

سلسلة الطارق في الرياضيات: مجموع الزوايا الداخلية للمضلعات



تم تحميل هذا الملف من موقع المناهج الإماراتية

موقع المناهج ⇨ المناهج الإماراتية ⇨ الصف العاشر ⇨ رياضيات ⇨ الفصل الأول ⇨ ملفات متنوعة ⇨ الملف

تاريخ إضافة الملف على موقع المناهج: 2026-10-10 11:07:28

ملفات اكتب للمعلم اكتب للطالب ا اختبارات الكترونية ا اختبارات ا حلول ا عروض بوربوينت ا أوراق عمل
منهج انجليزي ا ملخصات وتقارير ا مذكرات وبنوك ا الامتحان النهائي ا للمدرس

المزيد من مادة
رياضيات:

إعداد: طارق علي

التواصل الاجتماعي بحسب الصف العاشر



صفحة المناهج
الإماراتية على
فيسبوك

المزيد من الملفات بحسب الصف العاشر والمادة رياضيات في الفصل الأول

كتاب الطالب Reveal ريفيل المجلد الأول

1

التوزيع الزمني للخطة الفصلية الفصل الأول للعام 2022-2023

2

توزيع مقرر الرياضيات

3

تحميل تطبيق المناهج للهواتف الذكية

تطبيق المناهج على Play Google (أندرويد)

تطبيق المناهج على Store App (آبل)

الطارق

سلسلة

الرياضيات

فني

منصة طارق أكاديمي للرياضيات

Tarek Academy

2-1

مرحلة فعاشر (متقدم)

الطارق

أستاذ الرياضيات

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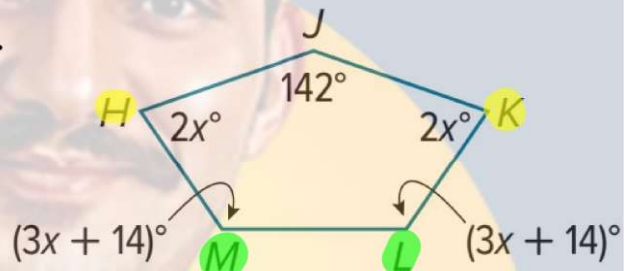


Theorem 2.1: Polygon Interior Angles Sum Theorem

The sum of the interior angle measures of an n -sided convex polygon is $(n - 2) \cdot 180^\circ$.

Example 1 Find the Interior Angles Sum of a Polygon

Find the measure of each interior angle of pentagon $HJKLM$.



$$\textcircled{1} \text{ Sum} = (n - 2) \cdot 180$$

$$(5 - 2) \times 180 = 540$$

$$\textcircled{2} \underline{2x} + \underline{3x + 14} + 142 + \underline{2x} + \underline{3x + 14} = 540$$

$$10x = 540 - 14 - 142 - 14$$

$$10x = 370$$

$$x = \frac{370}{10} = \underline{37}$$

$$\textcircled{3} m\angle H = m\angle K = 2(37) = 74^\circ$$

$$m\angle L = m\angle M = 3(37) + 14 = 125^\circ$$



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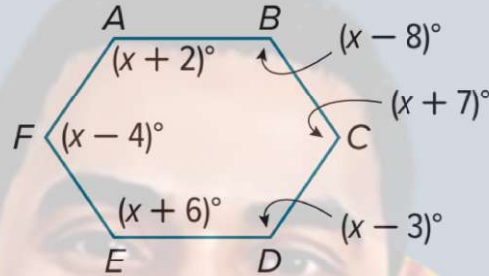




Check

Find the measure of $\angle E$.

- A. 108°
 B. 120°
 C. 122°
 D. 126°



$$\textcircled{1} \text{ Sum} = (n-2) \cdot 180 = (6-2) \times 180 = 720$$

$$\textcircled{2} x + 2 + x - 8 + x + 7 + x - 3 + x + 6 + x - 4 = 720$$

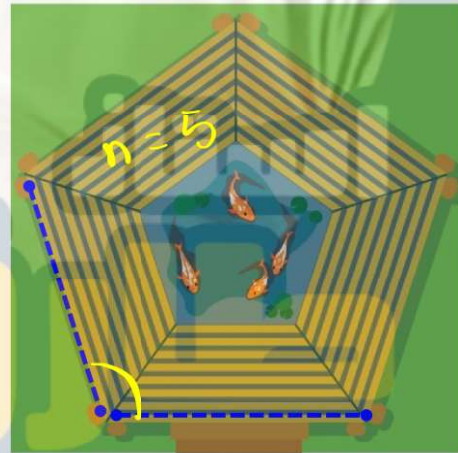
$$6x = 720 \rightarrow x = 120$$

$$\textcircled{3} m\angle E = x + 6 = 120 + 6 = 126^\circ$$

Check

PONDS Miguel has commissioned a pentagonal koi pond to be built in his backyard. He wants the pond to have a deck of equal width around it. The lengths of the interior deck sides are the same length, and the lengths of the exterior sides are the same.

