



PORTAFOLIO DE EVIDENCIAS

2DA OPORTUNIDAD EXTRAORDINARIA MANAGEMENT OF FORMS AND SPACES

Nombre del estudiante: _____

Matrícula: _____ **Grupo:** _____

Docente: _____

Fecha: _____

El presente portafolio forma parte del 50% de tu calificación. Este valor se obtendrá siempre y cuando cumpla con los siguientes requisitos:

1. Escribe tus datos de identificación completos.
2. Adjunta el portafolio en la Plataforma Ms Teams en formato PDF, el día y hora que el docente asigne la tarea correspondiente a la segunda oportunidad; no olvides agregar tu nombre completo en cada hoja.
3. Verifica el envío correcto del portafolio.

SIGUE LAS INSTRUCCIONES BRINDADAS POR TU MAESTRO PARA EL LLENADO DE ESTE PORTAFOLIO.

¡ADVERTENCIA!

El plagio y comercio de material académico contenido en este portafolio será sancionado en los términos de la Legislación Universitaria.



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Course Purpose: In the learning unit Management of Forms and Spaces the student applies the elements of plane geometry and trigonometry for modeling and solving real world situations; for this, mathematical skills such as observation, analysis and synthesis must be developed, and with the study of the properties of geometric figures represented in a plane and trigonometric knowledge to understand the physical world around us, the student's spatial mathematical reasoning is developed to a great extent.

General Guidelines

- Student punctuality and attendance are a fundamental part of academic performance.
- In each class, the student must have his/her academic material for the development of the activities (textbook, learning guide, portfolio of activities, notebook, etc.).L
- The activities of the portfolio of evidence must be submitted on time and in compliance with the guidelines specified by the teacher.
- In case of plagiarism and/or bad practices in the portfolio of activities, the student must assume responsibility for his/her actions.
- At each stage, requirement activities will be performed, which help to complement the learning evidence that is uploaded to the Nexus platform (for the 2nd opportunity it will be MS Teams platform).
- Deliver evidence of learning in Nexus platform, in the established times, respecting the evaluation criteria requested (Not applicable for 2nd opportunity).
- Once the grade is registered in Nexus, the student will be able to review the feedback and make a replica if necessary (Does not apply for 2nd opportunity).
- In the case of a student with special needs, we will work together with the department of integral formation.



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Course Policies and Guidelines

The student and his/her tutor must read and sign the policies and guidelines:

- Portfolio work is mandatory.
- The problems must have a correct, clear, understandable and complete procedure. It must be done in pencil.
- The use of Apps will not be allowed for the solution of the portfolio problems.
- The use of a calculator is mandatory (cell phone use is not allowed).
- The activities must be submitted in a timely manner, as requested by the teacher.
- The portfolio must be uploaded to the MS Teams platform with the policies and guidelines sheet, as well as each sheet must have a water drop (with a text mark you must place your name from corner to corner).
- In order for the student to obtain the 50 points on the portfolio, it must be answered 100% correctly, each problem answered incorrectly or not answered will reduce points.
- The portfolio will **NOT** be accepted out of time, if the student must reschedule the exam, the portfolio must not be handed in out of the date established by the teacher.
- Each problem must have its correct and clear procedure. If there is only one answer, it will be considered incomplete
- The guidelines must be signed by the student and his/her tutor. If they are not signed, the teacher will not be able to review the student's activities, since this is a requirement.

Name and signature of student

Tutor`s name and signature



STAGE 1: ANGLES AND TRIANGLES

Dimension 2: Comprehension

It is time to introduce new knowledge and relate it to the knowledge you already have; as a first step towards the comprehension of the contents, read the concepts that refer to angles and triangles.

