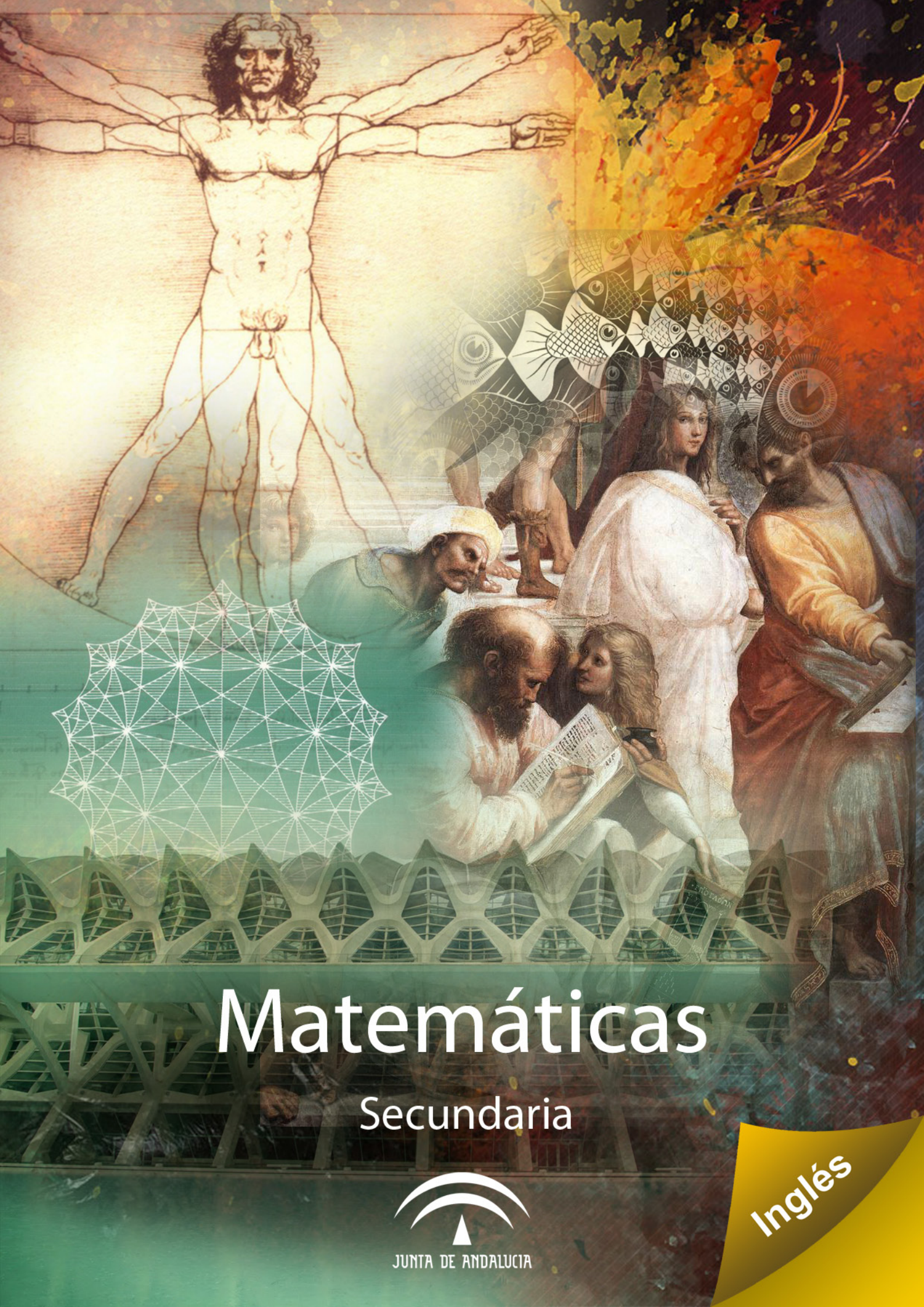
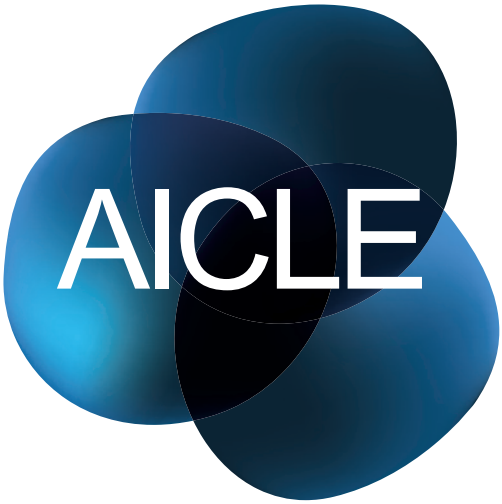


