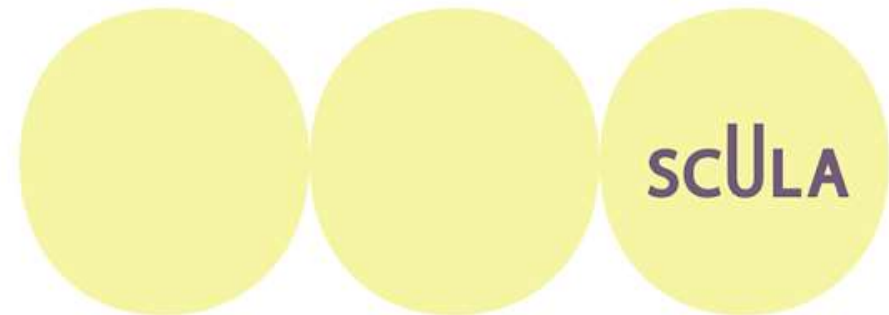# SAT MATH SECTION

Angles

The SAT Geometry has 3 interlinked chapters

1. Angles
2. Triangles
3. Circles

Today we will tackle Angles

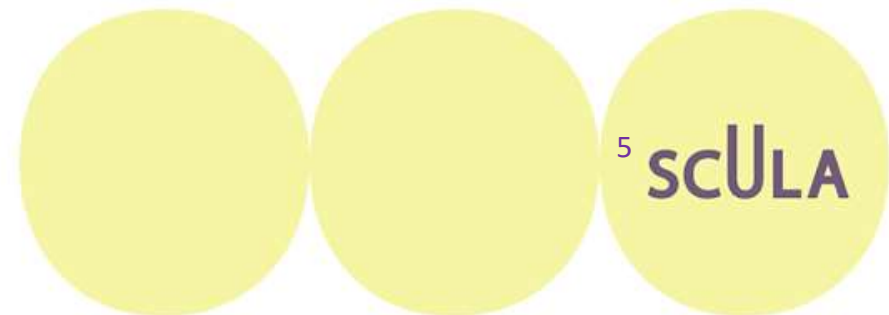These modules will be helpful to understand Triangles and circle over the next sessions