1.- Convert the following sexagesimal degrees to radians. ($\pi = 180^\circ$)

15°	200°
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2- Convert the following sexagesimal degrees to radians. ($\pi = 180^\circ$)

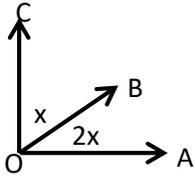
$\frac{\pi}{12}$	$\frac{11\pi}{18}$
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Dimension 3: Analysis

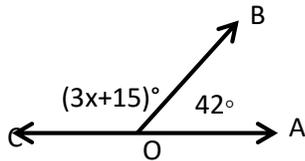
In this dimension you identify, distinguish and select the appropriate processes that lead you to determine the measures of angles and triangles, and in this way you analyze more deeply what you have learned.

3.- Find what you are asked to do in each of the following cases.

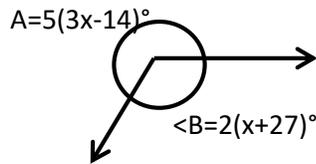
a) Let A and B be two complementary angles, where $A=4(x-1)^\circ$, $B=7(x-2)^\circ$. Find the measure of angle A.
b) An angle and its complement are at a ratio of 3:2. Find the measure of the lesser angle.
c) In the figure below, let angle AOC be a right angle. How long is angle AOB?



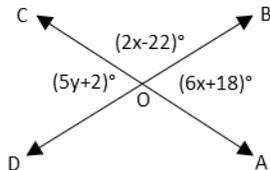
d) Find the value of "x".



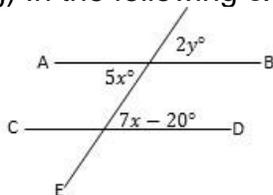
e) Find the measure of $\angle B$ in the figure below.



f) Determine the value of the "y" in the following figure:



g) In the following exercise find the value of "y".

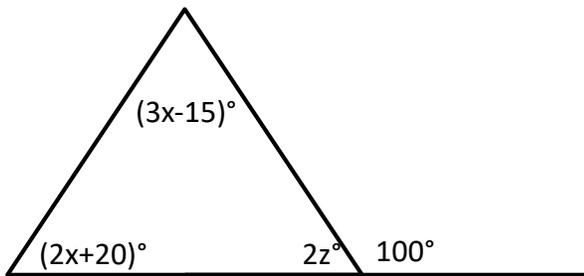


4.- In the following triangles answer what is indicated.

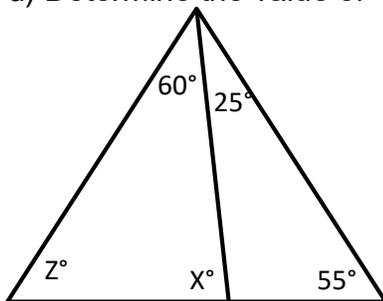
a) The angles of a triangle are in the ratio 2:3:5. Find the measure of these angles.

b) Let A, B and C be the interior angles of a triangle, where $A=(2x+35)^\circ$, $B=(4x-10)^\circ$ and $C=(3x-7)^\circ$. Determine the measure of angle A.

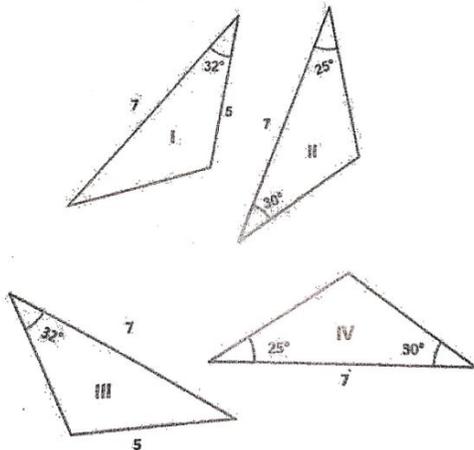
c) Determine the value of "x".



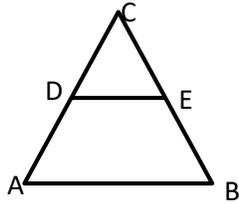
d) Determine the value of "x".



e) According to the triangles shown below, which are congruent?



f) Applying triangle similarity, determine the value of "x".



