UANL

Evidence Portfolio
2nd Extraordinary Opportunity

Management of Forms and Spaces

Student's Name: _____

_____

ID Number: _____ Date: _____/ _____ / 2022

Teacher: _____Group: _____

This portfolio is part of the 60% of the grade. This value will be obtained as long as it complies with the following requirements:

1. Follow **the instructions provided by the teacher** for the filling out of this portfolio.
2. Write your **full identification data**.
3. **Upload and send** this portfolio **in PDF format**, the **day** and **time** the **teacher assigns it** in the team **Tasks section** of the corresponding **subject team in MS Teams**, where your teacher will check it.
4. **PLEASE ADD YOUR NAME ON EACH PAGE.**

DISCLAIMER
Plagiarism and trade of academic material contained in this portfolio will be sanctioned according to the terms of the University Legislation.

VISIÓN UANL 2030
EDUCACIÓN DE CALIDAD PARA TRANSFORMAR Y TRASCENDER EN BENEFICIO DE LA HUMANIDAD

La excelencia por principio la educación como instrumento

STAGE 1: ANGLES AND TRIANGLES

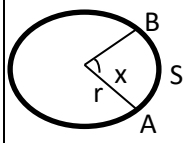
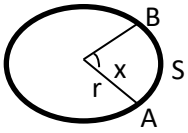
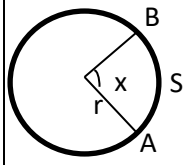
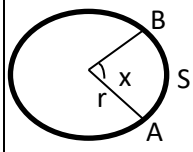
I.- Convert into radians the following sexagesimal degrees. $(\pi = 180°)$

$15°$	$200°$
$40°$	$240°$
$150°$	$340°$

II.- Convert the following sexagesimal degrees into radians. $(\pi = 180°)$

$\frac{\pi}{12}$	$\frac{11\pi}{18}$
$\frac{2\pi}{9}$	$\frac{3\pi}{12}$
$\frac{\pi}{4}$	$\frac{10\pi}{5}$

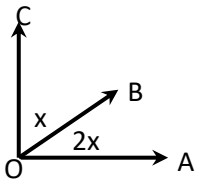
III.- In the following circles, determine the measure of the central angle into radians and sexagesimal degrees.

 r=20cm S=20cm < x= _____ rad < x = _____ degrees	 r=35.81cm S=50 cm < x = _____rad < x = _____ degrees
 r=20 cm S= 30 cm < x= _____ rad < x = _____ degrees	 r=25 cm S= 60 cm < x= _____ rad < x = _____ degrees

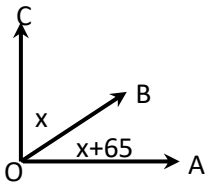
IV.- Find the measure of the following exercises; the angles are expressed in sexagesimal degrees.

An angle and its complement are at a ratio of 3:2. Find the measure of the minor arc.
An angle and its supplement are at a ratio of 5:4. Find the measure of these angles.
An angle and its conjugate are at a ratio of 2:1. Find the measure of the major arc.

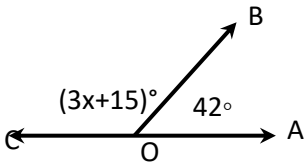
In the following figure in which the angle AOC is right. What is the measure of the angle AOB?



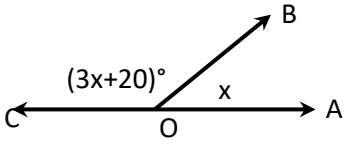
In the following figure in which the angle AOC is right, determine the measure of the angle COB.



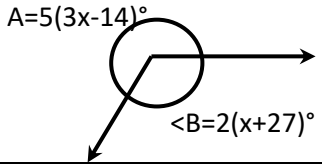
Find the value of “x”



In the following figure, find the measure of the angles <AOB and <BOC.

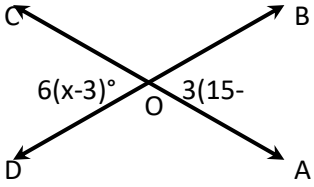


In the following figure, find the measure of <B

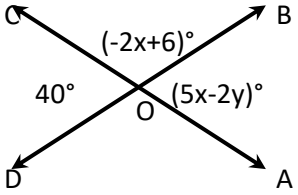


V. In each of the following exercises, find the values.

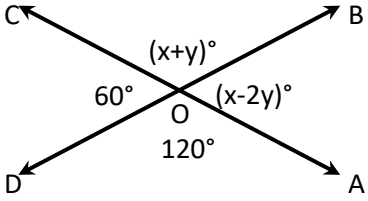
Find the measure of the angle <AOB.