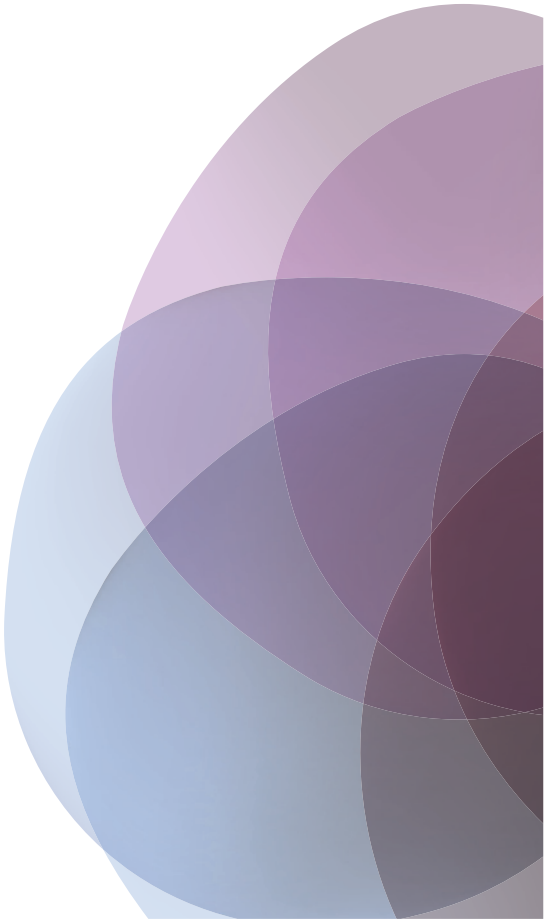
Matemáticas

Secundaria

Inglés

JUNTA DE ANDALUCIA





JUNTA DE ANDALUCIA

Identificación del material AICLE

TÍTULO	Perimeters and Areas
NIVEL LINGÜÍSTICO SEGÚN MCER	A2.1
IDIOMA	Inglés
ÁREA / MATERIA	Matemáticas
NÚCLEO TEMÁTICO	Geometría
GUIÓN TEMÁTICO	Identificación de polígonos y sus partes. Cálculo de sus perímetros y áreas. Estudio del círculo. Adquisición del vocabulario básico de la unidad.
FORMATO	Material didáctico en formato PDF
CORRESPONDENCIA CURRICULAR	1º de Educación Secundaria
AUTORÍA	Patricia Sánchez España
TEMPORALIZACIÓN APROXIMADA	6 sesiones.
COMPETENCIAS BÁSICAS	Competencia lingüística: - Conocer, adquirir, ampliar y aplicar el vocabulario del tema - Ejercitar una lectura comprensiva de textos relacionados con el núcleo temático Competencia Matemática: - Identificar polígonos y sus partes - Utilizar las fórmulas para calcular sus áreas y perímetros - Resolver problemas matemáticos sobre áreas y perímetros Aprender a aprender - Interpretar la información sobre las diferentes formas geométricas - Organizar información en esquemas. Autonomía e iniciativa personal - Ser autónomos para realizar las actividades individuales
OBSERVACIONES	Las fichas de vocabulario de trabajo en parejas, se pueden usar como introducción a la unidad. La unidad se puede explicar por completo en la segunda lengua. Atención a la diversidad Ampliación: Writing Word Problems Refuerzo: TANGRAM