SCULA

1- Angles

- Exterior Angle Theorem

- Parallel Lines

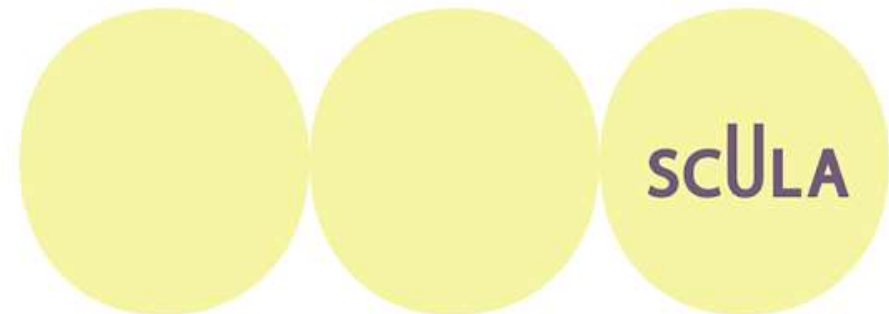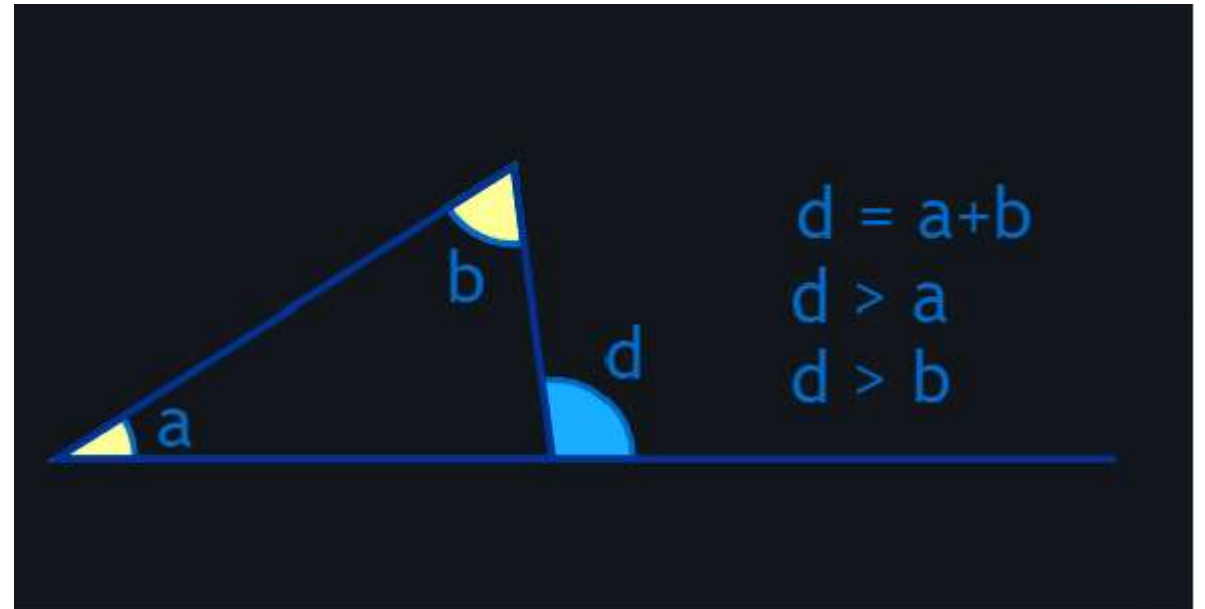- Polygons

Both circles and triangles are made of *angles* .
Most questions will require you to find the value of an angle.

SCULA

What is the measure of the angle d?

Remember these two important rules :

[interior angles of a triangle add to 180°](#), and angles c+d also add to 180°

$d = a+b$
$d > a$
$d > b$

The interior angles of a triangle add to 180°:

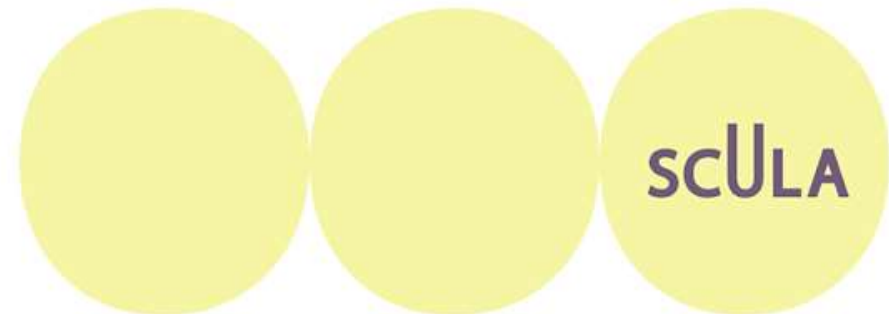$a + b + c = 180°$

Angles c and d make a straight angle, which is 180°:

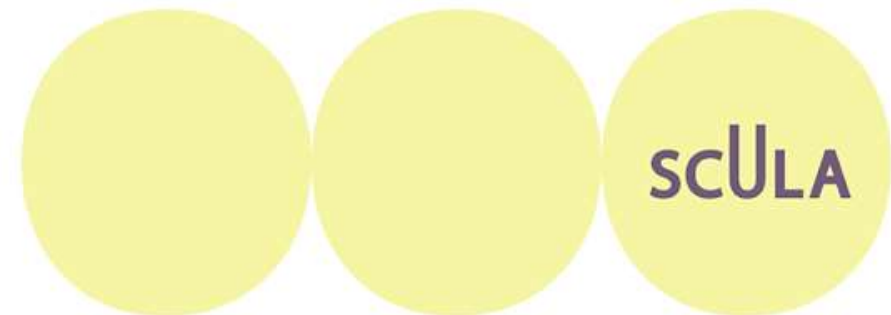$d + c = 180°$

So d + c equals a + b + c:

$d + c = a + b + c$

Subtract c from both sides:
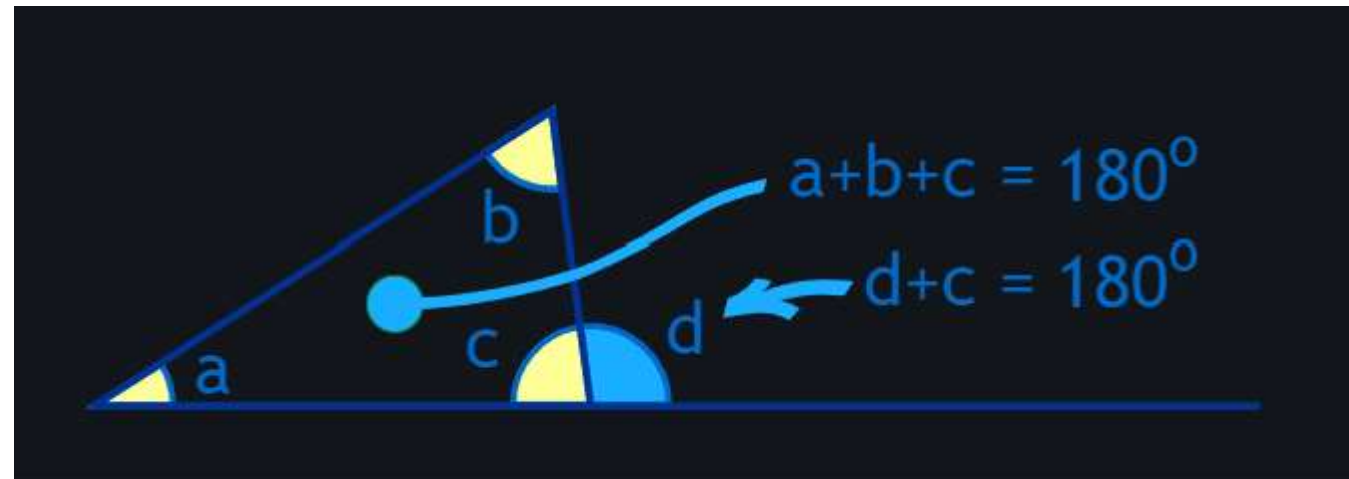
$d = a + b$

SCULA
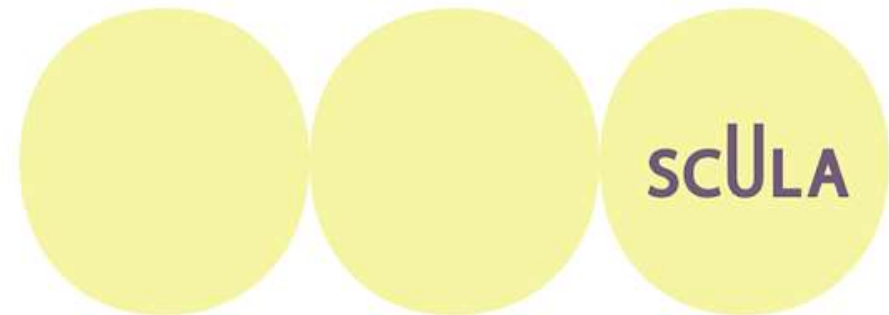
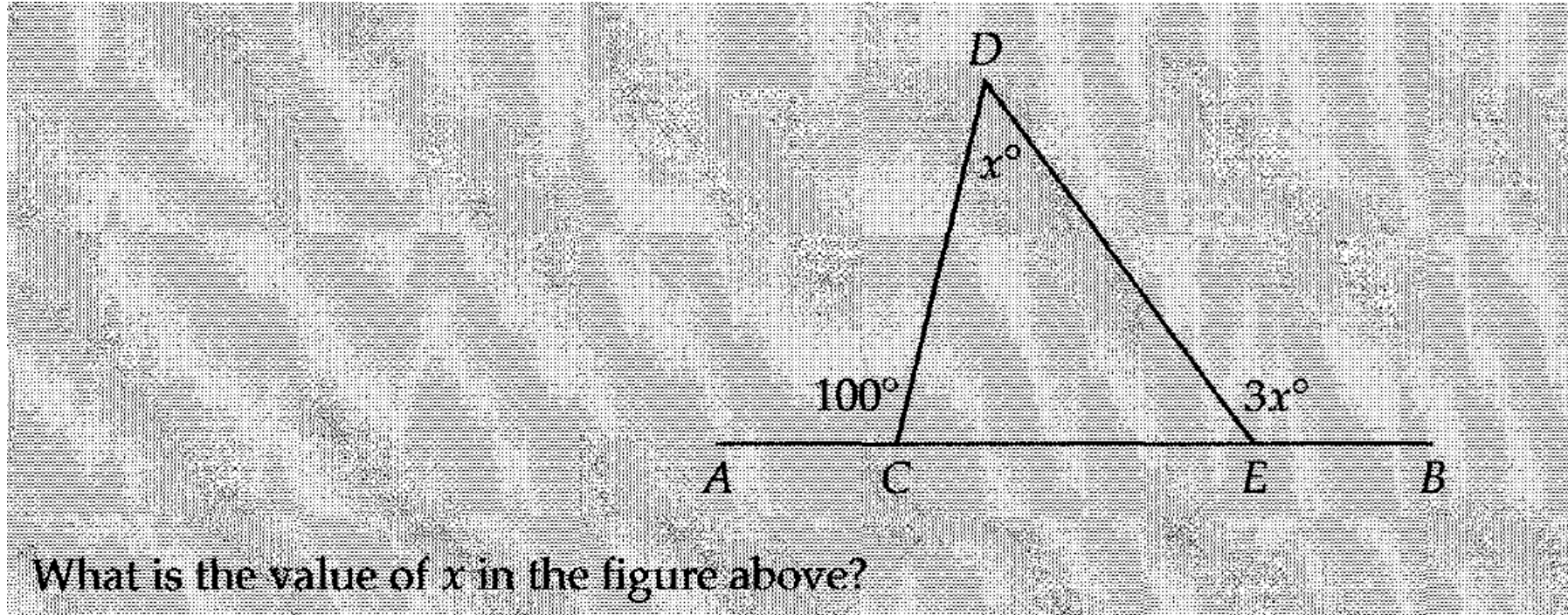By equating these two relationships between the given angles we can have :

a +b = d = 180° - c

a + b = d is the exterior angle theorem

Now that we have proven this equality, you can use it whenever you come across an exterior angle.

SCULA

Example :

What is the value of *x* in the figure above?

Apply the exterior angle theorem to solve this question.