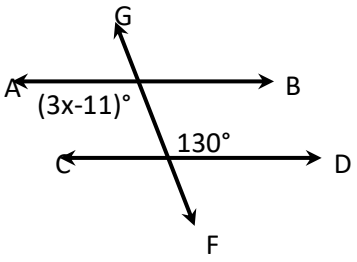
Find the value of "x" and "y".

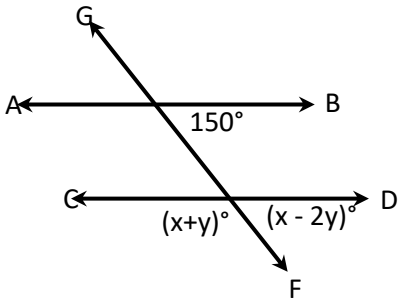


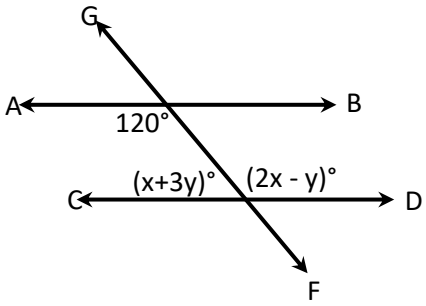
Find the value of "x" and "y".



VI. In each of the following exercises, find the "x" and "y" values.



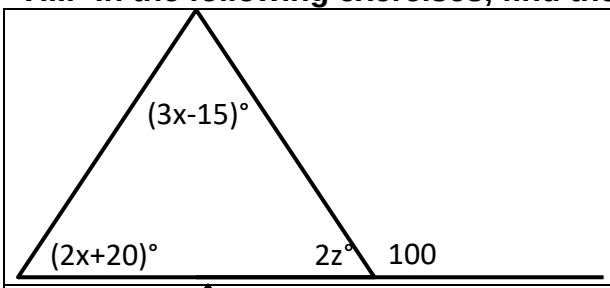


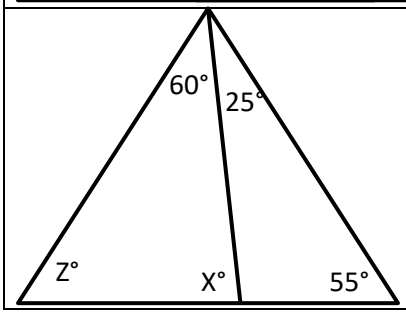


VII.- Resolve each of the following exercises, considering that the sum of the interior angles of a triangle is 180°.

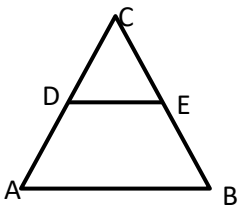
The angles of a triangle are at a ratio of 2:3:5. Find the measure of these angles.
If A, B, and C are the interior angles of a triangle, where $A = (2x + 35)°$, $B = (4x - 10)°$ y $C = (3x - 7)°$. Determine the measure of these angles.
<A, <B, and <C are the interior angles of a triangle. If B measures double than A and C measures triple than A. What is the measure of each angle?
In a right triangle, the acute angles are at a radio of 2:3. Find the measure of these angles.

VIII.- In the following exercises, find the values.

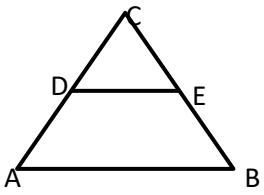




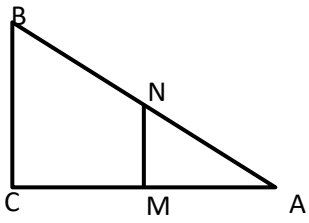
XI.- In the following exercises, find the value of "x" (Triangle Similarity).



DE II AB
AD=35
DC= 28
DE= 2x+8
AB= 7x-2

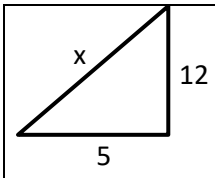


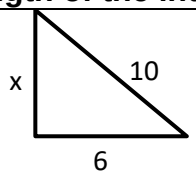
DE II AB
DE= 5x+3
AB=15x – 3
CE= 9
EB= 12

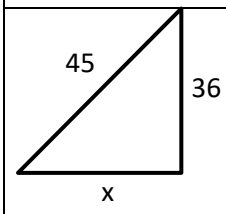


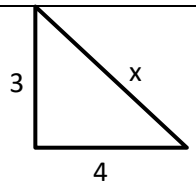
MN II BC
BC=35
MN=x
AC=20
MC=12

X.- In the following right triangles, find the length of the indicated side.









