

AUGUST 2022
EBS 143
GEOMETRY AND TRIGONOMETRY
2 HOURS

Candidate's Index Number
Signature:

UNIVERSITY OF CAPE COAST
COLLEGE OF EDUCATION STUDIES
SCHOOL OF EDUCATIONAL DEVELOPMENT AND OUTREACH
INSTITUTE OF EDUCATION

COLLEGES OF EDUCATION
FOUR-YEAR BACHELOR OF EDUCATION (B.ED)
FIRST YEAR, END-OF-SECOND SEMESTER EXAMINATION, AUG/SEPT 2022

AUGUST 22, 2022

GEOMETRY AND TRIGONOMETRY

2:00 PM – 2:30 PM

This paper consists of two sections, A and B. Answer ALL the questions in Section A and TWO questions from Section B. Section A will be collected after the first 30 minutes.

SECTION A
(20 marks)

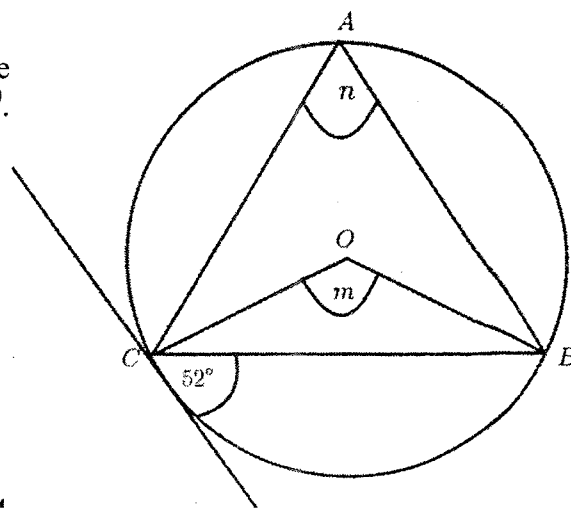
Answer ALL the questions in this Section.

Items 1 to 20 are stems followed by four options lettered A to D. Read each item carefully and circle the letter of the correct or best option.

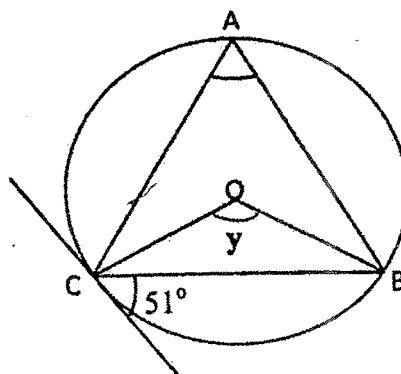
Note: Take $\pi = \frac{22}{7}$ to answer related questions.

- The area of a triangle with base length 12cm is 156cm^2 . Find its height?
 - 26cm
 - 34cm
 - 51cm
 - 62cm

- Given that O is the centre of the circle and the angle between the tangent and the chord CB is 52° . Calculate the value of $m + n$.
 - 52°
 - 76°
 - 104°
 - 156°

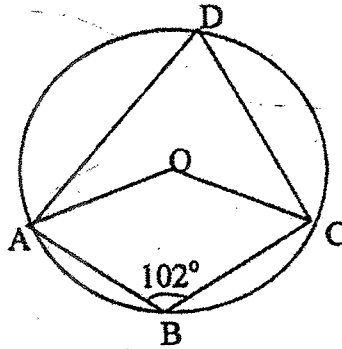


3. How many lines of symmetry has a rectangle?
 A. 1
 B. 2
 C. 3
 D. 4
4. A solid figure with uniform cross-sectional area is called
 A. cone.
 B. prism.
 C. pyramid.
 D. sphere.
5. Find the midpoint of the line P (3, 4) and Q(-5, 6).
 A. (-1,5)
 B. (1,5)
 C. (4,5)
 D. (1,-5)
6. Calculate the area of a rhombus of side 13cm if the length of one of its diagonals is 24cm long.
 A. 112cm^2
 B. 120cm^2
 C. 156cm^2
 D. 312cm^2
7. A sector of a circle of radius 14 cm subtends an angle of 54° at the centre. Calculate the area of the sector.
 A. 29.4cm^2
 B. 49.2cm^2
 C. 92.4cm^2
 D. 94.2cm^2
8. The height of an equilateral triangle is $\sqrt{3}\text{cm}$. What is the perimeter of the triangle?
 A. 2cm
 B. 3cm
 C. 6cm
 D. 9cm
9. O is the centre of the circle and the angle between the tangent and chord CB is 51° . Calculate the value of $\angle\text{COB}$ marked y.



