

AGA KHAN UNIVERSITY EXAMINATION BOARD

SECONDARY SCHOOL CERTIFICATE

CLASS X EXAMINATION

APRIL/ MAY 2019

Mathematics Paper I

Time: 45 minutes Marks: 30

INSTRUCTIONS

1. Read each question carefully.
2. Answer the questions on the separate answer sheet provided. DO NOT write your answers on the question paper.
3. There are 100 answer numbers on the answer sheet. Use answer numbers 1 to 30 only.
4. In each question, there are four choices A, B, C, D. Choose ONE. On the answer grid, black out the circle for your choice with a pencil as shown below.

Correct Way		Incorrect Ways	
1		1	
		2	
		3	
		4	

Candidate's Signature

5. If you want to change your answer, ERASE the first answer completely with a rubber, before blacking out a new circle.
6. DO NOT write anything in the answer grid. The computer only records what is in the circles.
7. You may use a simple calculator if you wish.

1. The value of b , when $\sqrt{ax^2 + bx + 64} = \pm 4(x+2)$, will be
 - A. 64
 - B. 32
 - C. 4
 - D. 2

2. $45x^2$ is the least common multiple (LCM) of
 - A. $3x^2$ and $15x$
 - B. $3x$ and $15x$
 - C. $5x^2$ and $9x$
 - D. $5x$ and $9x$

3. $(\sqrt{x}-4) \div (x-4^2) \times (\sqrt{x}+4)$ is equal to
 - A. 1
 - B. $\frac{1}{4}$
 - C. $\sqrt{x}+4$
 - D. $\frac{\sqrt{x}+4}{\sqrt{x}-4}$

4. Which of the following forms is suitable for the partial fraction of $\frac{5x+3}{(x-2)(x+3)}$?
 - A. $\frac{A}{(x-2)} + \frac{B}{(x+3)}$
 - B. $\frac{A+B}{(x-2)(x+3)}$
 - C. $\frac{A}{(x-2)} + \frac{Bx+C}{(x+3)}$
 - D. $\frac{Ax+B}{(x-2)} + \frac{C}{(x+3)}$

5. The solution set of $\frac{x-1}{2} = 0$ is
 - A. $\{-1\}$
 - B. $\{-3\}$
 - C. $\{3\}$
 - D. $\{1\}$

6. Given that $|-x| = -1$, the solution set which must satisfy the equation is

- A. $\{-1\}$
- B. $\{\}$
- C. $\{1\}$
- D. $\{\emptyset\}$

7. The inequality which BEST describes $m(x-1) > m$, where m is a natural number, will be

- A. $x < 1$
- B. $x < 2$
- C. $x > 1$
- D. $x > 2$

8. If x is a negative number, then the mathematical statement which must be TRUE is

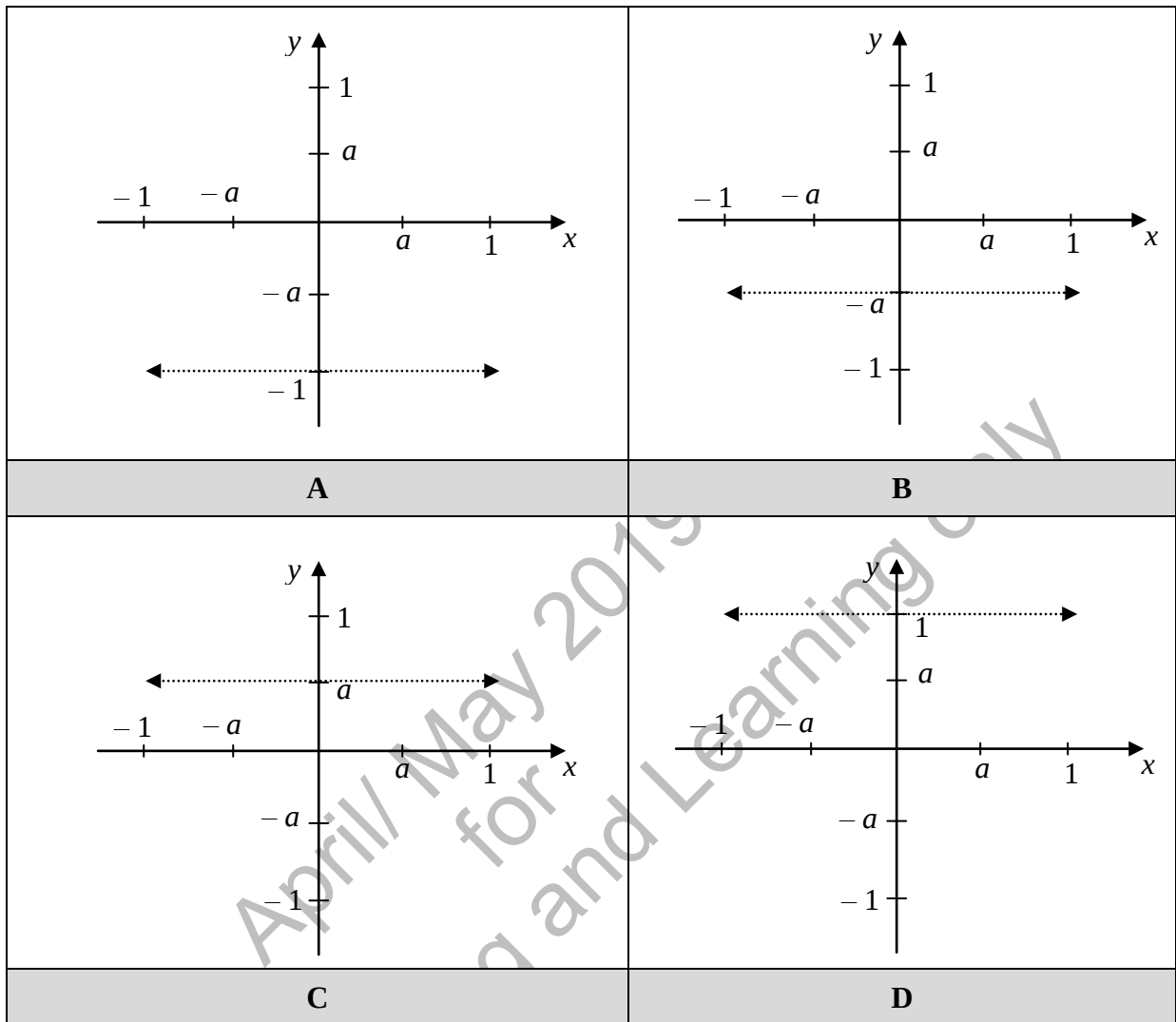
- A. $-x \leq 0$
- B. $-x \geq 0$
- C. $x < 0$
- D. $x > 0$

