

Model Exams

Mathematics

2018 \ 2019

First term 1st SEC

Choose the correct answer from the given ones:

Ques.	1	2	3	4	5	6
score	2.5	2.5	2.5	2.5	2.5	2.5

Solve the following problems

Ques.	7	8	9	10	11	12
score	5	4	4	4	4	4

Model Exam (1)

Subject: Math

Midyear Exam 201 /201

Grade: First Sec

Choose the correct answer from the given ones:

(1) If the two roots of the equation: $x^2 - 6x - m = 0$ are real and equal , then (m) equals

- (A) 36
- (B) 12
- (C) 9
- (D) - 9

(2) In the circle M :r = 4cm, $AM = \sqrt{17}$ cm. then : $P_M (A) = \dots$ cm

- (A) 33
- (B) 13
- (C) 1
- (D) -1

(3) If: $2 \sin \theta = -\sqrt{3}$ then the smallest positive angle satisfying this trigonometric function is =.....

- (A) 9
- (B) 4
- (C) 3
- (D) -9

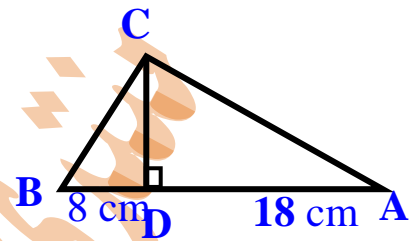
(4) Using the figure opposite: $CD = \dots\dots\dots$ cm

(A) $3\sqrt{13}$

(B) $6\sqrt{13}$

(C) $4\sqrt{13}$

(D) 12



(5) The simplest form of the imaginary number i^{73} is

(A) i

(B) $-i$

(C) 1

(D) -1

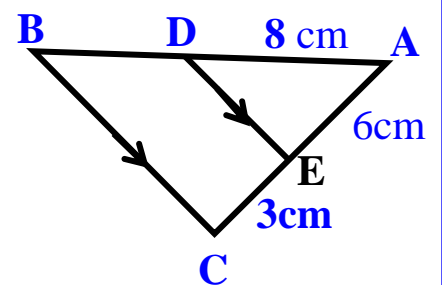
(6) Using the figure opposite: $BD = \dots\dots\dots$ cm

(A) 5

(B) 4

(C) 3.6

(D) 3



Solve the following problems

(7) Find the values of X , Y if each satisfy the equation :

$$\frac{25}{4i - 1} = x + yi$$

.....

.....

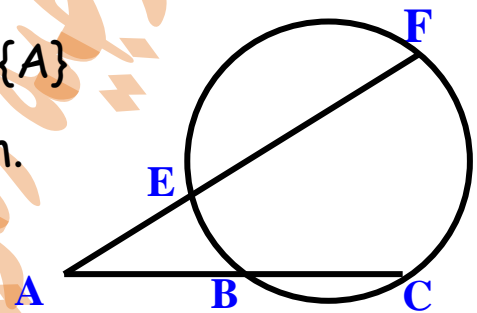
.....

.....

(8) In the opposite figure: $\vec{CB} \cap \vec{FE} = \{A\}$

$AB = 3 \text{ cm.}$, $BC = 2 \text{ cm.}$, $AF = 7.5 \text{ cm.}$

Find the length of \overline{EF}



.....

.....

.....

.....

.....

(9) Zyad ascends a road of length 48 metres and inclines on the horizontal with an angle of measure 25° by his bike. Find the road height to the nearest two decimals.

.....

.....

.....

.....

.....

(10) ABC is a triangle , $D \in \overline{AB}$ and $E \in \overline{AC}$ where
 $AD = 3 \text{ cm.}$, $DB = 6 \text{ cm.}$, $AE = 2 \text{ cm.}$ and $EC = 4 \text{ cm.}$
 Prove that : $\overline{DE} \parallel \overline{BC}$

.....

.....

.....

.....