Tabla de programación AICLE

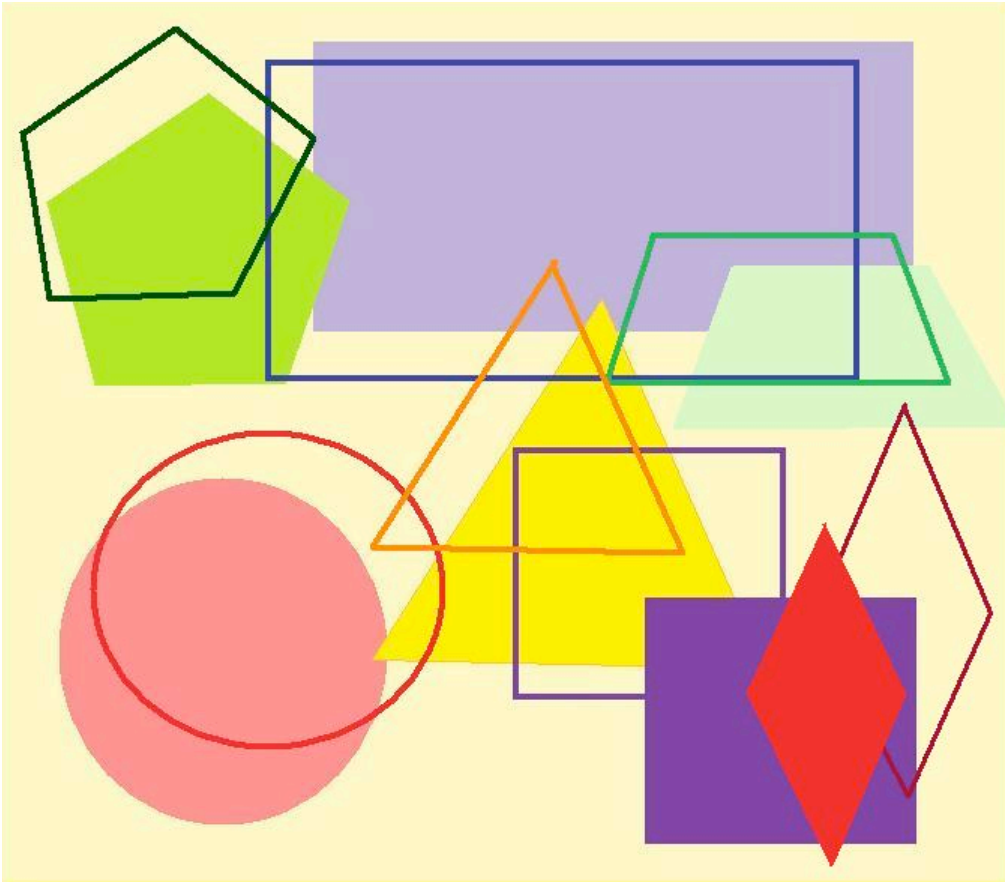
OBJETIVOS	- Concebir el conocimiento científico como un saber integrado, que se estructura en distintas disciplinas, así como conocer y aplicar los métodos para identificar los problemas en los diversos campos del conocimiento y de la experiencia. - Comprender y expresarse en una o más lenguas extranjeras de manera apropiada.
CONTENIDOS DE CURSO / CICLO	1. Contenidos comunes referentes a la resolución de problemas y la utilización de herramientas tecnológicas. 4. Geometría.
TEMA	- Los polígonos: definiciones y sus elementos - Clasificación de polígonos - Cálculo de perímetros y áreas de polígonos - La circunferencia y el área del círculo - Resolución de problemas
MODELOS DISCURSIVOS	- Distinguir las partes de un polígono. - Clasificar los distintos tipos de polígonos según el número de lados. - Analizar los diferentes elementos del círculo.
TAREAS	- Word problems - Tangrams - Presentación oral de un poster - Figuras geométricas en papel
CONTENIDOS LINGÜÍSTICOS	FUNCIONES: - Preguntar por acciones pasadas - Expresar la localización exacta - Expresar certeza o no certeza sobre una solución - Preguntar y responder sobre dimensiones ESTRUCTURAS: Find the area What is the name of polygon of five sides? No, triangle does not go in this box. I think this is a circle. I agree. I don't think so. What is the name for …? How do you read this? Can this be a...? LÉXICO: Area, perimeter, polygon, regular polygon, diagonal, centre, radius, apothem, circle, quadrilateral, square, rectangle, rhombus, trapezoid, parallelogram, triangle, pentagon, hexagon, ...
CRITERIOS DE EVALUACIÓN	- Utilizar correctamente las fórmulas para hallar áreas y perímetros de polígonos - Descomponer polígonos irregulares en otros más sencillos para calcular su área y su perímetro - Resolver problemas de la vida cotidiana que precisen del cálculo de perímetros y áreas de figuras planas

PERIMETERS AND AREAS

How many shapes do you know? What is the name of the blue shape?