$DE \parallel AB$
 $AD = 35$
 $DC = 28$
 $DE = 2x + 8$
 $AB = 7x - 2$

CHECKLIST
SELF-EVALUATION
PERFORMANCE EVALUATION
STAGE 1

PERFORMANCE INDICATORE	YES	NO	OBSERVATIONS
I differentiate correctly the systems of angle measurement.			
I correctly identify angles according to their measure.			
I correctly distinguish the property or theorem of parallel lines to be used according to the context of the problem.			
I correctly distinguish the properties of angles according to the value of their sum and according to their position.			
I correctly identify the property of triangles to use according to the context of the problem.			
I correctly identify congruent triangles.			
I correctly identify similar triangles.			
I write down the necessary procedures to reach the solution.			



STAGE 2: PROPERTIES OF POLYGONS

Dimension 2: Comprehension

In your textbook, read about the classification of polygons, their elements and properties, the formulas for perimeters and areas, as well as the concepts related to the circle and the circumference. Based on what you have learned; you will work on the activity.

1.- Calculate in the following regular polygons, the measure of each interior angle, the measure of each exterior angle, the number of diagonals that can be drawn and the sum of the interior angles.

a) Decagon

b) Endecagon

2.- Determine what each example tells you.

a) What is the name of the regular polygon whose sum of interior angles is 1800° ?

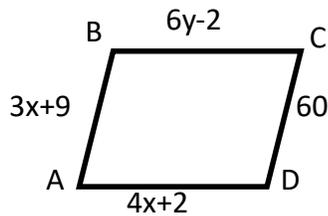
b) What is the regular polygon in which 27 diagonals can be drawn?

Dimension 3: Analysis

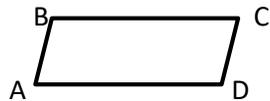
The activity in this dimension consists of a series of problems involving the properties of quadrilaterals, and those of the angles associated with the circumference. It is important that you write down all the procedures so that the feedback will allow you to see your successes and mistakes easier,

3.- 3.- Identify what is indicated in each Quadrilateral.

a) If ABCD is a parallelogram, find the value of "y".

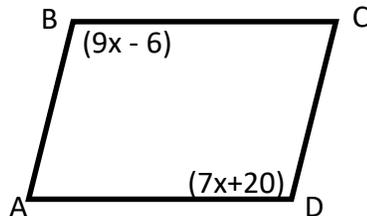


b) If ABCD is a parallelogram, find "x" and "z".

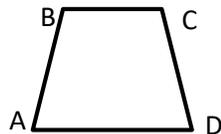


$$\begin{aligned} \angle A &= (2x + 40)^\circ \\ \angle B &= 110^\circ \\ \angle C &= 2z^\circ \end{aligned}$$

c) If ABCD is a parallelogram, find the measure of angle A.

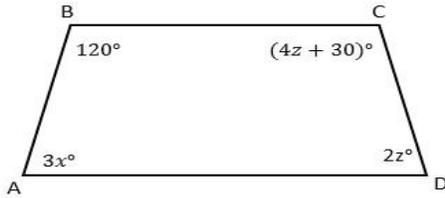


d) If ABCD is a trapezoid, find "x" and "z".



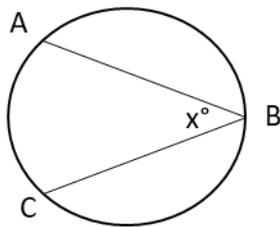
$$\begin{aligned} \angle B &= 120^\circ \\ \angle A &= 3x^\circ \\ \angle C &= (4z + 30)^\circ \\ \angle D &= 2z^\circ \end{aligned}$$

e) If ABCD is a trapezoid, find the value of “x” and “z”.



4.- In the following circles, determine what is required of you.

a) If $AC=62^\circ$ and B is a point that belongs to the circumference, calculate “x”.



**CHECKLIST
SELF-EVALUATION
PERFORMANCE EVALUATION
STAGE 2**

PERFORMANCE INDICATOR	YES	NO	OBSERVATIONS
I correctly identify the property or theorem of regular polygons.			
I correctly identify the property of parallelograms to use according to the context of the problem.			
I properly distinguish the properties of parallelograms according to their diagonals to use according to the context of the problem.			
Identified the inscribed angle.			
Wrote down the necessary procedures to find the solution.			