(11) If : L and M are the two roots of $f(x) : x^2 + 5x + 7 = 0$.
 Find the quadratic whose two roots are $\frac{1}{L}$ and $\frac{1}{M}$

.....

.....

.....

.....

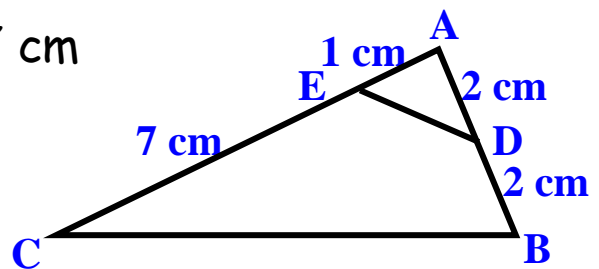
(12) In the opposites figure :

$AD = DB = 2 \text{ cm.}$, $AE = 1 \text{ cm.}$, $EC = 7 \text{ cm}$

Find : $\frac{\text{area } \Delta ADE}{\text{area } \Delta ACB}$

Prove that:

$DBCE$ is a cyclic quadrilateral



.....

.....

.....

.....

Model Exam (2)

Subject: Math

Midyear Exam 201 /201

Grade: First Sec

Choose the correct answer from the given ones:

(1) The arc whose length is 5π cm. in a circle of radius length 15cm. is opposite to a central angle of measure

(A) 90°

(B) 45°

(C) 120°

(D) 60°

(2) Using the figure opposite:

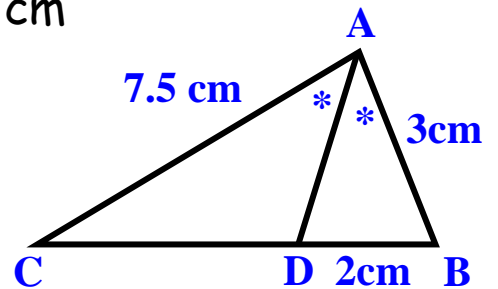
\overrightarrow{AD} bisects $\angle A$ then: $CB = \dots\dots\dots$ cm

(A) 4

(B) 5

(C) 6

(D) 7



(3) If: $x = 4$ is one of the two roots of the equation:

$x^2 + m x = 4$ then: $m = \dots\dots\dots$

(A) 3

(B) - 3

(C) 4

(D) -4

(4) Using the figure opposite:

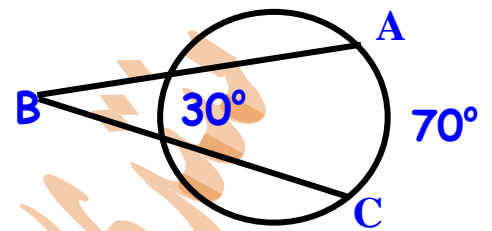
$$m(\angle B) = \dots\dots\dots$$

(A) 50°

(B) 35°

(C) 10°

(D) 20°



(5) If the ratio between the perimeters of two similar triangles is $1 : 4$, then the ratio between their two surface areas =

(A) $1 : 2$

(B) $1 : 4$

(C) $1 : 8$

(D) $1 : 16$

(6) If θ is an acute angle and $\sin(\theta + 10^\circ) = \cos 50^\circ$, then $m(\angle \theta) = \dots\dots\dots$

(A) 50°

(B) 40°

(C) 30°

(D) 20°

Solve the following problems

(7) ABC is a triangle , X is the midpoint of \overline{BC} , \overline{XY} the bisector of $\angle AXB$ intersects \overline{AB} at Y , $\overline{YZ} \parallel \overline{BC}$ is also drawn to meet \overline{AC} at Z. prove that: \overline{XZ} bisects $\angle AXC$

.....

.....

.....

.....

.....

.....

.....