Can you see shapes with similar properties? How many sides ...? What are the angles like?

Do you know their areas and perimeters? Do you know any other shapes?



Key vocabulary

VOCABULARY PRACTICE

where did you put...? I put it in...goes with...

can you find ...?
look, ... is here. it is next to ...

I don't think so.
I agree

no,...does not go in...!
what does this word mean?

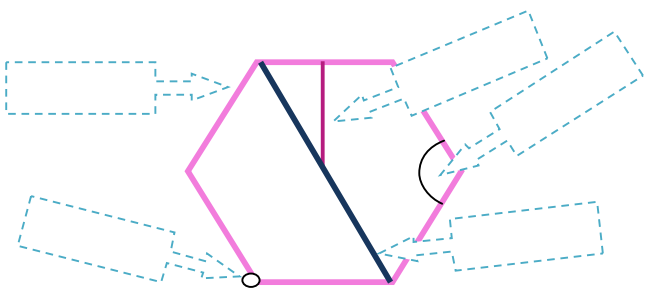
can this be the pentagon?

1. Listen and fill in the gaps.

Identifying the parts of a polygon

A polygon, Greek for many sides, is a closed figure drawn using straight line segments which meet only at their endpoints. The endpoints of the _____ of polygons are called _____. When naming a polygon, its vertices are named in consecutive order either clockwise or counterclockwise. Consecutive sides are two sides that have an endpoint in common. A _____ of a polygon is any segment that joins two nonconsecutive vertices. The sum of the measures of the _____ of a convex polygon with n sides is (n-2)180º

2. Complete the chart with the following words. Work in pairs.



side
vertex
diagonal
interior angle
apothem

3. Match each polygon name with its number of sides. Work in pairs.

NAME		Number of Sides
Triangle		5
Quadrilateral		4
Pentagon		7
Hexagon		8
Heptagon		9
Octagon		12
Nonagon		10
Decagon		3
Dodecagon		6

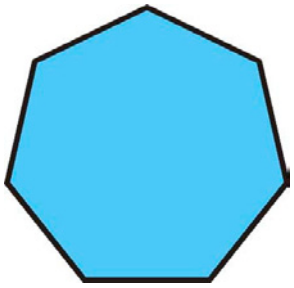
4. Write the name of each polygon and complete the sentence. Work in pairs.

