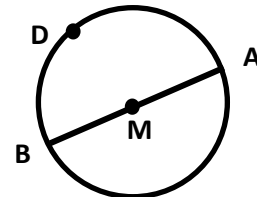


**Released Items in Mathematics for first form secondary**

**2019/2020**

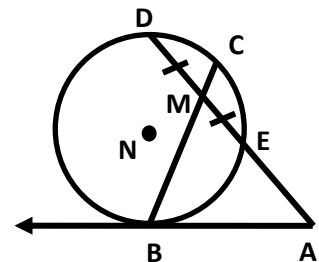
- (1) If the curve of the function  $f : f(x) = ax^2 + bx + c$  intersects the  $x$ -axis at the two points  $(5, 0), (1, 0)$ , then the solution set of the equation:  $2ax^2 + 2bx + 2c = 0$  is .....
- (a)  $\{10, 2\}$                       (b)  $\{5, 0\}$                       (c)  $\{1, 0\}$                       (d)  $\{5, 1\}$
- (2) If one of the roots of the equation:  $3x^2 - (k + 2)x + k^2 + 2k = 0$  is the multiplicative inverse of the other, then  $k = \dots\dots\dots$
- (a)  $-3, 1$                       (b)  $-3, -1$                       (c)  $3, -1$                       (d)  $3, 1$
- (3) If the ratio between the lengths of two corresponding sides in two similar polygons equals  $1 : 2$ , then which of the following statements is incorrect ?
- (a) The ratio between their areas equals  $1 : 4$
- (b) The ratio between their perimeters equals  $1 : 4$
- (c) The ratio between the measures of their corresponding angles equals  $1 : 1$
- (d) The ratio of similarity equals  $1 : 2$

- (4) In the opposite figure :  
 $\overline{AB}$  is the diameter of the circle M, If the length of the arc  $\overline{ADB} = 8\pi$  cm, then the radius length of its circle M equals ..... cm



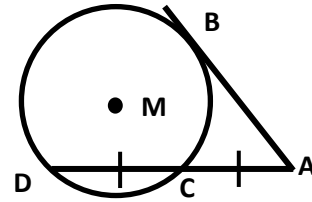
- (a) 16                      (b) 8                      (c) 4                      (d) 2
- (5) If  $a = 2i^2 - 5i^3$ ,  $b = \frac{2}{i^3} + 5i^2$ , Prove that:  $a - b = 3(1 + i)$

- (6) In the opposite figure :  
 $\overline{AB}$  touches the circle N at B,  $AE = ED$ , M is the midpoint of  $\overline{DE}$ ,  
 $CM = 1$  cm,  $MB = 4$  cm.  
 Find  $P_N(A)$ .

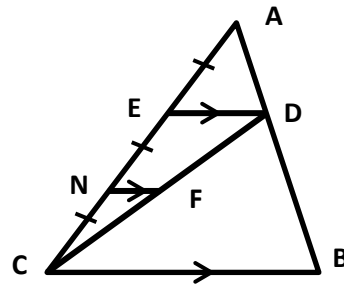


- (7) If  $L$  and  $M$  are the roots of the equation:  $x^2 - 7x + 1 = 0$ , form the quadratic equation whose roots are  $\sqrt{L}$  and  $\sqrt{M}$ .

- (8) In the opposite figure :  
 C is the midpoint of  $\overline{DA}$ ,  $\overline{AB}$  touches the circle M at B,  
 $P_M(A) = 200$ , find the length of  $\overline{AD}$ .



- (9) If  $\triangle ABC \sim \triangle XYZ$ , the perimeter of  $\triangle ABC$  : the perimeter of  $\triangle XYZ = 1 : 4$ , then the area of  $\triangle ABC$  : the area of  $\triangle XYZ = \dots\dots\dots$
- (a) 1 : 2                      (b) 2 : 8                      (c) 1 : 16                      (d) 1 : 64
- (10) The degree measure of the central angle which subtends an arc of length 4 cm and the radius of its circle equals 5 cm equals  $\dots\dots\dots$
- (a)  $45^\circ 50'$                       (b)  $55^\circ 50'$                       (c)  $144^\circ$                       (d)  $72^\circ$
- (11) If  $\cos(270^\circ - \theta) = \frac{-1}{2}$  such that  $\theta$  is the measure of the smallest positive angle, then  $\theta = \dots\dots^\circ$
- (a) 30                      (b) 150                      (c) 210                      (d) 330
- (12) In the opposite figure :  
 $\overline{ED} \parallel \overline{NF} \parallel \overline{CB}$ ,  $FN = 2$  cm, then the length of  $\overline{BC} = \dots\dots$  cm



- (a) 8                      (b) 9                      (c) 10                      (d) 12