ETAPA 2: PROPERTIES OF POLYGONS

XI.- Resolve the following exercises of polygons.

Calculate in a regular hexagon

a) The measure of each interior angle

b) The measure of each exterior angle

c) The number of diagonals

Determine the number of sides that has a polygon in which interior angles sum to 1260º.

The interior angle of a regular polygon measures 120º. Determine:

a) The number of sides of the polygon

b) The number of diagonals

c) The value of each exterior angle

Determine how many sides a polygon with the following numbers of diagonals have

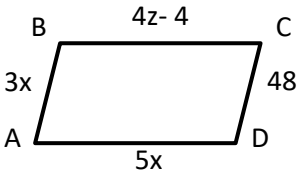
20 diagonals

44 diagonals

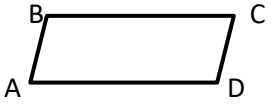
XII.- Resolve the following exercises of quadrilaterals

Find the interior angles of a quadrilateral, if are represented by: $A = (2x + 10)°$, $B = (8x)°$, $C = (7x - 5)°$ and $D = (9x + 5)°$.

If ABCD is a parallelogram, find the value of " x" and "z".

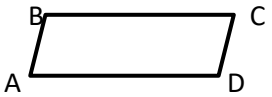


If ABCD is a parallelogram, find the value of "x" and "z".



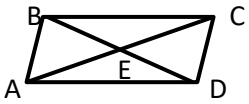
$$< A = (2x + 40)°$$
$$< B = 110°$$
$$< C = 2z°$$

If ABCD is a parallelogram, find the value of "x" and "z".



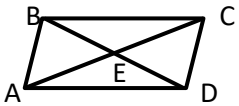
$$< A = 5z°$$
$$< B = 140°$$
$$< D = 4(2x + 10)°$$

If ABCD is a parallelogram, find the value of "x" and "z".



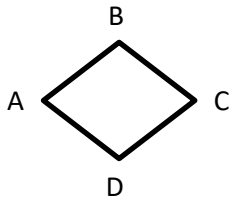
$$AE = 1.5x$$
$$AC = 30$$
$$BE = 8$$
$$DE = 2z$$

If ABCD is a parallelogram, find the value of "x" and "z".



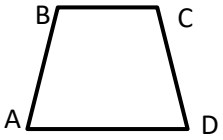
$$AE = 4x - 2$$
$$EC = z$$
$$BE = 2x + 3z$$
$$ED = 22$$

If ABCD is a rhombus, find the value of "x" and "z".



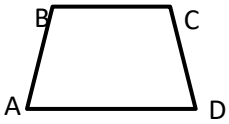
$$AB = 4x + 1$$
$$BC = x + 28$$
$$CD = \frac{z}{2}$$

If ABCD is a trapezoid, find the value of "x" and "z".



$$< B = 120°$$
$$< A = 3x°$$
$$< C = (4z + 30)°$$
$$< D = 2z°$$

If ABCD is an isosceles trapezoid, find the value of "x" , "y" and "z".



$$< A = 6(x - 5)°$$
$$< B = 5y°$$
$$< C = 6z°$$
$$< D = 2(x + 5)°$$

XIII.- Determine the following values (Polygonal region area).

Find the area of a rectangle if its base measures 25 cm and the perimeter measures 90 cm.

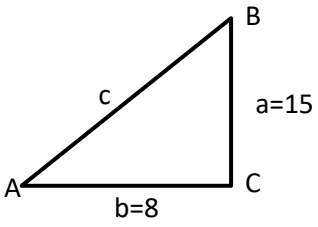
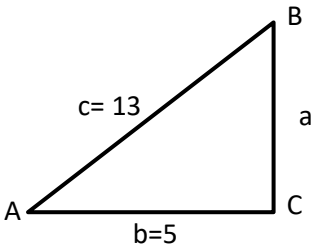
Find the area of a rectangle if its base measures 5 mts and the diagonal measures 13 mts.

The area of a square is 625cm^{2,} find the length of its sides.