this is a _____
because it has __sides

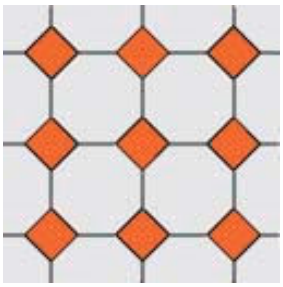
this is a _____
because it has __sides

this is a _____
because _____

this is a _____
because _____

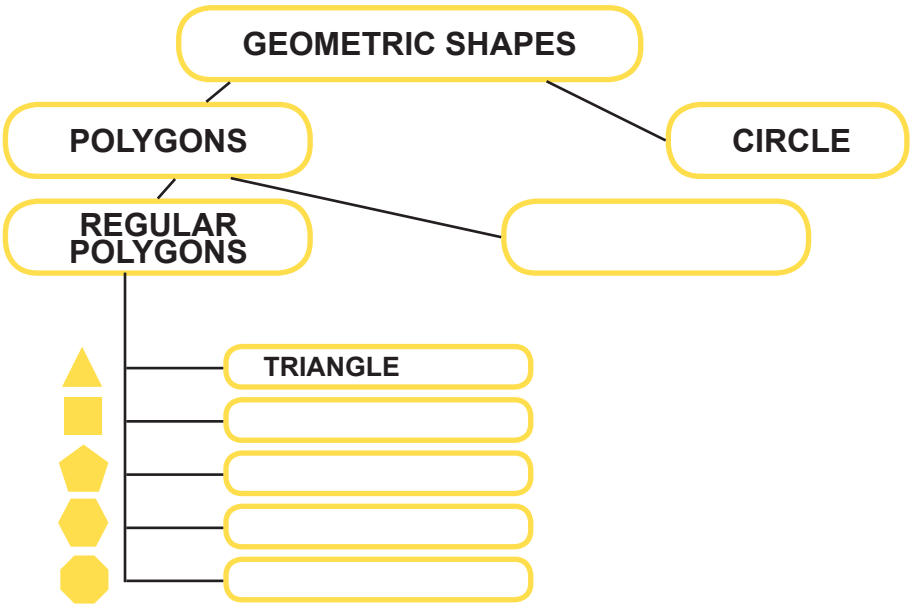


this is a _____
because _____



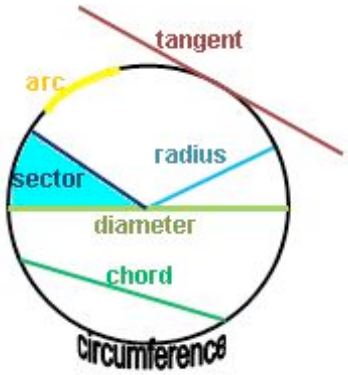
these are _____
_____

5. Complete the following chart and prepare a short presentation to show to the class.



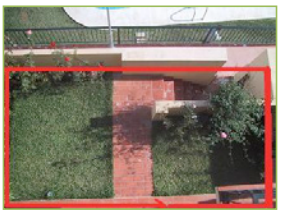
6. Find seven words related to circles. Work in pairs.

G	U	T	C	H	O	R	D	O	I	C	E	A
H	R	H	I	U	J	K	N	F	E	T	H	F
I	C	I	R	C	L	E	R	E	C	T	A	E
I	R	P	C	P	E	R	M	E	T	W	R	A
M	F	U	U	A	F	E	C	V	E	S	M	S
D	I	A	M	E	T	E	R	C	N	E	X	F
K	L	E	F	A	A	G	A	O	S	G	S	P
M	O	R	E	R	N	E	D	L	U	M	E	J
H	E	I	R	E	G	U	I	O	E	E	U	J
R	T	M	E	A	E	B	U	G	G	N	N	T
V	D	E	N	S	N	I	S	E	C	T	O	R
N	A	R	C	E	T	O	D	F	I	P	E	G
M	L	I	E	S	W	E	O	K	J	N	V	D



PERIMETER AND AREA PRACTICE

7. Listen to your teacher and complete the following text about perimeters.



The _____ is the distance around the outside of the polygon. A polygon is 2-dimensional, however, the perimeter is _____ and is measured in linear units.

To help us make this distinction, look at our picture of a backyard. The yard is 2-dimensional: it has a _____.

The amount of fence needed to enclose the backyard (perimeter) is 1-dimensional. The perimeter of this yard is the distance around the outside of the yard, indicated by the red lines. It is measured in _____ such as feet or meters.

To find the _____, take the sum of the length of each side. The formula for perimeter of a rectangle is:

P = 2w + 2l

To find the perimeter of a regular polygon, _____ by the length of one side.

8. Solve for each exercise and draw the correct shape. Explain your reasoning.

a) Find the perimeter of a triangle with sides measuring 10 inches, 14 inches and 15 inches.

b) A rectangle has a length of 12 centimeters and a width of 4 centimeters. Find the perimeter.

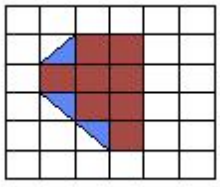
c) Find the perimeter of a regular hexagon with each side measuring 8 meters.

d) The perimeter of a square is 20 feet. How long is each side?

e) The perimeter of a regular pentagon is 100 centimeters. How long is each side?

The area of a plane figure, measured in square units (or units^2), is the number of squares required to cover it completely.

