NAME: _____

GROUP: _____   R.L._____   GRADE_____

COEVALUATED BY: _____

STAGE 1.
INSTRUCTIONS : Solve each of the following exercises (without a procedure your answer will not be valid).

1. Determine the equivalent of $240°$ in radians

a) $\dfrac{4}{3}\pi\ rad$ b) $\dfrac{16}{9}\pi\ rad$ c) $\dfrac{16}{9\pi}\ rad$ d) $\dfrac{8}{3\pi}\ rad$ e) $\dfrac{9}{16}\pi\ rad$

2. Express $\dfrac{\pi}{15}\ rad$ in sexagesimal degrees

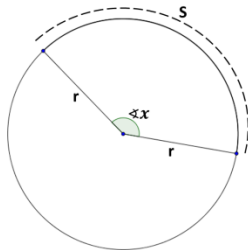a) $180°$ b) $12°$ c) $108°$ d) $300°$ e) $0.6°$

3. For the following figure, knowing that the radius "r" of the circumference is 24 cm and the length of the arc "S" is 20 cm, determine the mean of the angle "x" in **sexagesimal degrees** .

a) $2.5°$ b) $8.33°$ c) $450°18'$ d) $143.31°$ e) $47°46´$

4. Consider that A and B are two complementary angles. If $A = 8(x + 3)°$ y $B = 4(12 + x)°$, calculate the measure of angle B.

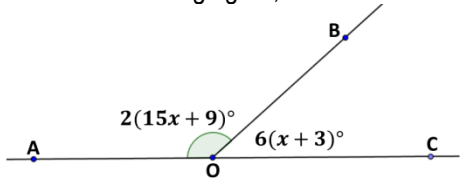a) $56°$ b) $41.36°$ c) $54°$ d) $1.67°$ e) $36°$

5. The conjugate of 44° 32′41″

a)　146° 37′49″　　b)　327° 37′49″　c)　147° 38′49″　　d)　315° 27′19″　e)　56° 37′49″

6. For the following figure, determine the measure of angle $\angle BOC$.

a)　42°　　b)　138°　　c)　69°　　d)　129°　　e)　51°

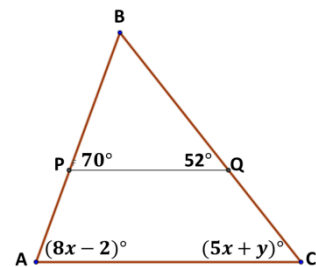7. Determine the measurement of angle AOD for the following figure, angle EOC is right.
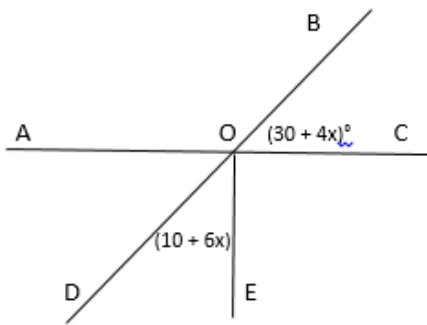
a)　130°　　b)　50°　　c)　45°　　d)　90°　　e)　5°

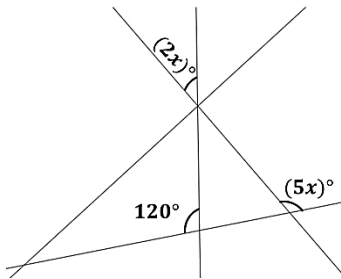8. If in the following figure, $r \parallel t$, determine the value of "y".
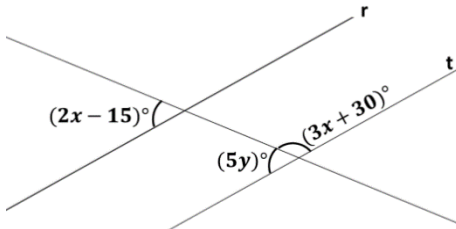
a)　51　　b)　129　　c)　33　　d)　10.2　　e)　102

