

AGA KHAN UNIVERSITY EXAMINATION BOARD

SECONDARY SCHOOL CERTIFICATE

CLASS X EXAMINATION

APRIL/ MAY 2017

Mathematics Paper II

Time: 2 hours 20 minutes Marks: 45

INSTRUCTIONS

Please read the following instructions carefully.

1. Check your name and school information. Sign if it is accurate.

**I agree that this is my name and school.
Candidate's signature**

2. RUBRIC. There are ELEVEN questions. Answer ALL questions. Choices are specified inside the paper.
3. When answering the questions:

Read each question carefully.
Use a black pointer to write your answers. DO NOT write your answers in pencil.
Use a black pencil for diagrams. DO NOT use coloured pencils.
DO NOT use staples, paper clips, glue, correcting fluid or ink erasers.
Complete your answer in the allocated space only. DO NOT write outside the answer box.
4. The marks for the questions are shown in brackets ().
5. You may use a simple calculator if you wish.

(ATTEMPT EITHER PART a OR PART b OF Q.1.)

Q.1.

(Total 5 Marks)

- a. Find the least common multiple (L.C.M.) of $8a^3 - 1$, $4a^2 - 1$ and $(2a - 1)^2$ and simplify the result by using appropriate formula.
- b. Simplify the expression $\left(\frac{x^3 - a^3}{(x - a)(x + a)} \div \frac{x^2 + ax + a^2}{x^3 + a^3} \right) - a^2$.

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Q.2.

(Total 3 Marks)

If $\frac{8x - 17}{x(2x + 1)} = \frac{A}{x} + \frac{B}{2x + 1}$, then find the value of B .

(ATTEMPT EITHER PART a OR PART b OF Q.3.)

Q.3.

(Total 5 Marks)

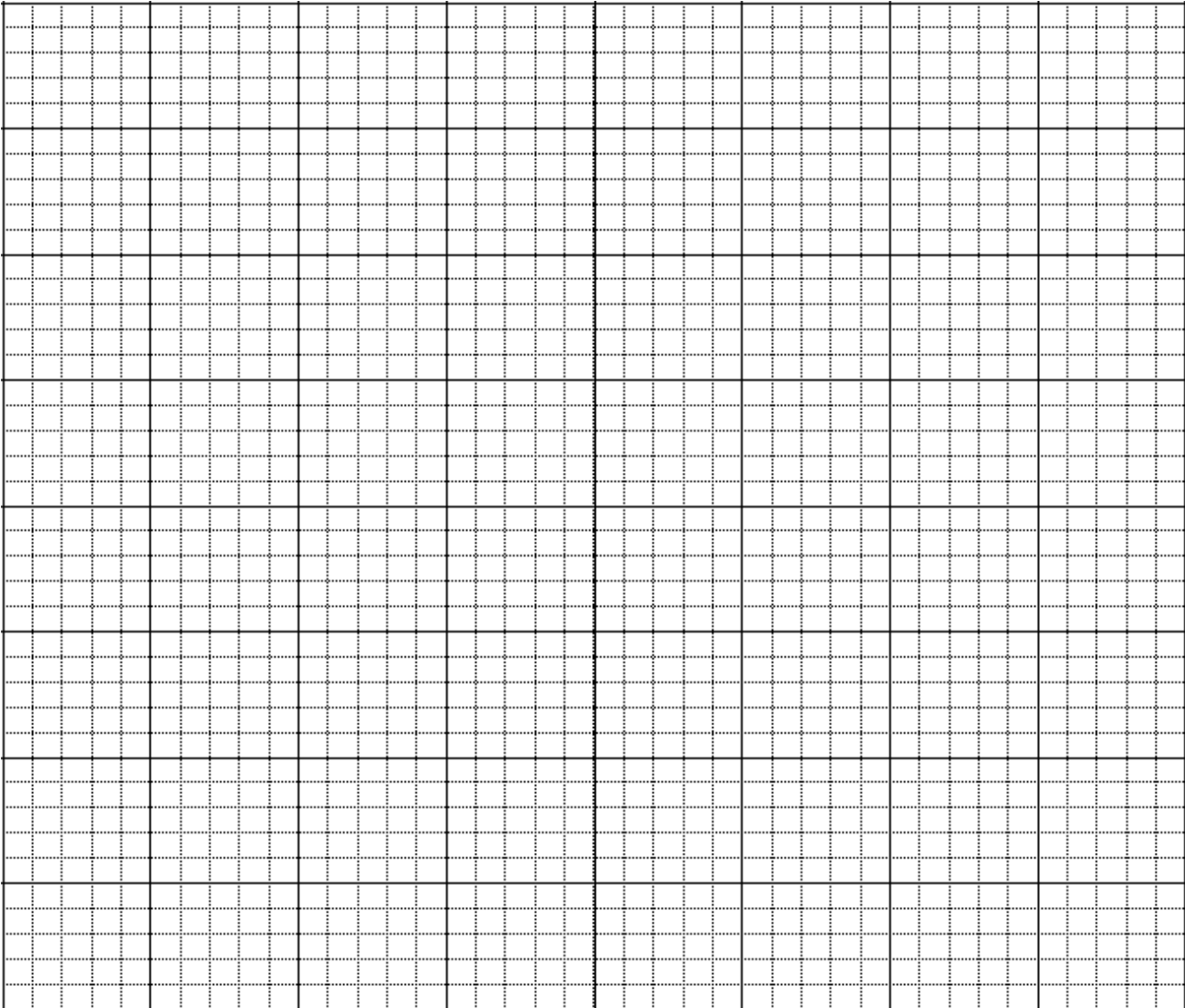
a. Solve $x - \frac{1}{5} = 3\left(x - \frac{5}{3}\right) - 5x$.