Find the base and the height of a parallelogram if are at a ratio of 4:5 and its area is 1280cm^2
Find the area of an equilateral triangle which perimeter is 30 cm.
Find the area of a rhombus if its diagonals measure 12 and 8 cm, respectively.
Find the area of a rhombus if its diagonals measure 10 inches and its sides measure 13 inches.
The bases of a trapezoid measure 9 and 11 feet, respectively. If its area is 60 feet^2, find the measure of its height.

ETAPA 3: RIGHT TRIANGLES

1.- Determine the trigonometric functions of the acute angle of the following right triangles.

	SinA=_____ CscA=_____ CosA=_____ SecA=_____ TanA=_____ CotA=_____
	SinA=_____ CscA=_____ CosA=_____ SecA=_____ TanA=_____ CotA=_____

2.- Complete the tables of the following trigonometric functions.

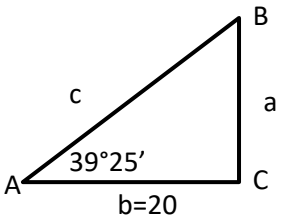
Given the value of the angle, find the value of the function	Given the value of the function, find the value of the angle
Sin 23.58°=	Sec B=1.0906 <B=
Csc 72.75°=	Cos A=0.5225 <A=
Cos 15.1°=	Tan *B= 2.229* <*B*=
Tan 36.27°=	*Sin A=0.1576* <*A*=

Sec 49.21°=	Cot *B=0.76733* <*B*=
Cot 54.92°=	Csc*A=3.08197* <*A*=
Tan 45º=	SinA=0.866 <A=

3. - Determine the value of the indicated function, considering that is an acute angle.

Given Sinθ=$\frac{8}{17}$ calculate the value of Cscθ.	Given Tanθ= $\frac{24}{70}$= calculate the value of Sinθ.
Given Cotθ= $\frac{13}{2}$ calculate the value of Cosθ.	Given Secθ= $\frac{5}{1}$ calculate the value of Tanθ.

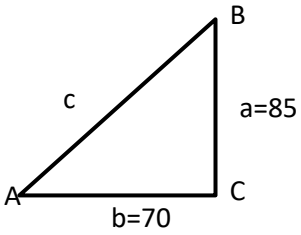
4.- Using the trigonometric functions, find the indicated values of the following right triangles.



a=_____

c=_____

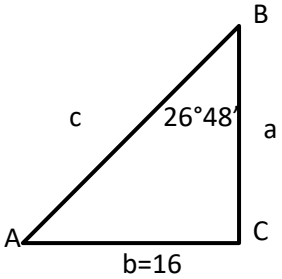
<B=_____



c= _____

<A=_____

<B=_____



a=_____

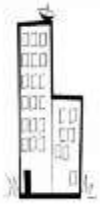
c=_____

<A=_____

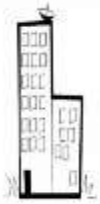
5.- Resolve the following application exercises

A tree of 20mts high projects a shadow of 28 mts long. Find the angle of elevation of the Sun.

When the Sun is 25º over the horizon, what is the length of a shadow projected by ah building of 15mts high?



A building projects a shadow of 92.33 mts when the angle of elevation of the Sun is 18º. Calculate the height.



A ladder of 4mts is leaned against a wall of a building, where its lower end is 1.4 mts from the base of the building. Determine the angle between the ladder and the floor.

STAGE 4: OBLIQUE TRIANGLES

1.- Find the value of the trigonometric functions of the angle θ if its terminal side passes through:

Point (4,-3)	Point (-24,70)

2.-Find the value of the other trigonometric functions of θ given.

Given $Cos\theta = -\frac{5}{13}$ and θ is in the II quadrant	Given $Tan\theta = -\frac{20}{21}$ and θ is in the VI quadrant

3.-Evaluate each of the following trigonometric expressions

$Sen\ 0° + 3Cos0° + Sen90° - 2Cos180° =$	$Sen\ 75° - 4Sen\ 35° + Cos180° + 3Sen90° =$
$Tan45° + 5Sen60° - 2Cos0° + 3Cos180° =$	$2sen90° - 3Csc270° - 5Cos180° + 2Tan180° =$

4.- Express each of the functions of the given angle as the function of its reference angle and find the value of the function.

