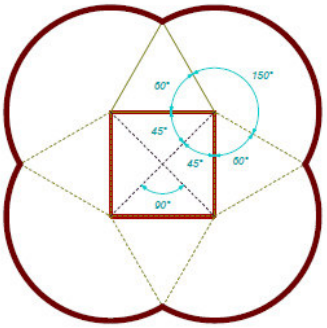
2. If an equilateral triangle is rotating around a square, the central angle α, over which a petal is drawn, is equal to:

α = 360° - (90° + 2×60°)
α = 360° - 210°
α = 150°




* The perimetre of a flower with four petals is:

$$\text{Perimeter}_4 = p_4 = 4 \cdot \frac{150}{360} \cdot 2\pi r$$

$$\text{Perimeter}_4 = p_4 = \frac{10}{3}\pi r$$

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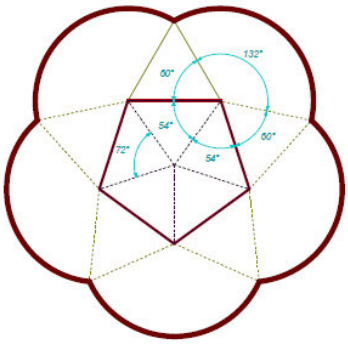
3. . If an equilateral triangle is rotating around a pentagon, then the central angle α, over which a petal is drawn, is equal to:

$$\alpha = 360° - \left( \frac{(n-2)\cdot 180}{5} + 2 \cdot 60° \right)$$

α = 360° - ( 108° + 120°)
α = 360° - 228°
α = 132°




* The perimetre of a flower with five petals is:

$$\text{Perimeter}_5 = p_5 = 5 \cdot \frac{132}{360} \cdot 2\pi r$$

$$\text{Perimeter}_5 = p_5 = \frac{11}{3}\pi r$$

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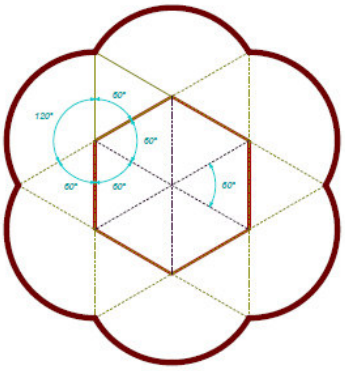
4. If an equilateral triangle is rotating around a hexagon, then the central angle α, over which a petal is drawn, is equal to:



$$\alpha = 360° - \left( \frac{(n-2)\cdot 180}{6} + 2\cdot 60° \right)$$
$$\alpha = 360° - ( 120° + 120°)$$
$$\alpha = 360° - 240°$$
$$\alpha = 120°$$

* The perimetre of a flower with six petals is:

$$\text{Perimeter}_6 = p_6 = 6\cdot \frac{120}{360}\cdot 2\pi r$$
$$\text{Perimeter}_6 = p_6 = \frac{12}{3}\pi r$$

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5. If an equilateral triangle is rotating around a 100-sided polygon, then the central angle α, over which a petal is drawn, is equal to:

$$\alpha = 360° - \left( \frac{(n-2)\cdot 180}{100} + 2\cdot 60° \right)$$
$$\alpha = 360° - ( 176{,}4° + 120°)$$
$$\alpha = 360° - 296{,}4°$$
$$\alpha = 63{,}6°$$

* The perimetre of a flower with a hundred petals is:

$$\text{Perimeter}_{100} = p_{100} = 100\cdot \frac{63{,}3}{360}\cdot 2\pi r$$
$$\text{Perimeter}_{100} = p_{100} = \frac{106}{3}\pi r$$

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6. If an equilateral triangle is rotating around an n-polygon, then the central angle α, over which a petal is drawn, is equal to:

$$\alpha = 360° - \left( \frac{(n-2)\cdot 180}{n} + 2\cdot 60° \right)$$
$$\alpha = 360° - \frac{(n-2)\cdot 180}{n} - 120°$$
$$\alpha = 240° - \frac{(n-2)\cdot 180}{n}$$
$$\alpha = \frac{240°\cdot n - 180°n + 360°}{n}$$
$$\alpha = \frac{60°\cdot n + 360°}{n}$$

$$\alpha = \frac{60° \cdot (n+6)}{n}$$

* The perimetre of a flower with an n petals is:

$$\text{Perimeter}_n = p_n = n \cdot \frac{60° \cdot (n+6)}{n \cdot 360°} \cdot 2\pi r$$

$$\text{Perimeter}_n = p_n = \frac{n+6}{3} \cdot \pi r$$

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