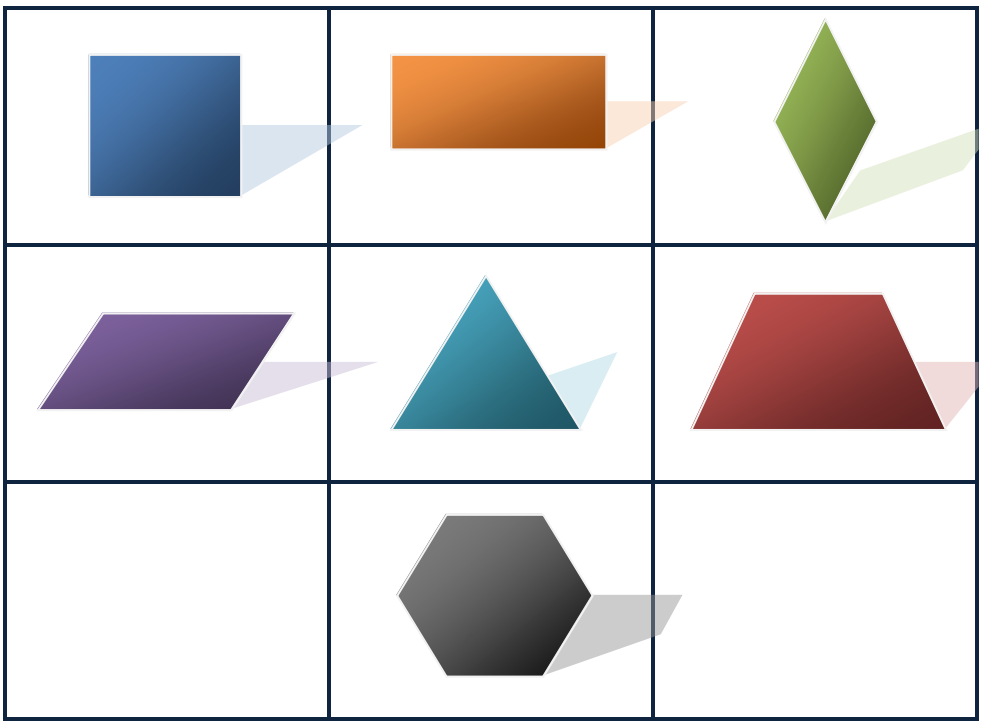
Example:
The figure shown has an area of 9.5 square units: 8 whole squares plus 3 half-squares.



9. Match each figure with its area formula. Work in pairs.

figure	area	
square	$A = bh$	**b** and **h** are the base and height
rectangle	$A = s^2$	**s** is the length of the side of the square
rhombus	$A = l\,w$	**L** and **W** are the lengths of the rectangle's sides: **length and width**
parallelogram	$A = \frac{(b+B)h}{2}$	**b** and **B** are the bases and h is the height
triangle	$A = \frac{Pa}{2}$	**P** is the perimeter and a is the apothem
trapezoid	$A = \frac{dD}{2}$	**d** and **D** are the diagonals of the rhombus.
regular polygon	$A = \frac{bh}{2}$	**b** and **h** are the base and height .

10. Label the following figures with their measurements. Work in pairs.



11. Draw the correct shape for each exercise and solve it. Explain your reasoning.

a) A parallelogram has a base of 3 inches and a height of 7 inches. What is its area?

b) A square-shaped garden has a side of 6 feet. What is its area?

c) A triangular-shaped yard has a base of 25 meters and a height of 12 meters. What is its area?

d) A trapezoid has bases of 9 inches and 7 inches and a height of 5 inches. What is its area?

e) A large window has a length of 8 feet and a width of 6 feet. What is its area?

f) A trapezoid has bases of 7 centimeters and 5 centimeters and a height of 3 centimeters. What is its area?

g) A rectangular piece of paper has a width of 16 inches and an area of 192 square inches. What is its length?

h) A rhombus has diagonals of 8 and 6 cm. Find the area.

i) A hexagon with sides measuring 10 meters has an apothem of 8.66 meters. Find the area.

12. Fill in the gaps with the words bellow.

A _____ is a shape with all points the same distance from the center. If you measure the distance around a circle and divide it by the distance across the circle through the center, you will always come close to a particular value, depending upon the accuracy of your measurement. This value is approximately 3.14159265358979323846... We use the Greek letter ____ to represent this value. The number Pi goes on forever. However, using computers, Pi has been calculated to over 1 trillion digits past the decimal point.