(8) If: $\tan \beta = \frac{5}{12} : 180^\circ < \beta < 270^\circ$, $\sin \theta = \frac{3}{5} : 0^\circ < \theta < 90^\circ$
 , Find: $\sin (180^\circ - \theta) \cos \beta - \cos (360^\circ - \theta) \sin \beta$

.....

.....

.....

.....

.....

.....

.....

(9) If: L and M are the two roots of $f(x): 2x^2 + 3x - 5 = 0$.
 Find the quadratic whose two roots are L + 3 and M + 3

.....

.....

.....

.....

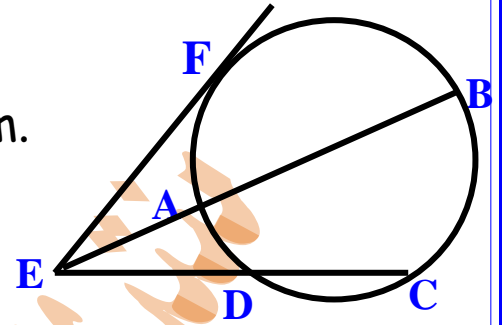
.....

(10) In the opposites figure :

The radius length of circle M = 4,5 cm.

EA = 3 cm. ,and DE = 5 cm.

Find the length of \overline{DC} and \overline{EF}



.....

.....

.....

.....

.....

(11) Find in R the solution set of the inequality :

$$x^2 + 5x + 4 \leq 0.$$

.....

.....

.....

.....

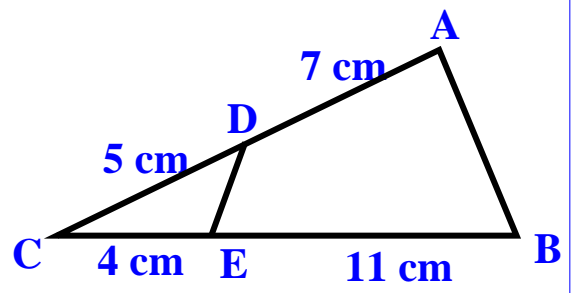
.....

(12) In the opposites figure :

Prove that : $\Delta CDE \sim \Delta CBA$

If the area of $\Delta CDE = 8 \text{ cm}^2$

Find : the area of the quadrilateral ABED



.....

.....

.....

.....

.....

Model Exam (3)

Subject: Math

Midyear Exam 201 /201

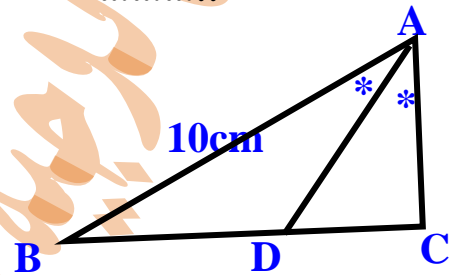
Grade: First Sec

Choose the correct answer from the given ones:

(1) In the figure opposite: \overrightarrow{AD} bisects $\angle A$, $AB=10$ cm.

$BD: DC = 5 : 3$. Then the length of $\overline{AC} = \dots\dots\dots$

- (A) 3 cm
- (B) 5 cm
- (C) 6 cm
- (D) 7,5 cm



(2) The arc of length 15π in a circle of a radius length 10 cm. is opposite to a central angle of measure

- (A) $\frac{2\pi}{3}$
- (B) $\frac{3\pi}{2}$
- (C) $\frac{4\pi}{3}$
- (D) $\frac{5\pi}{3}$