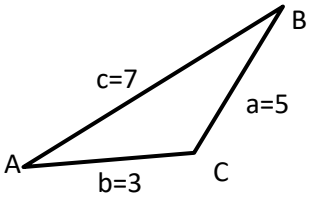
$Tan\ 590°$
$Cos(-345°)$

5.-Given the value of the function, find the measure of the angle θ, if $0° < \theta < 360°$**.**

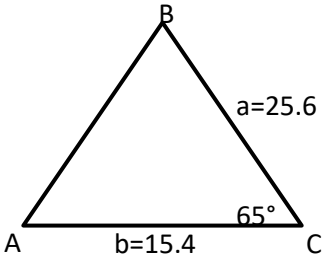
Quadrant I $\theta r = \theta$	Quadrant III $\theta r = 180° + \theta$
Quadrant II $\theta r = 180° - \theta$	Quadrant IV $\theta r = 360° - \theta$

$Sen\ \theta = 0.6293$	$Cos\ \theta = 0.61566$

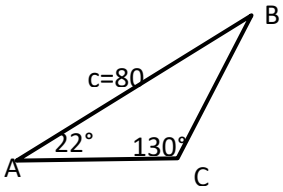
6.-Resolve the following oblique triangles and determine its area. Assume that the length of the sides are expressed in centimeters.



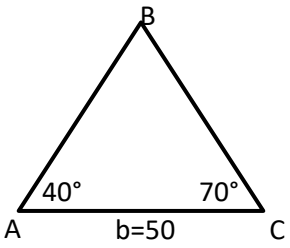
<A=
<B=
<C=



c=
<A=
<B=
Area=

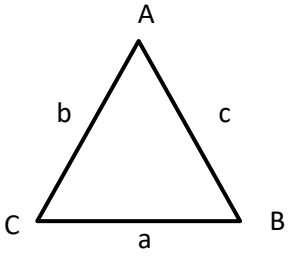


a=
b=
<B=
Area=



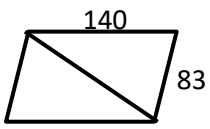
a=
c=
<B=
Área=

In ΔABC, <B=32º, side a=5 and side b=4. Determine the side c. **(Ambiguous Case)**

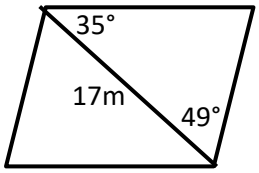


7.- Resolve the following application problems of Oblique Triangles.

Two sides of a parallelogram are 83 and 140 mts, and one of its diagonals measures 189mts. Calculate the area of one of the triangles formed by the diagonals with the sides of the parallelogram.



Calculate the perimeter and the area of a parallelogram, if one of its diagonals measures 17mts, and the angles that it forms with the sides of the parallelogram are 35º and 49º.



FORMULARIO

Sistema Circular

Θ= $\frac{S}{r}$ **π= 180°**

Fórmulas de Polígonos

Suma de los ángulos interiores	Sai=180(n-2)
Angulo interior	ai=180(n-2)/n
Numero de Diagonales	d=n(n-3)/2
Angulo exterior	ae=360/n

Triángulo Rectángulo

c^2= a^2+ b^2

Identidades

Sen Θ= $\frac{co}{h}$ **Csc Θ=** $\frac{h}{co}$ **Csc Θ=** $\frac{1}{Sen\theta}$

Cos Θ= $\frac{ca}{h}$ **Sec Θ=** $\frac{h}{ca}$ **Sec Θ=** $\frac{1}{Cos\theta}$

Tan Θ= $\frac{co}{ca}$ **Cot Θ=** $\frac{ca}{co}$ **CotΘ=** $\frac{1}{Tan\theta}$

Áreas

Cuadrado $A = l^2$

Rectángulo $A = bh$

Triangulo $A = \frac{bh}{2}$

Rombo $A = \frac{Dd}{2}$

Trapecio $A = \frac{(B+b)h}{2}$

Triangulo Oblicuángulo

Ley de senos

$\frac{SenA}{a} = \frac{SenB}{b} = \frac{SenC}{c}$ $\frac{a}{SenA} = \frac{b}{SenB} = \frac{c}{SenC}$

Ley de Cosenos

$a^2=b^2+c^2-2bcCosA$ **$A=Cos^{-1}\left(\frac{b^2+c^2-a^2}{2bc}\right)$**

$b^2=a^2+c^2-2acCosB$ **$B=Cos^{-1}\left(\frac{a^2+c^2-b^2}{2ac}\right)$**

$c^2=a^2+b^2-2abCosC$ **$C=Cos^{-1}\left(\frac{a^2+b^2-c^2}{2ab}\right)$**

Fórmulas para Calcular el Área **$A=\frac{1}{2}bcSenA$** **$A=\frac{1}{2}acSenB$** **$A=\frac{1}{2}abSenC$**