9. The linear equation which satisfies the given pairs of values as shown in the given table will be

X	2	-1
Y	-1	2

- A. $Y = 1 - X$
- B. $Y = X - 1$
- C. $Y - 1 = X$
- D. $Y = -1 - X$

10. The correct graphical representation of $ay + a = 0$ is



11. The given graph represents straight line(s)

I. $2y = -(2x + 2c)$

II. $y = -x - c$

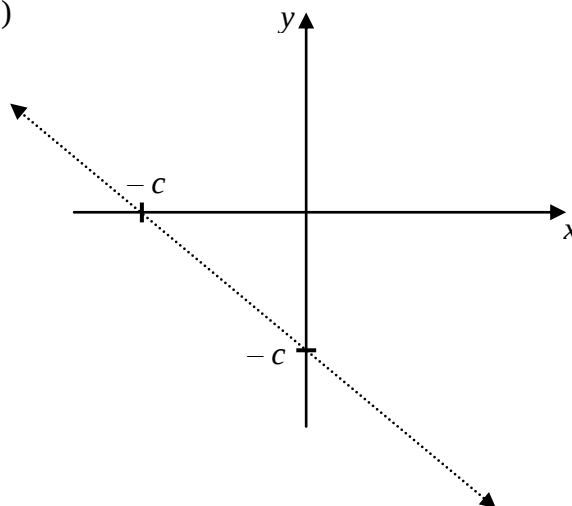
III. $2y = x - c$

A. I and III.

B. I and II.

C. III only.

D. II only.



12. The standard form of the quadratic equation $\frac{3}{2} + x^2 = 2x$ is
- $x^2 + 4x + 3 = 0$
 - $x^2 - 2x + 3 = 0$
 - $2x^2 + 4x + 3 = 0$
 - $2x^2 - 4x + 3 = 0$
13. When four times of a number x is squared, then the result will be half of one less than that number. The given statement can be written mathematically as
- $16x^2 = \frac{1}{2}(x-1)$
 - $4x^2 = \frac{1}{2}(x-1)$
 - $16x^2 = \frac{1}{2}x - 1$
 - $4x^2 = \frac{1}{2}x - 1$
14. Which of the following equation(s) is same as $2x^2 - 1 = 0$?
- (Note: $x \neq 0$)
- $3 - \left(\frac{1}{x^2} + 1\right) = 0$
 - $2(x^2 - 1) = 0$
 - $\frac{1}{x} - 2x = 0$
- II only
 - III only
 - I and II
 - I and III
15. The valid condition for the distance between two points (a, b) and (c, d) will be
- $(a - c)^2 + (b - d)^2 \geq 0$
 - $(b - a)^2 + (d - c)^2 \geq 0$
 - $(a - c)^2 + (b - d)^2 < 0$
 - $(b - a)^2 + (d - c)^2 < 0$