9. Find the value of "y" in the following figure; consider $\overline{PQ} \parallel \overline{AC}$.

a)　$y = 8$　　b)　$y = 5$　　c)　$y = 7$　　d)　$y = 10$　　e)　$y = 6$

10. For the following figure, calculate the value of "x".
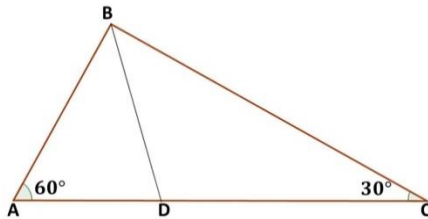

a) $x = 3$ b) $x = 60$ c) $x = 20$ d) $x = 10$ e) $x = 30$

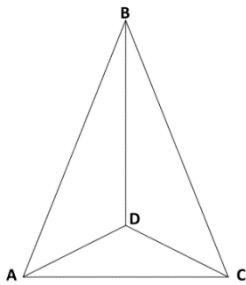11. In a triangle, the interior angles are in the ratio 3 :7:8. The measurement of the smaller angle is:

a)   30°   b)   10°   c)   80°   d)   35°   e)   18°

12. In the following figure, the line segment $\overline{BD}$, is the bisector of angle B. Calculate the measure of angle BDA.

a)   75°   b)   45°   c)   105°   d)   90°   e)   50°

13. Given: △ ABC and △ ADC both are isosceles. Show that triangles ADB and CDB are congruent and state the congruence criterion.

a) $Criterion\ LLL$ b) $Criterion\ LAL$ c) $Criterion\ ALA$ d) $Criterion\ AAA$ e) $They\ are\ not\ congruents$

14. In the figure, $\overline{DE}$ y $\overline{BC}$ are parallel. Based on the following data, determine the value of "x".

$\overline{BD} = 2x + 1$
$\overline{DA} = 3x - 11$
$\overline{DE} = 22$
$\overline{BC} = 55$
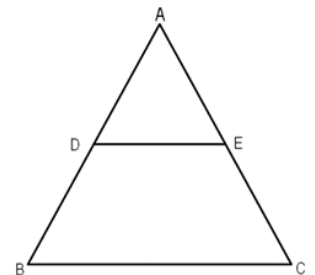
a) $x = 9$ b) $x = 7$ c) $x = 11$ d) $x = 6$ e) $x = 5$

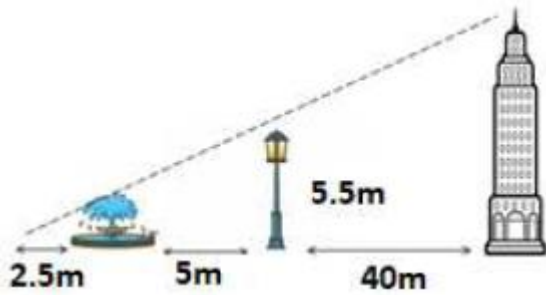15. At a certain time of day, a building, a streetlight, and a fountain cast shadows in such a way that they resemble similar triangles, as shown in the figure. Calculate the difference between the heights of the building and the fountain.

5.5m

2.5m   5m   40m

a)   34.2m   b)   36m   c)   32.4m   d)   33m   e)   35m

STAGE 2.
INSTRUCTIONS : Solve each of the following plane geometry problems.

The interior angles of a regular polygon add up to 2160°. Answer questions 16 to 18.