The measure of the angle of the pond formed by two sides of the deck is ____.



$$(n-2) \cdot 180$$

n

= an angle

$$(5-2) \times 180$$

5

$$= 108^\circ$$





$$n = ?$$

Number of sides

$$\text{Angle} \times n = (n - 2) \times 180$$

Example 3 Identify the Polygon Given the Interior Angle Measure

The measure of an interior angle of a regular polygon is 144° . Find the number of sides in the polygon.

$$144n = (n - 2) \times 180$$

$$144n = 180n - 360$$

$$360 = 180n - 144n$$

$$360 = 36n$$

$$n = \frac{360}{36} = \boxed{10 \text{ Sides}}$$

Check

The measure of an interior angle of a regular polygon is 150° . Find the number of sides in the polygon.

The polygon has ? sides.

$$150n = (n - 2) \times 180 \Rightarrow \frac{150n}{180} = n - 2$$

$$\frac{5}{6}n = n - 2$$





$$2 = n - \frac{5}{6}n$$

$$2 = \frac{1}{6}n$$

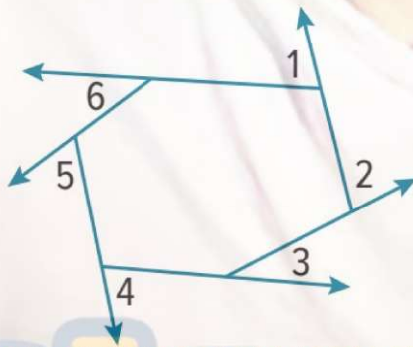
$$n = 2 \left(\frac{6}{1} \right) = \boxed{12 \text{ Sides}}$$

Learn Exterior Angles of Polygons

Theorem 2.2 Polygon Exterior Angles Sum Theorem

Words The sum of the exterior angle measures of a convex polygon, one angle at each vertex, is 360° .

Example $m\angle 1 + m\angle 2 + m\angle 3 + m\angle 4 + m\angle 5 + m\angle 6 = \boxed{360^\circ}$



* one, an, each
exterior

$$= \frac{360}{n}$$

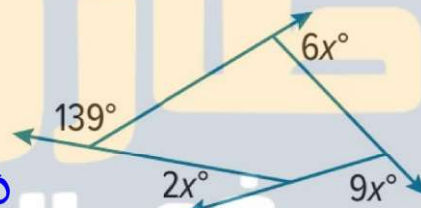
Example 4 Find Missing Values

Find the value of x .

$$6x + 2x + 9x + 139 = 360$$

$$17x = 360 - 139$$

$$17x = 221 \rightarrow x = \frac{221}{17} = \boxed{13}$$

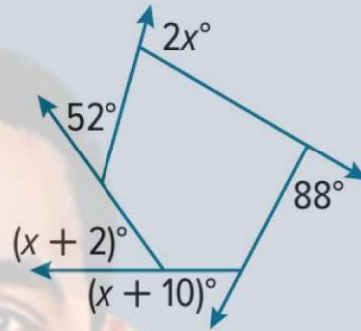




Check

Find the value of x .

- A. 45 **(B) 52** C. 93 D. 97



$$* x + 2 + x + 10 + 2x + 88 + 52 = 360$$

$$\rightarrow 4x = 360 - 2 - 10 - 88 - 52$$

$$4x = 208 \quad \rightarrow \quad x = \frac{208}{4} = \boxed{52}$$

$$* \text{one measure of each exterior} = \frac{360}{n}$$

$$* \text{an interior} = \frac{(n-2) \cdot 180}{n}$$

$$* \text{Sum of interior} = (n-2) \cdot 180$$

$$* \text{Sum of exterior} = 360$$

$$* \text{number of sides}$$

$$\text{Angle} \cdot n = (n-2) \cdot 180$$





Example 5 Find Exterior Angle Measures of a Polygon

Find the measure of each exterior angle of a regular dodecagon. $n=12$

$$\frac{360}{n} = \frac{360}{12} = 30^\circ$$

Check

$$n=8$$

The measure of each exterior angle of a regular octagon is ?

$$\frac{360}{n} = \frac{360}{8} = 45^\circ$$

Polygon Names



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Dodecagon



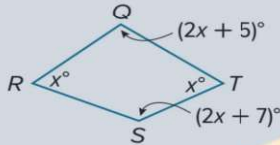


Practice

Example 1

Find the measure of each interior angle.