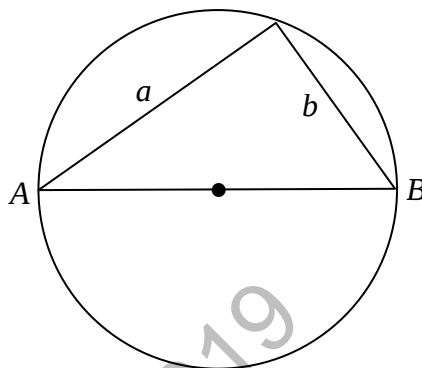
16. Which of the following points is collinear with the points (x, y) and $(x-1, y)$?
- A. $(x+1, y+1)$
 - B. $(x-1, y-1)$
 - C. $(x+1, y)$
 - D. $(x, y+1)$
17. If $(1, -a)$ is the midpoint of $(0, -5)$ and $(2, -5)$, then the value of $(1-a)$ will be
- A. -4
 - B. -1
 - C. 1
 - D. 6
18. $1\frac{1}{4}$ rotation in anticlockwise direction is equal to
- A. 90°
 - B. 270°
 - C. 288°
 - D. 450°
19. If the central angle measured in radians is $\alpha + 2$ and the length of circular arc is 3π of radius r , then the value of α is equal to
- A. $3\pi + 2$
 - B. $3\pi - 2$
 - C. $\frac{3\pi}{2}$
 - D. 3π
20. If the sum of all quadrantal angles is x , then x must be equal to
- A. 180°
 - B. 225°
 - C. 360°
 - D. 900°
21. For $A=45^\circ$, the value of $(\sin A + \cos A)^2$ is equal to
- A. 1
 - B. 2
 - C. $\frac{1}{2}$
 - D. $\frac{1}{4}$

22. Which of the following lengths do NOT form a right angled triangle?

- A. $3\sqrt{2}$, $4\sqrt{2}$ and $5\sqrt{2}$
- B. 6, 8 and 10
- C. 5, 5 and 10
- D. 3, 4 and 5

23. In the given diagram, if the diameter of the circle is AB , then radius of the circle, in terms of a and b , will be

- A. $\frac{a^2 - b^2}{2}$
- B. $\frac{a^2 + b^2}{2}$
- C. $\frac{\sqrt{a^2 + b^2}}{2}$
- D. $\frac{\sqrt{a^2 - b^2}}{2}$



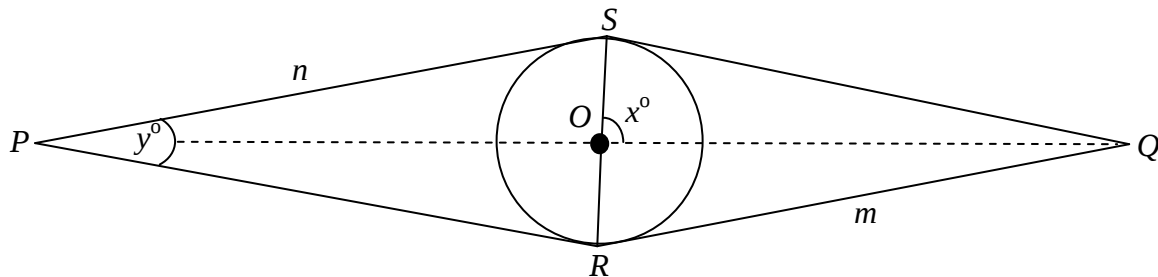
NOT TO SCALE

24. If the length of the sides of a right angled triangle are k , l and m such that $l < k < m$, then according to Pythagoras' theorem

- A. $m^2 = k^2 - l^2$
- B. $l^2 = (k + m)^2$
- C. $m^2 = (k + l)^2$
- D. $l^2 = m^2 - k^2$

Use the given information to answer Q.25, Q.26 and Q.27.

The given diagram shows a circle with centre O . Two tangents are drawn each from points P and Q to the circle at points S and R respectively that form a quadrilateral $PSQR$.

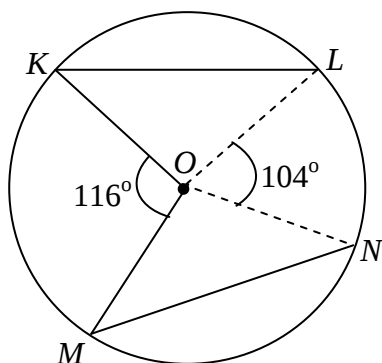


NOT TO SCALE

25. If $\angle SQR = 72^\circ$, then the value of x is equal to
- A. 18°
 - B. 36°
 - C. 54°
 - D. 81°
26. The angle SOP , in terms of y , will be
- A. $90^\circ - y^\circ$
 - B. $90^\circ - \frac{y^\circ}{2}$
 - C. $90^\circ - 2y^\circ$
 - D. $\frac{1}{2}(90^\circ - y^\circ)$
27. The total length of the sides of quadrilateral $PSQR$
- A. is $2m + 2n$
 - B. is $2m + n$
 - C. is $2mn$
 - D. cannot be determined.

Use the given information to answer Q.28, Q.29 and Q.30.

In the given circle, two arcs KL and MN are congruent.



NOT TO SCALE

28. Given that the half of chord MN is m , the length of chord KL will then be

- A. m
- B. $\frac{m}{2}$
- C. $2m$
- D. $\frac{1}{2} + m$

29. The angle MON will be

- A. 220°
- B. 140°
- C. 110°
- D. 70°

30. The CORRECT relationship between the lengths of chords KL and MN will be

- A. $2MN = KL$
- B. $KL = \frac{1}{2}MN$
- C. $KL - MN = 0$
- D. $KL + MN = 0$

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