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PRINCIPAL OF ACADEMY OF MATHEMATICS II: MTRA. ADRIANA I. GARZA CERVANTES	
PROGRAMA EDUCATIVO: PROPEDEÚTICO	

NAME OF STUDENT _____			
GROUP: _____	R.L. _____	GRADE: _____	
COEVALUATION MADE BY: _____			

**I. INSTRUCTIONS: Associate both columns correctly**

- |                                                                                                                                                              |                           |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| 1.- ( ) Trigonometric function whose ratio is $\frac{Hypotenuse}{Adjacent}$ with respect to an acute angle in a right triangle.                              | A. $\cos^2 B$             |
| 2.- ( ) It studies the relations between side's length and angles in triangles                                                                               | B. Depression Angle       |
| 3.- ( ) Acute angle which is formed by the horizontal and line of sight whenever an observer sees an object or point which is on top of the horizontal line. | C. Cotangent              |
| 4.- ( ) Pythagorean relation equivalent to $1 - \text{sen}^2 B$                                                                                              | D. Trigonometric Function |
| 5.- ( ) It is defined as the opposite side with respect to the right angle in a right triangle.                                                              | E. Secant                 |
| 6.- ( ) Name that receives both line segments which form the right angle.                                                                                    | F. $\text{Csc}^2 B$       |
| 7.- ( ) Pythagorean relation equivalent to $\cot^2 B + 1$                                                                                                    | G. Leg                    |
| 8.- ( ) It is the quotient between two sides of a right triangle which is associated with its angles.                                                        | H. Elevation Angle        |
| 9.- ( ) The ratio $\frac{Adjacent}{Opposite}$ corresponds to this trigonometric function in the acute angle of a right triangle.                             | I. Hypotenuse             |
| 10.- ( ) Acute angle which is formed by the horizontal and line of sight whenever an observer sees an object or point which is below the horizontal line.    | J. Trigonometry           |

**II. INSTRUCTIONS: Determine the value of the trigonometric functions for the following values.**

11.-  $\text{Csc} 12^\circ 47' 48''$

- |           |           |           |           |
|-----------|-----------|-----------|-----------|
| a) 4.5148 | b) 0.0722 | c) 4.1584 | d) 0.1996 |
|-----------|-----------|-----------|-----------|

12.-  $\sin 35.8^\circ$

- |           |           |           |           |
|-----------|-----------|-----------|-----------|
| a) 0.5331 | b) 0.5849 | c) 0.5358 | d) 0.5685 |
|-----------|-----------|-----------|-----------|

13.-  $\cot 45^\circ 30' 58''$

- |           |           |           |           |
|-----------|-----------|-----------|-----------|
| a) 0.8677 | b) 0.7565 | c) 0.6540 | d) 0.9821 |
|-----------|-----------|-----------|-----------|

14.-  $\tan 45^\circ 30'$

- |           |           |           |           |
|-----------|-----------|-----------|-----------|
| a) 0.8677 | b) 0.7573 | c) 1.0176 | d) 0.6877 |
|-----------|-----------|-----------|-----------|

**III. INSTRUCTIONS: Determine the value of the trigonometric functions for the given angles.**

15.-  $Csc\theta = 4.5137$

a)  $12^\circ 47' 60''$

b)  $34^\circ 17' 35''$

c)  $14^\circ 26' 33''$

d)  $43^\circ 17' 35''$

16.-  $\cos\theta = 0.4262$

a)  $27^\circ 33' 45''$

b)  $64^\circ 46' 24''$

c)  $28^\circ 1' 46''$

d)  $46^\circ 64' 24''$

**IV. INSTRUCTIONS: Solve next exercises using special values of acute angles. (Do not use calculator)**

17.-  $\sqrt{\frac{1 - \cos 60^\circ}{2}}$

a)  $\frac{1}{2}$

b) 0

c) 2

d) 1

18.-  $4\cos^2 30^\circ + 6\sin^2 30^\circ$

a)  $\frac{5}{2}$

b)  $\frac{15}{2}$

c)  $\frac{9}{2}$

d)  $\frac{7}{2}$

19.-  $\sqrt{\frac{\csc^2 45^\circ - \sin 30^\circ}{2 \tan 45^\circ}}$

a)  $\frac{1}{2}$

b)  $\frac{2}{\sqrt{3}}$

c)  $\frac{\sqrt{3}}{2}$

d) 1

20.-  $6\tan^2 30^\circ + 20\cos 60^\circ$

a) 10

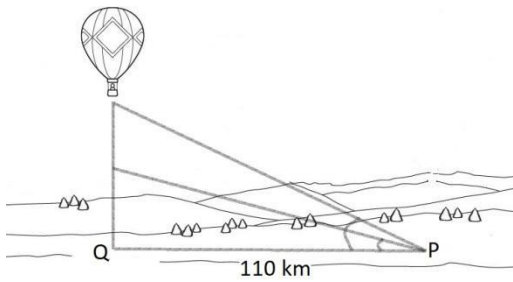
b) 6

c) 4

d) 12



26.- A hot air balloon rising up from the floor has an elevation angle from a sight point P which is at ground and 110 km separated from Q point as shown in the figure. The elevation angle changes from  $19^{\circ}20'$  to  $31^{\circ}50'$ , find how much does the hot air balloon elevate in this period? As a hot balloon rises, its elevation angle from a point P at ground level and 110 km from point Q, which is directly below the globe, changes from  $19^{\circ}20'$  to  $31^{\circ}50'$ . Approximately how much does the balloon rise during this period?



- a) 38.59                      b) 29.75                      c) 68.34                      d) 18.54

27.- An ladder measures 20 feet of height rest on a building and the angle between them is  $22^{\circ}$ . Calculate the building's height.

- a) 7.49                      b) 18.54                      c) 17.02                      d) 19.99

28.- From the top of a lighthouse which is 105 m over sea level, there is a depression angle of  $24^{\circ}12'$  towards a boat that just departed. What is the horizontal distance between the boat and the lighthouse in that moment?

- a) 106.89                      b) 233.64                      c) 283.87                      d) 256.4

29.- It is required to purchase cord for a flagpole and you observe the flagpole projects a shadow onto the floor of 11.6 m. If the elevation angle is  $35^{\circ}40'$ , find the flagpole's height.

- a) 12.24                      b) 5.32                      c) 6.76                      d) 8.32

30. Obtain the angle formed by a pole with 7.5 m of height if it has a tense string attached to its top section which length is 13.75 m

- a)  $33.05^{\circ}$                       b)  $56.94^{\circ}$                       c)  $61.39^{\circ}$                       d)  $28.61^{\circ}$