(3) If A lies on the circle M , then $P_M(A) \dots\dots\dots 0$

- (A) $<$
- (B) \geq
- (C) \leq
- (D) $>$

(4) If the sum of the two roots of the equation:

$$x^2 - m x + 6 = 0 \text{ equals } 5 \text{ then } m = \dots\dots$$

(A) - 6

(B) - 5

(C) 5

(D) 6

(5) In the figure opposite: $m(\angle C) = 90^\circ$

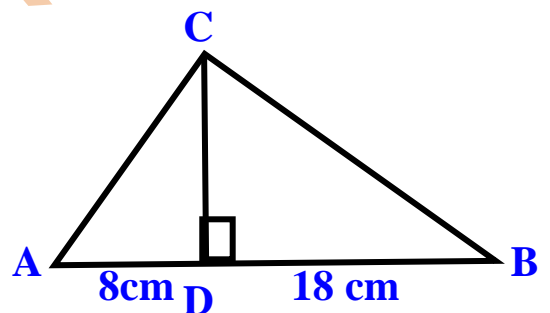
CD is perpendicular to AB then : CD =

(A) 18 cm

(B) 8 cm

(C) 10 cm

(D) 12 cm



(6) The function $f : f(x) = -2x - 4$ is positive if

(A) $x > -2$

(B) $x \geq -2$

(C) $x < -2$

(D) $x \leq -2$

Solve the following problems

(7) ABC is a right-angled triangle at A , AB = 20 cm, AC=15 cm. ,D ∈ BC , DB = 10 cm. and AE ⊥ BC and intersects BC at E , DF // AB and intersects AE at F
 Prove that : CF bisects ∠ C

.....

.....

.....

.....

.....

(8) If : L and M are the two roots of $f(x) : x(3x - 2) = 5$.
 Find the quadratic whose two roots are $\frac{M}{L}$ and $\frac{L}{M}$

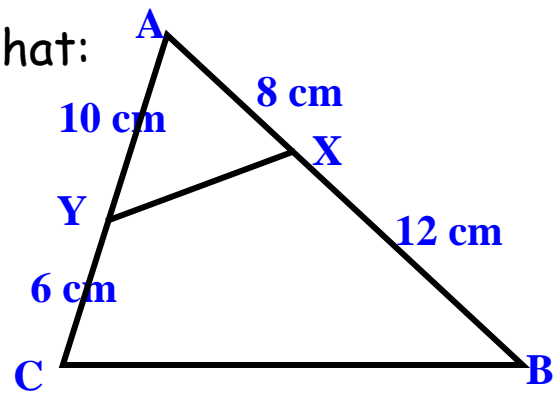
.....

.....

.....

.....

(9) In the opposite figure: Prove that:
 XBCY is a cyclic quadrilateral
 Find : $\frac{\text{area } \Delta AXY}{\text{area } \Delta ACB}$



.....

.....

.....

.....

(10) If: $x = \frac{7 - i}{2 - i}$, $y = \frac{13 - i}{4 + i}$ Prove that : x and y are conjugate numbers , then prove that : $x^2 + y^2 = 16$

.....

.....

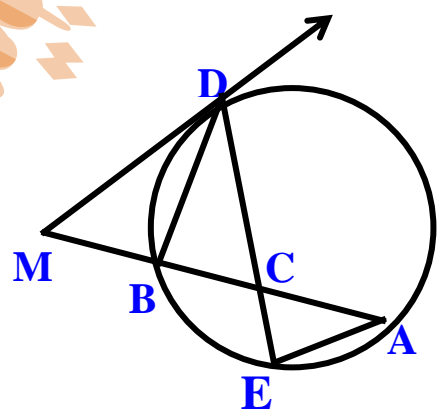
.....

.....

.....

.....

(11) In the opposite figure: $CA = CB$,
 $CD = 8\text{cm}$, $CE = 2\text{ cm}$, $MB = \frac{1}{2}AB$
 \overrightarrow{MD} is a tangent to the circle
 Find the length of \overline{MD}
 Prove that : $\Delta DCB \sim \Delta ACE$



.....

.....

.....

.....

.....

.....

(12) If: $\tan (\theta - 45^\circ) = \cot (2\theta - 45^\circ)$ where θ is an acute angle . Prove that $\cos^2 \theta + \sin^2 \theta$

.....

.....

.....

.....

.....