16. Determine the number of sides of the polygon.

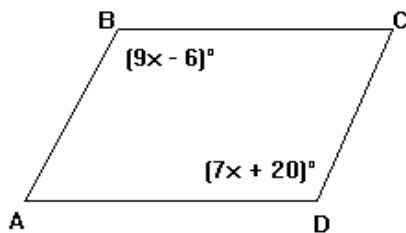a) 12   b) 29   c) 10   d) 23   e) 1 4

17. The measurement of each exterior angle.

a) 22.5°   b) 20°   c) 36 °   d) 25.71°   e) 74.5°

18. The measurement of each interior angle.

a) 200°   b) 122.5°   c) 150°   d) 144 °   e) 154.285°

19. Determine the measure of angle C of the parallelogram shown in the figure.

B
(9x - 6)°

(7x + 20)°

A   D

a) 80°   b) 120 °   c) 60°   d) 69 °   e) 75°

20. From the following parallelogram data, determine the value of "z".

$$\overline{AE} = 4x$$
$$\overline{AC} = 72$$
$$\overline{BE} = 14$$
$$\overline{ED} = 2x - z$$
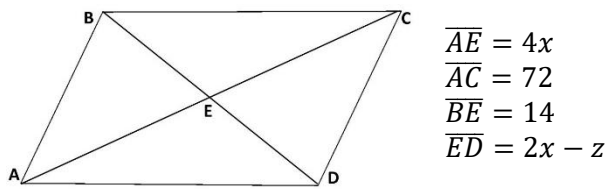
a) $z = 4$ b) $z = 12$ c) $z = 15$ d) $z = 13$ e) $z = 65$

21. Consider the following figure to be an isosceles trapezoid. Based on the data, determine the measure of angle B.
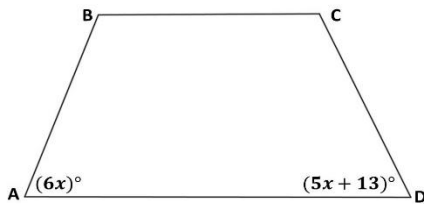
a) $60°$ b) $76°$ c) $68°$ d) $102°$ e) $78°$

22. Calculate the area "A" of a trapezoid if its bases measure 20 and 7 cm respectively, with a height of 3 cm.

a) $37.5cm^2$ b) $40.5cm^2$ c) $28.5cm^2$ d) $63cm^2$ e) $12.5cm^2$

23. Calculate the area of an isosceles triangle whose perimeter is 32 cm and its base measures 12 cm.

a) $60cm^2$ b) $30cm^2$ c) $66cm^2$ d) $180cm^2$ e) $48cm^2$

24. In the following rectangle, segment AC measures 13 cm and CD measures 5 cm. Calculate its area.
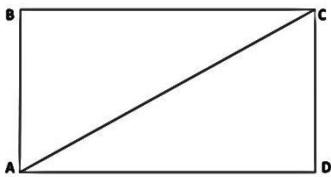
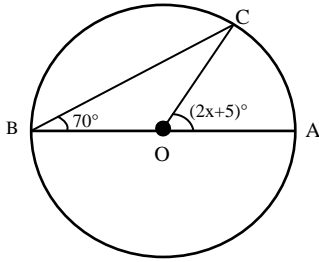a) $85cm^2$ b) $12cm^2$ c) $540cm^2$ d) $60cm^2$ e) $585cm^2$

25. Calculate the area "A" of a rhombus if its diagonals measure 12 and 18 cm respectively.

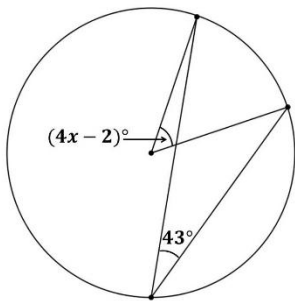a) A = 108cm ^{2} b) A = 216cm ^{2} c) A = 30cm ^{2} d) A = 120cm ^{2} e) A = 48cm ^{2}

26. Based on the data in the following figure, calculate the value of "x".

a) $x = 35$ b) $x = 20$ c) $x = 67.5$ d) $x = 90$ e) $x = 88.5$

27. For the following figure, determine the value of "x".

a) $x = 14$ b) $x = 17$ c) $x = 20$ d) $x = 22$ e) $x = 25$

STAGE 3 AND 4.
INSTRUCTIONS : Solve each of the following Trigonometry I problems.