The distance around a circle is called the_____. The distance across a circle through the center is called the diameter. Pi is the ratio of the circumference of a circle to the diameter. C equals Pi _____ d.

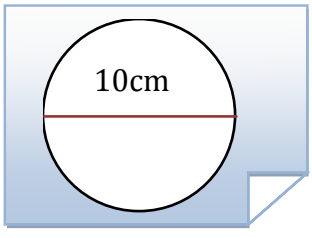
The _____ of a circle is the distance from the center of a circle to any point on the circle. If you place two radii end-to-end in a circle, you would have the same length as one diameter. Thus, the diameter of a circle is _____ as long as the radius.

Circumference, diameter and radii are measured in _____ units, such as inches and centimeters. A circle has many different radii and many different diameters, each passing through the center. A real-life example of a radius is the spoke of a bicycle wheel. A 9-inch pizza is an example of a diameter: when one makes the first cut to slice a round pizza pie in half, this cut is the diameter of the pizza. So a 9-inch pizza has a 9-inch diameter. Let's look at some examples of finding the circumference of a circle. In these examples, we will use Pi = 3.14 to simplify our calculations.

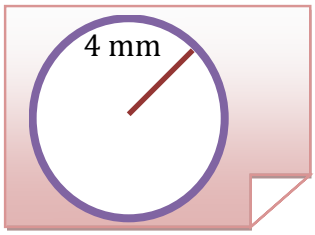
Pi linear circumference times circle twice radius

13. Draw the correct shape for each exercise and solve it. Explain your reasoning.

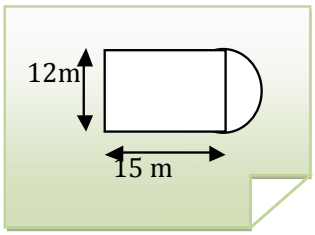
a) Work out the circumference of this circle



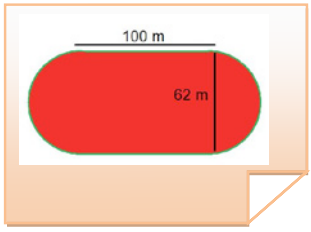
b) Work out the area of this circle.



c) Work out the area of this shape.



d) A running track is marked as shown. The straight part of the track is 100m long and the width across the track is 62m. The ends of the track are semicircular. Calculate the perimeter of the inside of the track.



e) Helen's kitchen window is in the shape of a rectangle, 1.8m by 1.2m, with a semicircle at the top. What is the total area of the window?

14. Solve the following word problems. Explain your reasoning.

a) A playing card has a length of 10 centimeters and a width of 5 centimeters. What is its perimeter?

The shape is _____ because
_____
_____.
The formula is _____ and the solution is:

b) A parallelogram has a base of 3 inches and a height of 7 inches. What is its area?

The shape is _____ because
_____
_____.
The formula is _____ and the solution is:

c) The perimeter of a square is 220 centimeters. What is the length of each side?

The shape is _____ because
_____
_____.
The formula is _____ and the solution is:

d) A rectangular frame has a width of 12 inches and an area of 192 square inches. What is its length?

The shape is _____ because
_____
_____.
The formula is _____ and the solution is:

e) The perimeter of a room is 22 feet, and the area is 24 square feet. Find the length and width.

The shape is _____ because
_____
_____.
The formula is _____ and the solution is:

WRITING WORD PROBLEMS

15. Write 2 different word problems where the solution requires you to find the area of a polygon and solve them. Present the problems to your class.

The shape of a _____ is a _____
that measures _____.
Find the _____.

The _____
_____.
Find the _____.