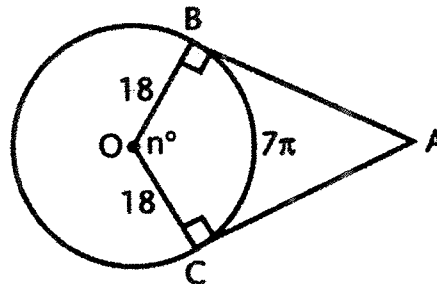
10. The points A, B, C and D lie on the circumference of the circle with centre O as shown in the diagram below. If $\angle ABC = 102^\circ$, find the value of $\angle AOC$ subtended by the minor arc \widehat{AC} .

- A. 78°
 B. 152°
 C. 156°
 D. 204°



11. $|AB|$ and $|AC|$ are tangents to a circle at points B and C, respectively. Minor arc BC is 7π cm. and the radius of the circle is 18 cm. What is measure of angle BAC?

- A. 90
 B. 95
 C. 70
 D. 110



12. A triangle has vertices $A(1, 3)$, $B(4, 2)$, and $C(3, 8)$. What unit transformation would produce an image with vertices $A_2(3, -1)$, $B_2(2, -4)$ and $C_2(8, -3)$? A
- A. reflection on the x-axis.
 B. reflection on the y-axis.
 C. rotation 90° anticlockwise about the origin.
 D. rotation of 90° clockwise about the origin.
13. If $Q(1, 2)$, $R(4, 3)$, $S(6, 6)$ are the three vertices of a parallelogram $QRST$, find the co-ordinates of the fourth vertex T.
- A. (2, 4)
 B. (3, 5)
 C. (4, 2)
 D. (5, 3)
14. The point $(3, q)$ lies on the straight line $4x - 3y = 3$. Find the value of q .
- A. -5
 B. -3
 C. 3
 D. 5
15. The translation vector, $\begin{pmatrix} 2 \\ -3 \end{pmatrix}$ takes a point P to its image, $P(-3, 7)$ Find the co-ordinates of P .
- A. $(5, -5)$
 B. $(-5, 10)$
 C. $(-5, 5)$
 D. $(-5, 4)$

Given that $\tan \theta = \frac{4}{3}$ use the information to answer the next questions 16 and 17.

16. Find $\cot \theta$

- A. $\frac{3}{4}$
- B. $\frac{4}{3}$
- C. $\frac{5}{4}$
- D. $\frac{4}{5}$

17. Find $\operatorname{cosec} \theta$

- A. $\frac{3}{4}$
- B. $\frac{4}{3}$
- C. $\frac{5}{4}$
- D. $\frac{4}{5}$

18. The interior angles of a polygon are x° , $2x^\circ$, $(x + 60)^\circ$, $(x + 10)^\circ$ and $(x - 10)^\circ$. Find the value x .

- A. 80°
- B. 180°
- C. 360°
- D. 540°

19. Find the gradient of the straight line whose equation is given by $5x - 7y = 0$.

- A. $-\frac{7}{5}$
- B. $-\frac{5}{7}$
- C. $\frac{5}{7}$
- D. $\frac{7}{5}$

20. What will be the resulting image if the point $(4, -7)$ undergoes three consecutive transformations such as reflection on the line $y = x$, reflection on the line $x = -1$ and the translation by the vector $\begin{pmatrix} 4 \\ 2 \end{pmatrix}$?

- A. $\begin{pmatrix} 9 \\ 6 \end{pmatrix}$
- B. $\begin{pmatrix} -5 \\ 6 \end{pmatrix}$
- C. $\begin{pmatrix} 2 \\ 6 \end{pmatrix}$
- D. $\begin{pmatrix} -7 \\ 6 \end{pmatrix}$