b. Solve $|4x - 1| = |3x - 2|$. Also verify your answer.

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Q.4.
(Total 4 Marks)

Draw lines $y = 3$, $y = -x$ and $x = -3$ on the given paper and find their point of intersection.



Q.5.

(Total 4 Marks)

Find the value(s) of x in the equation $x^2 - \frac{3}{2}x = 1$ by completing square method.

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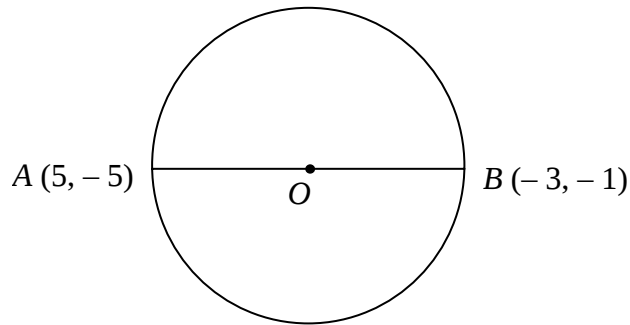
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(ATTEMPT EITHER PART a OR PART b OF Q.6.)

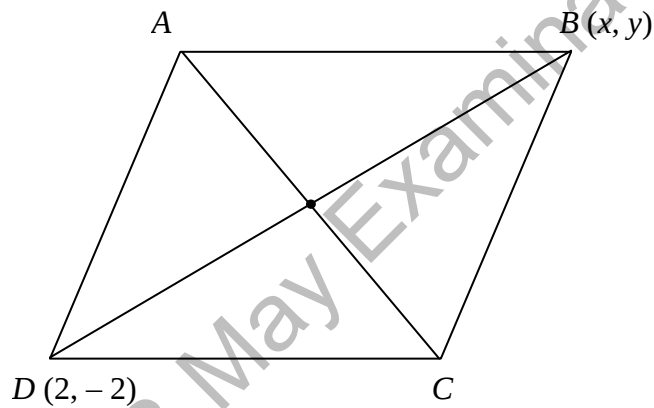
Q.6. (Total 3 Marks)

- a. AB is the diameter of the given circle with centre O . Find the length of diameter and radius of the given circle.



