Neo Scientific Peer Reviewed Journal
Volume 30, January 2025
ISSN (E): 2949-7752
www.neojournals.com

DIFFERENT WAYS TO FIND A TRIANGULAR FACE

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Abstract:
In this article, we will study the methods of calculating the face of a tringle in different ways, that is, according to its given characteristics.

Keywords
Geron, triangle, surface, altitude, angle, perimeter, median.

Introduction

The place of mathematics in a person's life is considered overwhelming while living his life. In particular, accounting issues in everyday life, the human mind - it also has a significant role in mathematics in its imagination. Geometry, on the other hand, is considered an area of Mathematics, all the structures that are being built around us, from schools to universities, all come, first of all, from mathematical hypotheses, and buildings are built on this basis. The basis of geometry is triangles. Because each given form is all made up of triangles. And we consider below the formulas for calculating the faces of the sphere occupied by such triangles in different ways:

The form formed from the attachment of three points, none of which lie in one straight line, through incisions, is called a triangle. The Triangle is the most robust shape, divided into three types according to both sides and angles.

According to the sides:

1. Equilateral
2. Equal-sided
3. Different-sided

According to the corners

1. Right angle
2. Acute angle
3. Impermeable angle

If we Study 7 different types of methods for calculating the face of a triangle.

Given an arbitrary 2 sides of a triangle and the sine of the angle between them, the area of this triangle is found as follows. $S=\frac{1}{2}ab\sin\alpha$

Example: a triangle with sides 4cm and 5cm and an angle sine 0.7 between them is given. Find her face?

Solution: a=4sm, b=5sm, $\sin\alpha = 0{,}7$. $S=\frac{1}{2}ab\sin\alpha$

S=$\frac{1}{2} * 4 * 5 * \frac{7}{10} = \frac{140}{20} = 7sm^2$ Answer: $7sm^2$

1. Given an arbitrary side of a triangle and an altitude lowered in that direction, the area of the Triangle is S=$\frac{1}{2}ah$ is equal to.
2. Example: find a triangular face whose height is equal to 7cm on one side and 4cm on the other.
3. Solution: a=7sm, h=4sm S=$\frac{1}{2}ah$

S=$\frac{1}{2} * 7 * 4 = \frac{28}{2} = 14sm^2$ Answer: $14sm^2$

1.Calculation of the triangular face by the Geron formula:

S=√ ( ) ( ) ( )

a, b, c = triangle

triangle p= semi-perimeter $a+b+c$

p=——

2

Example: calculate its area if a triangle with sides 7cm, 8cm, 9cm is given.

Solution: a=7sm, b=8sm, c=9sm p=$\frac{a+b+c}{2} = \frac{7+8+9}{2} = 12$sm

S=$\sqrt{p * (p-a) * (p-b) * (p-c)} = \sqrt{12 * (12-7) * (12-8) * (12-9)} =$

$= \sqrt{12 * 5 * 4 * 3} = \sqrt{5 * 12 * 12} = 12\sqrt{5}\ sm^2$

Answer: $12\sqrt{5}\ sm^2$

1. Finding the face of a triangle on the basis of its medians lowered on its sides:

$$S = \frac{4}{3}\sqrt{m * (m-m_a) * (m-m_b) * (m-m_c)}$$

m= half of the sum of the medians m=$\frac{m_a+m_b+m_c}{2}$

Example: let the medians of a triangle equal to 9SM, 13sm and 16sm be given. Find the same triangular face.

Solution: $m_a = 9\ sm$ m_b=13 sm $m_c = 16\ sm$

m=$\frac{9+13+16}{2} = \frac{38}{2} = 19sm$

$$S = \frac{4}{3}\sqrt{19 * (19-9) * (19-13) * (19-16)} = \frac{4}{3}\sqrt{19 * 10 * 6 * 3} =$$

$$= \frac{4}{3} * 6\sqrt{95} = 8\sqrt{95}\ sm^2$$

Solution: $8\sqrt{95}\ sm^2$

1. Given the Radus of this circle and the sides of the Triangle to find the circle and the triangle face drawn internally, the surface of the Triangle is found as follows:
2.

3. $S=\frac{a*b*c}{4R}$

a,b,c- triangle sides

R- triangle sides

Example: let the right triangle with sides 3sm, 4sm, 5SM and the radius of the circle drawn outwards into it be 2.5 cm. Find her face?

Solution: $S=\frac{3*4*5}{4*2,5}=\frac{15}{2,5}=\frac{150}{25}=\frac{30}{5}=6\ sm^2$

Answer: $6\ sm^2$

6. Given the radius of the circle and the sine of the angles of the triangle drawn internally, one defines its area as:

$S=2*R^2*\sin\alpha*\sin\beta*\sin\gamma$

R- radius of the circle $\sin\alpha, \sin\beta, \sin\gamma$- angle sine

Example: the radius of the circle drawn externally to the Triangle is 2cm. And if the Sines of the angles are equal to 2/3 3/4 and 1/2, find the face of this triangle?

Solution: $S=2*2^2*2/3*3/4*1/2=2\ sm^2$

Answer: $2\ sm^2$

7. Given the sides of a triangle and the radius of an inner drawn circle, its surface is defined as follows:

S=p*r p- semi-perimeter R-inner circle radius

Example: the sides are 8cm, 9cm, 13cm, and the radius of the circle is 6cm. Find the area of the Triangle.

Solution: $S= p*r=\frac{a+b+c}{2}*r=\frac{8+9+13}{2}*6=15*6=90sm^2$

Answer: $90sm^2$

Through a few more different methods similar to the above, we can also use formulas for finding their surfaces in relation to the private cases of the Triangle.

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