SCULA

From the figure, we can conclude that c = .80 =100 −180

Applying the theorem on the first exterior angle (evah ew (100
 : noitauqe siht

 + 80x = 3x

2x= 80

X = 40
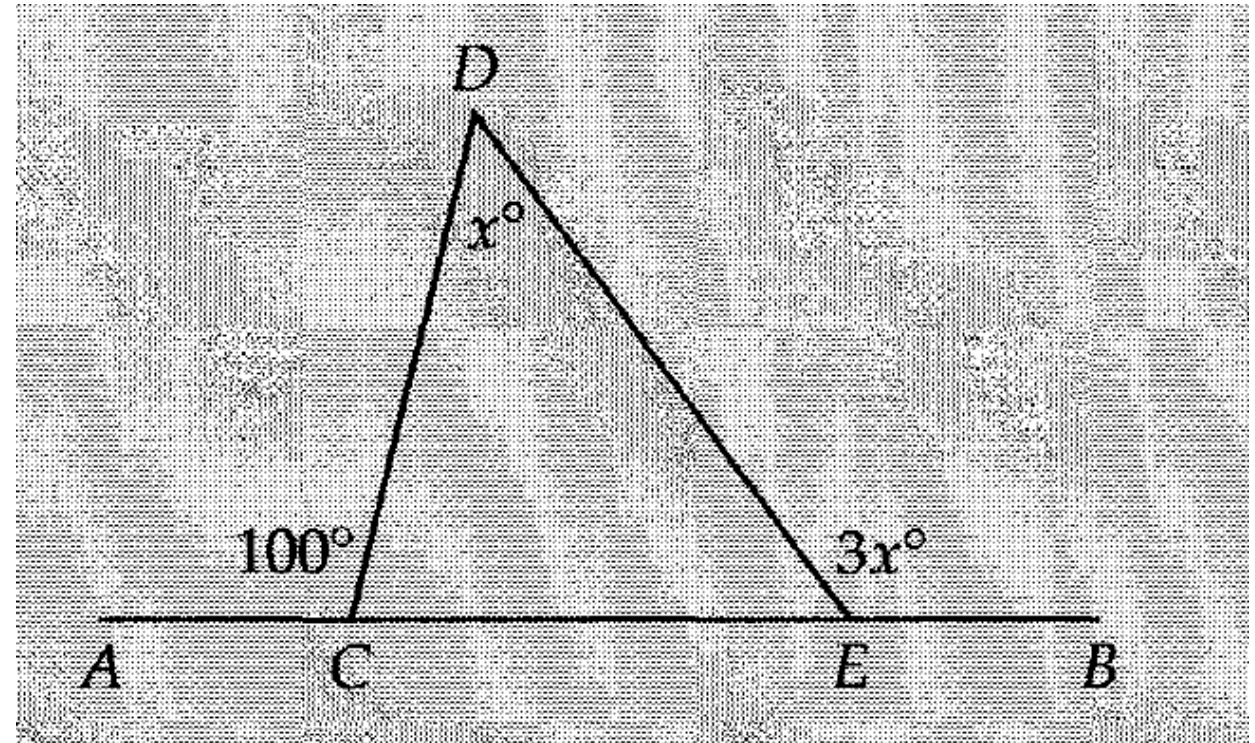
Parallel Lines :

| If **Any Pair** Of ...	Example:
Corresponding Angles are equal	$a = e$
or	
Alternate Interior Angles are equal	$c = f$
or	
Alternate Exterior Angles are equal	$b = g$
or	
Consecutive Interior Angles add up to 180°	$d + f = 180°$
... then the lines are **Parallel**	

SCULA

If the lines are parallel and one line intersect both lines, then all the equalities mentioned before apply .
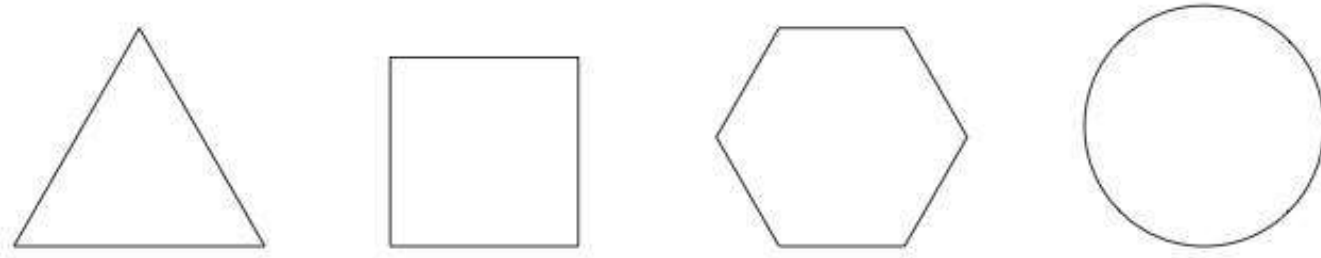
We can conclude for example that :