NOT TO SCALE

- b. AC and BD are diagonals of the given parallelogram $ABCD$. The midpoint of the diagonal AC is $(5, 6)$ and the coordinates of D are $(2, -2)$. Find the coordinates of $B(x, y)$ and justify your answer.



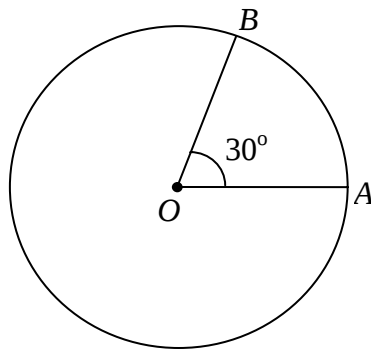
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(ATTEMPT EITHER PART a OR PART b OF Q.7.)

Q.7.

(Total 4 Marks)

- a. Consider the given circle with centre O and radius 3 cm. Find the length of the arc AB .



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- b. Correctly match the items in column A with items in column B by with arrow ($\rightarrow$).

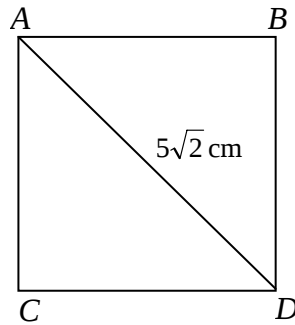
Column A	Column B
$\sec \theta$	$\sqrt{3}$
$\sin 210^\circ$	$\sqrt{1 + \tan^2 \theta}$
$\tan 60^\circ$	- ve
$\cos 30^\circ$	$\sin 60^\circ$
	$\frac{\sqrt{3}}{2}$

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(ATTEMPT EITHER PART a OR PART b OF Q.8.)

Q.8. (Total 4 Marks)

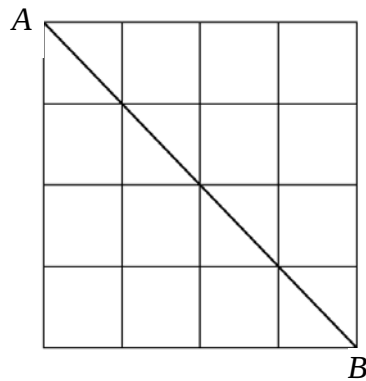
- a. The length of diagonal of a square $ABCD$ is $5\sqrt{2}$ cm. Find the length of each side of the square and the perimeter of the square.



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- b. In the given diagram, there are 16 square tiles, if the area of each square tile is 100 cm^2 , then find the length of $\overline{AB}$.

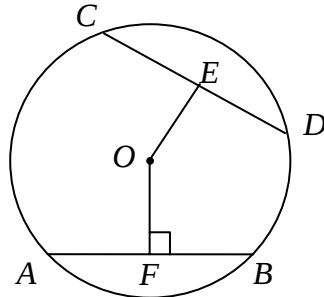


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Q.9. (Total 4 Marks)

In the given diagram, if $m\overline{AB} = m\overline{CD} = 10\text{ cm}$, then answer the following questions.



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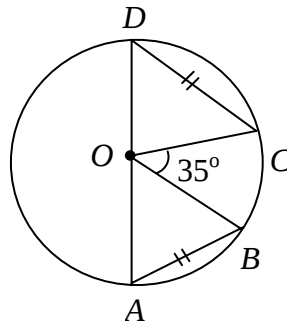
- i. Find $m\overline{AF}$ and justify your answer. (2 Marks)

- ii. Is $m\overline{AF} = m\overline{DE}$? Justify your answer. (2 Marks)

Q.10.

(Total 4 Marks)

Consider the given circle with centre O and find $m\angle AOB$. Justify each step involved in the calculation.



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Q.11.

(Total 5 Marks)

Draw a circle of radius 3 cm in the given space and draw a circumscribed regular hexagon around the given circle.

Space for diagram

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