TANGRAM

16. Work with a partner. Cut out your tangram. With a ruler, measure all of the sides. Then, calculate the areas and perimeters of each shape. Finally, determine the total area and perimeter of the entire tangram.

shape 1:

shape 2:

shape 3:

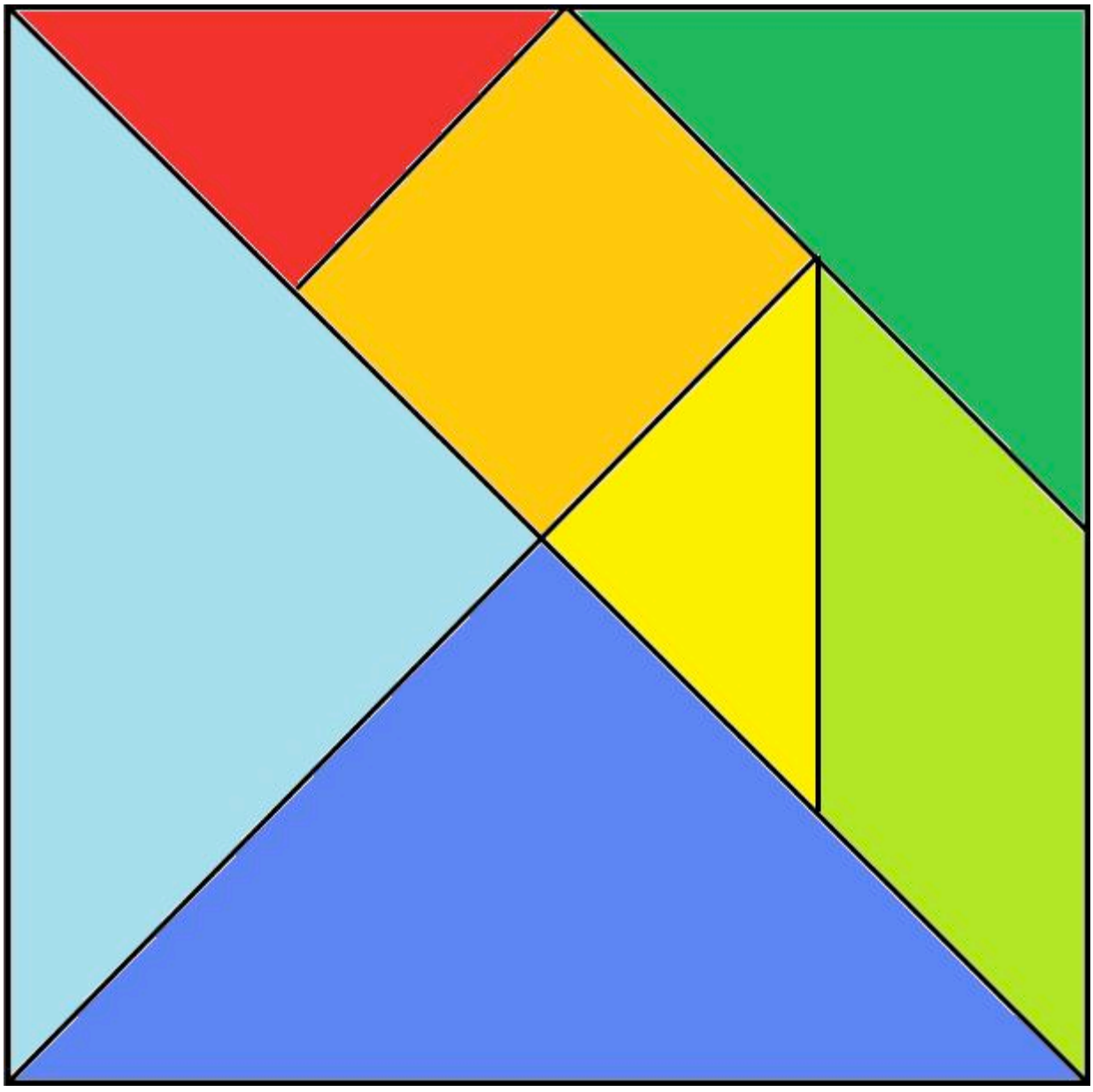
shape 4:

shape 5:

shape 6:

shape 7:

TOTAL:



FINAL PROJECT

17. Design a poster about your favorite shape. Prepare a short presentation about the shape that will help your classmates to guess what it is.

SELF ASSESSMENT

	ALWAYS	SOMETIMES	NEVER
LISTENING			
I understand when someone talks about shapes.			
READING			
I can read texts about shapes and understand the important information.			
SPEAKING			
I can speak about some of the characteristics of polygons and circles.			
WRITING			
I can write about polygons and circles.			
VOCABULARY			
I recognise words and expressions related to shapes, areas and perimeters.			

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