STAGE 3: RIGHT TRIANGLES

Dimension 2: Comprehension

In your textbook, read stage 3, on the topics; right triangle and trigonometric ratio. And for better understanding, with the help of your suggestions, find the solution to the problematic situations posed. Answer the following activity.

1.- Using the Pythagorean theorem, find the indicated side.



2.- Complete the tables of the following trigonometric functions

$$\text{Csc}\theta = \frac{1}{\text{Sen}\theta} \quad \text{Sec}\theta = \frac{1}{\text{Cos}\theta} \quad \text{Cot}\theta = \frac{1}{\text{Tan}\theta}$$

Angle	Sine	Cosine	Tangent	Cosecant	Secant	Cotangent
a) 25°16'46''						
b) 63° 45'13''						



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3.- For each of the following trigonometric functions, let A be an acute angle. Find the value of the acute angle. Find the value of A. Write the corresponding letter in the parenthesis.

Tan A=1	()	a) 35°
Cos A=0.81915	()	b) 48°
Sen A=0.62932	()	c) 45°
Tan A=1.11063	()	d) 56°
Cos A=0.55919	()	e) 24°
Sen A=0.4067366	()	f) 39°

4.- Given the value of some acute angle's trigonometric ratio, determine the value of the indicated trigonometric ratio.

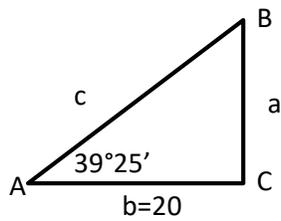
a) Given the value of the trigonometric ratio $\text{Cos}\theta=12/13$ of some acute angle θ , determine the value of the missing trigonometric ratios.

Dimension 3: Analysis

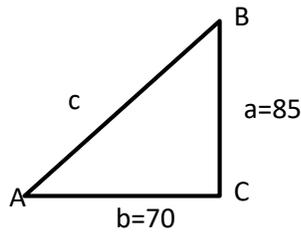
Pay attention, also work to propose solution processes that help achieve collective learning. The activity of this dimension consists of a series of problems involving the resolution of right triangles. It is important that you write down all the procedures so that, in case of feedback, it allows you to see your successes or errors in a simpler way.

5.- For each of the following right triangles, calculate what is asked of you.

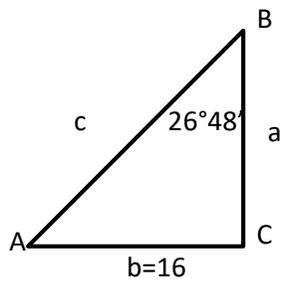
a) Determine the value of side "a" in the following right triangle.



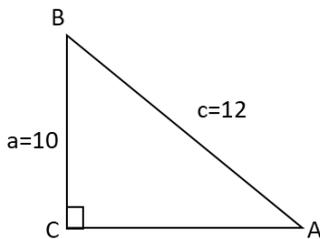
b) Determine the value of angle "A" in the following right triangle.



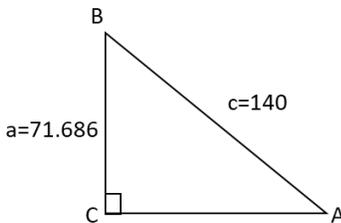
c) Determine the value of side "c" in the following right triangle.



d) Determine the value of angle "B" in the following right triangle.



e) Determine the value of angle "B" in the following right triangle.

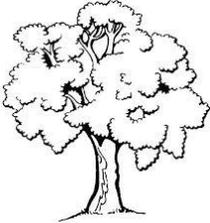


Dimension 4: Application

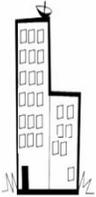
It's time to apply everything you've learned in the stage. But before leaving you alone, the teacher will exemplify a series of situations in which you apply trigonometry in everyday contexts and propose procedures based on what you already know. In the end, you will be ready to find a solution to the following activity on your own.