$12\angle = 9\angle = 4\angle = 1\angle$

$5\angle = 1\angle$

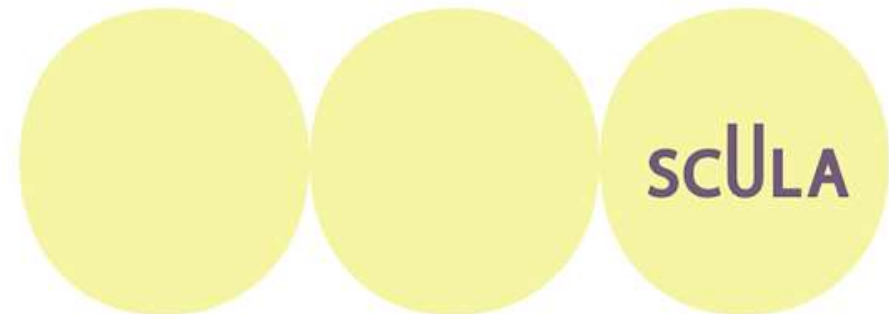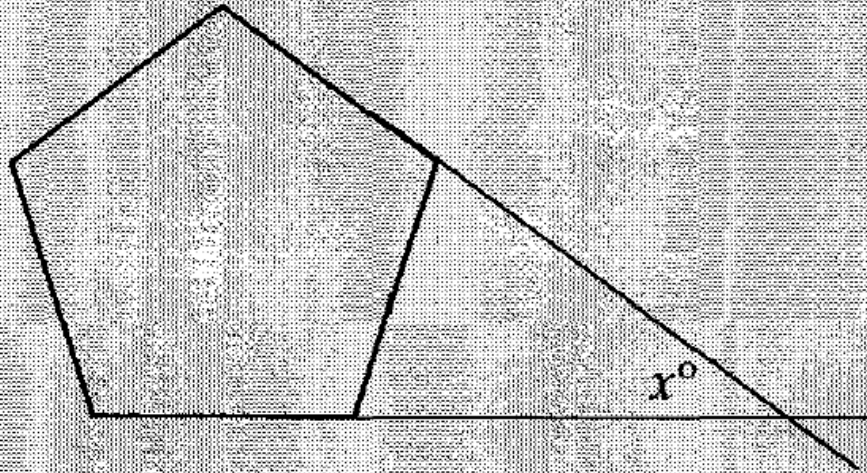$16\angle = 11\angle$ and $14 \angle = 10 \angle$
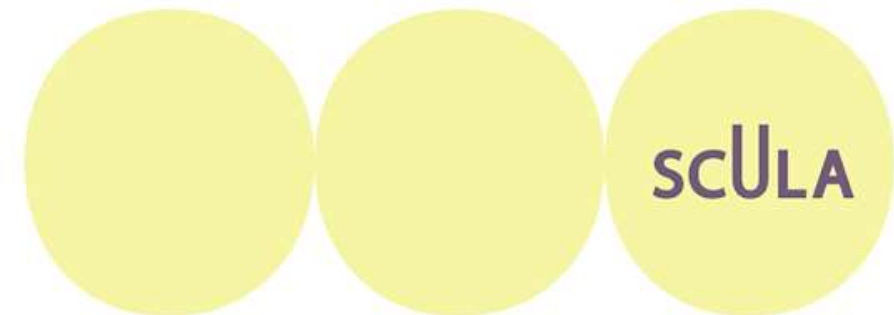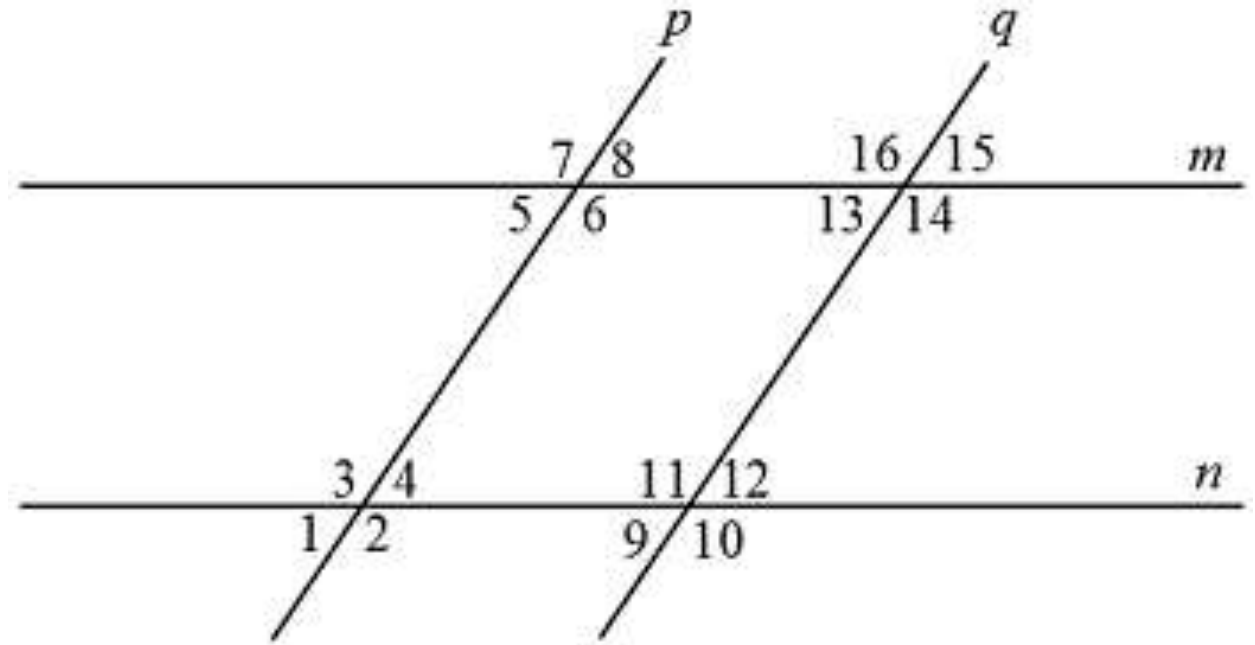
Polygons