1.



$$* \text{Sum} = (4-2) \times 180 = 360$$

$$* 2x + 5 + x + x + 2x + 7 = 360$$

$$6x = 360 - 5 - 7 \rightarrow 6x = 348$$

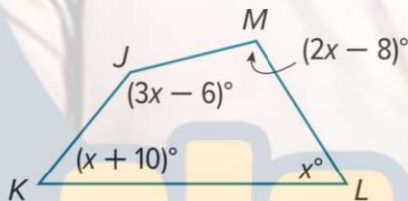
$$x = \frac{348}{6} = \underline{58}$$

$$* m\angle R = m\angle T = x = 58^\circ$$

$$* m\angle Q = 2(58) + 5 = 121^\circ$$

$$* m\angle S = 2(58) + 7 = 123^\circ$$

2.



$$* S = (4-2) \times 180 = 360$$

$$* 2x - 8 + x + x + 10 + 3x - 6 = 360$$

$$7x = 360 + 8 - 10 + 6$$

$$7x = 364 \rightarrow x = \frac{364}{7} = 52$$

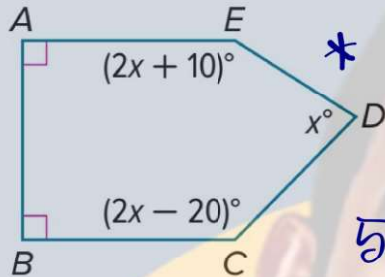
$$* m\angle L = x = 52^\circ \quad * m\angle K = 52 + 10 = 62^\circ$$

$$* m\angle J = 3(52) - 6 = 150^\circ \quad * m\angle M = 2(52) - 8 = 96^\circ$$





3.



$$* \Sigma = (5-2) \times 180 = 540$$

$$* 90 + 90 + 2x + 10 + 2x - 20 + x = 540$$

$$5x = 540 - 90 - 90 - 10 + 20$$

$$5x = 370 \rightarrow x = \frac{370}{5} = 74$$

$$* m\angle D = x = 74^\circ$$

$$* m\angle C = 2(74) - 20 = 128^\circ$$

$$* m\angle E = 2(74) + 10 = 158^\circ$$

5. **ARCHITECTURE** In the Uffizi gallery in Florence, Italy, there is a room built by Buontalenti called the Tribune (*La Tribuna* in Italian). This room is shaped like a regular octagon. What is the measure of the angle formed by two consecutive walls of the Tribune?



$$* n = 8$$

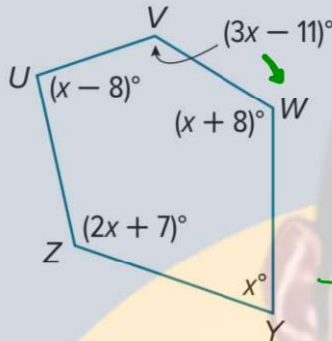
$$* \frac{(n-2) \times 180}{n} = \frac{(8-2) \times 180}{8} = 135^\circ$$

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4.



$$* \Sigma = (5-2) \times 180 = 540$$

$$* 3x - 11 + x + 8 + x + 2x + 7 + x - 8 = 540$$

$$\rightarrow 8x = 540 + 11 - 8 - 7 + 8$$

$$8x = 544 \rightarrow x = \frac{544}{8} = 68$$

$$* m\angle U = x - 8 = 68 - 8 = 60^\circ$$

$$* m\angle Y = x = 68^\circ$$

$$* m\angle V = 3x - 11 = 3(68) - 11 = 193^\circ$$

$$* m\angle W = x + 8 = 68 + 8 = 76^\circ$$

$$* m\angle Z = 2x + 7 = 2(68) + 7 = 143^\circ$$

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Mr. Tarek Ali

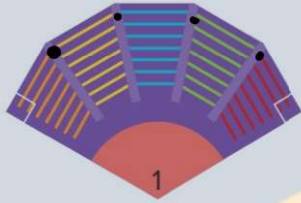
سلسلة الطارق في الرياضيات منصة طارق أكاديمي

10

متقدم



6. **THEATER** A theater floor plan is shown in the figure. The upper five sides are part of a regular dodecagon. Find $m\angle 1$.



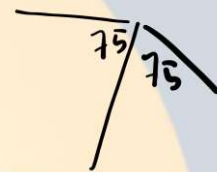
$$* n = 12$$

$$* S = (12 - 2) \times 180 = 1800^\circ$$

$$* \text{an angle} = \frac{S}{n} = \frac{1800}{12} = 150^\circ$$



$$* \text{one angle} = \frac{150}{2} = 75^\circ$$



$$* 7 \text{ side } S \rightarrow S = (7 - 2) \times 180 = 900$$

$$\# m\angle 1 = 900 - 2(75) - 4(150) = 150^\circ$$

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في الرياضيات



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IN

Math

$\pi = 3.14$

$A = \frac{ab + c}{d}$

$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

$a^2 + b^2 = c^2, c = \sqrt{a^2 + b^2}$

$c^2 + a^2 = b^2, c^2 - b^2 = a^2$

$a^2 = 2a$

$f(a + b) = c$

$(x + y)^2 - (x - y)$

$+ 2c = 1$

$\frac{a}{c} = \frac{HB}{a}$

$Me =$

MATH

خاص بالمنصة



خاص بجميع الجروبات و القنوات



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