6.- Solve the following application problems.

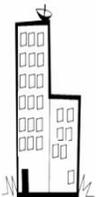
a) A tree 20 meters tall casts a shadow 28 meters long. Find the angle of elevation of the sun.



b) When the sun is 25° above the horizon, what is the length of the shadow cast by a building 15 meters tall?



c) A building casts a shadow of 92.33 meters when the angle of elevation of the sun is 18° . Calculate its height.



d) A ladder 4 meters long leans against the wall of a building, so that its lower end is 1.4 meters from the base of the building. Determine the angle formed by the ladder with the floor.





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**CHECKLIST
SELF-EVALUATION
PERFORMANCE EVALUATION
STAGE 3**

PERFORMANCE INDICATOR	YES	NO	OBSERVATIONS
Applies the Pythagorean theorem formula.			
Properly differentiates each of the trigonometric ratios for an acute angle in a right triangle.			
Accurately calculates the value of a trigonometric function using a calculator if the angle's magnitude is known.			
Correctly calculates the magnitude of the acute angle if the value of a trigonometric function is known.			
Accurately draws the right triangle if requested by the problem.			
Correctly identifies the trigonometric function to use according to the problem's requirements.			
Uses the calculator correctly.			
Correctly solves for the requested side or angle in the problem.			
Demonstrates order and coherence in procedures.			
Points obtained by the student in this stage.			

STAGE 4: OBLIQUE TRIANGLES

Dimension 2: Comprehension

Read stage 4 of your textbook to understand the new content; your teacher supplements the reading with the presentation and explanation of examples, for which your participation in proposing solutions is very important.

1.- Answer as indicated

a) Which of the following angles is coterminal with an angle of 38° ?

a) 146°	b) 236°	c) 398°	d) 416°	e) 156°
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b) Which of the following angles is coterminal with an angle of 82° ?

a) 433°	b) 442°	c) 343°	d) 163°	e) 107°
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c) Which of the following angles is the **reference angle** for 197° ?

a) 60°	b) 17°	c) 150°	d) 45°	e) 420°
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d) Which of the following angles is the **reference angle** for 325° ?

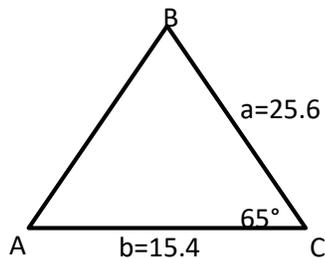
a) 35°	b) 45°	c) 150°	d) 60°	e) 420°
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Dimension 3: Analysis

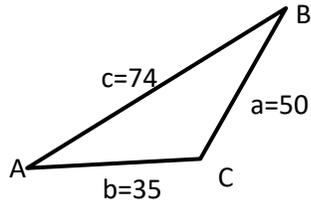
This activity consists of a series of problems involving the resolution of oblique triangles. It is very important that you write down all your procedures so that feedback can help you see your successes or errors more easily.

1.- Determine what is indicated in each problem.

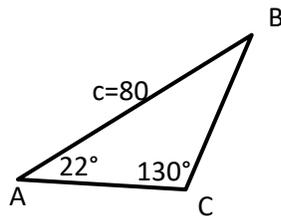
a) From triangle ABC, determine the value of side "c."



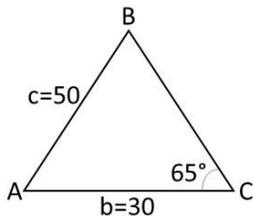
b) Given triangle ABC, and knowing its three sides, determine angle "C."



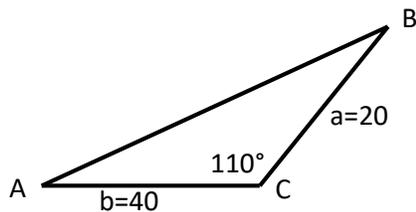
c) In oblique triangle ABC, determine the value of side "a."



d) In oblique triangle ABC, determine angle "B."



e) Determine the area of the following oblique triangle.