In the following right triangle, the value of the sine of angle A is Csc A = $\frac{17}{8}$. Based on the above, write down the values of sides a, b, and c; then answer questions 28 and 29.
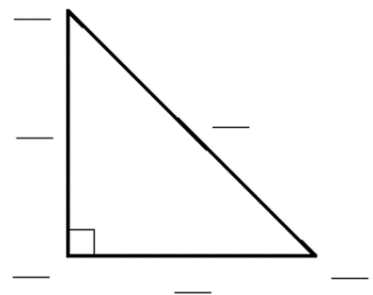
28. What is the value of Cos A?

a) 0.8824   b) 0.8012   c) 0.7684   d) 0.0768   e) 0.9042

29. What is the value of angle A?

a) 61.92°   b) 28.07°   c) 29.79°   d) 39.79°   e) 33.30 °

In the following right triangle, the value of the tangent of angle B is Cos B = $\frac{24}{25}$. Based on the above, write down the values of sides a, b, and c; then answer questions 30 and 31.
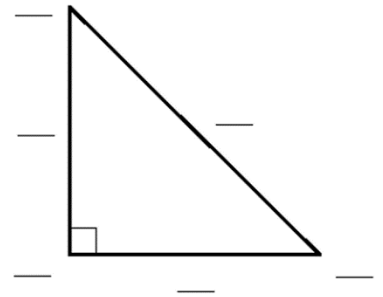
30. What is the value of Tan B?

a) 0.3296   b) 0.8992   c) 0.7684   d) 0.2916   e) 0.3342

31. What is the value of angle B?

a) 16.26°   b) 53.13°   c) 39.79°   d) 63.79°   e) 33.30°

32. If Tan $\theta = 8$, calculate Cot θ.

a) $\frac{8}{1}$ b) $\frac{8.06}{1}$ c) $\frac{1}{8}$ d) $\frac{9}{1}$ e) $\frac{1}{8.06}$

33. If Tan $\theta = 0.0491$, calculate Sec θ.

a) 1.0120   b) 1.0012   c) 0.9988   d) 0.0988   e) 0.9999
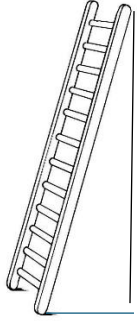
34. What is the value of Sec 40°?

a) 2.9238   b) 2.7071   c) 1.9685   d) 1.3054   e) 5.7587

35. Determine the value of the leg "a" of the right triangle, where <A = 18° and the adjacent 92.33
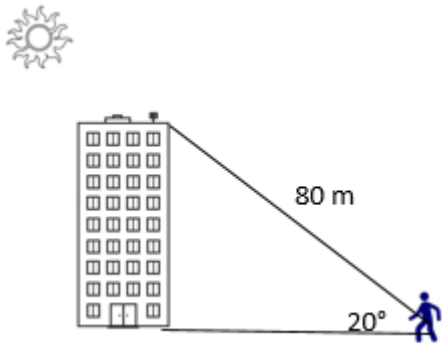
a) 22.70   b) 71.4   c) 29.99   d) 68.3   e) 45.05

36. A 4m ladder rests against a wall, with the foot 1.6m away. Determine the height of the wall.

a) 3.66 m   b) 4 m   c) 2.5 m   d) 3.2 m   e) 1.3 m

37. A pedestrian watches the sun set behind a building 80 m away. The angle of elevation of the pedestrian is 20°. What is the distance from the pedestrian to the building?

80 m

20°

a) 26.4   b) 27.3   c) 72.7   d) 75.17   e) 25.9

38. From the top of a 50-meter-high lighthouse, an observer sees a ship at sea at a 15° angle of depression. How far is the ship from the lighthouse?

a) 200m   b) 216m   c) 215m   d) 251m   e) 186.6m

40. From the top of a building, the angle of depression at point A is observed to be 26°. Find the height of the building if the distance from that point to the base of the building is 50.

a) 24.4m   b) 12m   c) 16m   d) 14.3m   e) 21m

41 . If the point (15, 8) is on the terminal side of the angle θ in normal position, determine Sin θ.

a) $\dfrac{17}{15}$ b) $\dfrac{15}{17}$ c) $\dfrac{8}{15}$ d) $\dfrac{-8}{17}$ e) $\dfrac{8}{17}$