As you can see on the polygons above, each additional side can increase the sum of the interior angles by 180°

For any polygon with n sides, the sum of the interior angles is :

$$S = (2-n)180$$

SCULA

Two sides of a regular pentagon are extended as shown in the figure above. What is the value of x?

Remember that a regular pentagon is a pentagon with equal angles and equal sides.

The sum of the interior angle is :

540 = (2 - 5)180

The measure of one interior angle is :
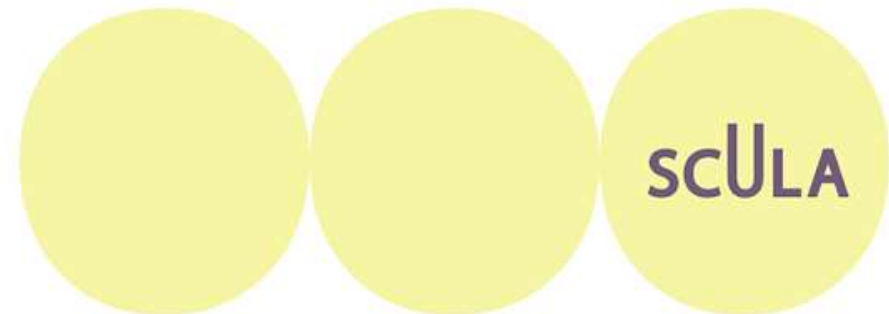
108 = 5÷ 540

The angles of the triangle formed by intersecting line must be :

72 = 108 - 180

)The sum of the interior angles of a triangle is (180

The measure of the angle x is:

36 = 2× 72 - 180

SCULA

THANK YOU!

DO YOU HAVE ANY QUESTIONS?