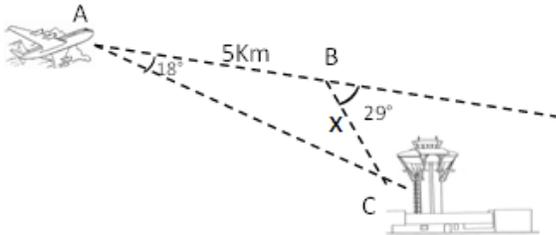


Dimension 4: Application

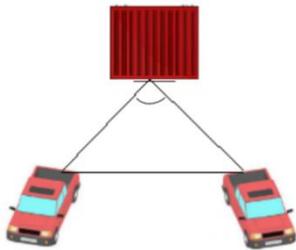
The following activity consists of the following application problems. Write down all procedures coherently and orderly and clearly identify the answers you have obtained. With the teacher's feedback, correct if necessary.

1.- Solve the following application problems.

a) The pilot of an airplane observes that the airport where he has to land is at 18° . After advancing 5 km in the same direction, he observes the radar again and now sees it at 29° . How far is he from the airport?



b) Two trucks tow a very heavy load on a horizontal platform. The separation between both trucks is 12 meters, and the lengths of the ropes with which they hold the load are 9 and 15 meters, respectively. Note: the trucks and the load are not aligned.





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**CHECKLIST
SELF- EVALUATION
PERFORMANCE EVALUATION
STAGE 4**

Performance Indicator	YES	NO	OBSERVATIONS
Correctly identifies a coterminal angle from a given angle in standard position.			
Correctly identifies the reference angle from its angle in standard position.			
Determines the missing elements of an oblique triangle using the law of sines.			
Determines the missing elements of an oblique triangle using the law of cosines.			
Calculates the area of an oblique triangle correctly.			
Demonstrates order and coherence in procedures.			

**FORM****Circular System**

$$\Theta = \frac{S}{r}$$

$$\pi = 180^\circ$$

Polygon Formulas

Sum of interior angles

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

Interior angle

$$ai = 180(n-2)/n$$

Number of diagonals

$$d = n(n-3)/2$$

Exterior angle

$$ae = 360/n$$

Right Triangle

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

Identities

$$\text{Sen } \Theta = \frac{co}{h}$$

$$\text{Csc } \Theta = \frac{h}{co}$$

$$\text{Csc } \Theta = \frac{1}{\text{Sen } \Theta}$$

$$\text{Cos } \Theta = \frac{ca}{h}$$

$$\text{Sec } \Theta = \frac{h}{ca}$$

$$\text{Sec } \Theta = \frac{1}{\text{Cos } \Theta}$$

$$\text{Tan } \Theta = \frac{co}{ca}$$

$$\text{Cot } \Theta = \frac{ca}{co}$$

$$\text{Cot } \Theta = \frac{1}{\text{Tan } \Theta}$$

Areas

Square

$$A = l^2$$

Rectangle

$$A = bh$$

Triangle

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

Rhombus

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

Trapezoid

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

Oblique Triangle**Law of Sines**

$$\frac{\text{Sen } A}{a} = \frac{\text{Sen } B}{b} = \frac{\text{Sen } C}{c}$$

$$\frac{a}{\text{Sen } A} = \frac{b}{\text{Sen } B} = \frac{c}{\text{Sen } C}$$

Law of Cosines

$$a^2 = b^2 + c^2 - 2bc \text{Cos } A$$

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

$$b^2 = a^2 + c^2 - 2ac \text{Cos } B$$

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

$$c^2 = a^2 + b^2 - 2ab \text{Cos } C$$

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

Area Calculation Formulas $A = \frac{1}{2}bc \text{Sen } A$

$A = \frac{1}{2}ac \text{Sen } B$

$A = \frac{1}{2}ab \text{Sen } C$



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Made by:

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Approved by:

Academia de matemáticas 1 y 2

Verified by:

Área de Apoyo y Desarrollo de Clase

Validated by:

ME. Nancy Elvira Tenorio Garza (Secretaria Académica)