42. If the point (6, -8) is on the terminal side of the angle θ in standard position, determine Cos θ.

a) $\dfrac{6}{8}$ b) $-\dfrac{6}{10}$ c) $-\dfrac{8}{10}$ d) $\dfrac{8}{10}$ e) $\dfrac{6}{10}$

43. Express the function of the given angle as the function of its reference angle and find the value of the function.
$Cos(-150°)$

a) $Cos\ 150° = -Cos\ 30° = -0.9397$ b) $Cos\ 210° = Sin\ 30° = .0.3420$ c) $Cos\ 210° = -Cos\ 30° - .9397$

d) 2.38   e) $Cos\ 150° = Sin\ 30° = 2.7475$

44. An airplane flies 240 km from city A to city B; then it changes course 40° and heads for city C, which is 162 km from B. What is the distance from city A to C?
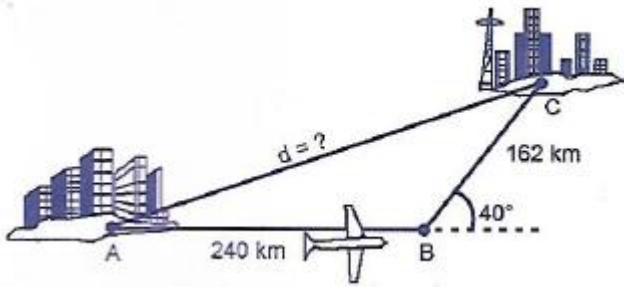
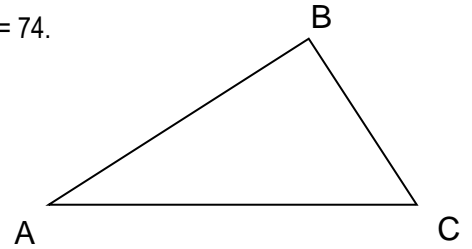a) 378.7 km   b) 320 km   c) 155.8 km   d) 430.3 km   e) 345.8 km

45. Given the value of the function, find the measure of angle θ if: $0° \le \theta \le 360°$
$Sin\ \theta = -0.5664$

a) $\theta\ III = 214.5°, \theta\ IV = 325.5° = \theta r\ 34.5°$ b) $\theta\ II = 220°, \theta\ IV = 325.5° = \theta r - 34.5°$
c) $\theta\ I = 215°, \theta\ III = 325.5° = \theta r\ 34.5°$ d) $\theta\ III = 200°, \theta\ IV = 325° = \theta r\ 35°$

46. Calculate the value of angle B of the following oblique triangle. If a = 50 b = 35 and c = 74.

a) 24. 2° b) 51.97°   c) 18.02°   d) 35.8°   e) 120.03°

47. Calculate the area of a triangular shaped plot, if a = 50 b = 35 and c = 74.

a) 242 u²   b) 530.33 u²   c) 217.14 u²   d) 378.62 u²   e) 442.99 u²

48. A hot-air balloon rises vertically, and upon reaching a certain point, one person sees it at an elevation angle of 20°15', and on the opposite side, someone sees it at an elevation angle of 42°18'. If the distance between the two people is 145 m, calculate the height of the balloon.

a) 295.20 m   b) 281.95 m   c) 420.95 m   d) 245 m   e) 235 m

49. Calculate the area of the following triangle. If a = 8   b = 11.29   and   < B = 83°
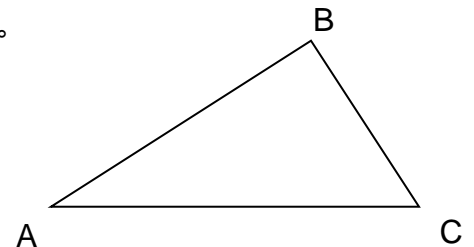
   a)   35.75   b)   48.62   c)   30.59   d)   26.26   e   49.5

50. The distance BC across the base of a volcano is to be determined. The distances AB and AC are measured and found to be 120 meters and 180 meters, respectively. Angle BAC measures 60°. Calculate the approximate distance along the volcano.

a) 158.7m   b) 145.4m   c) 205m   d) 196m   e) 185m