

AGA KHAN UNIVERSITY EXAMINATION BOARD

SECONDARY SCHOOL CERTIFICATE

CLASS X EXAMINATION

APRIL/ MAY 2018

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.

(Total 5 Marks)

Q.1.

a. Simplify completely $\left(\frac{1}{x-1} + \frac{2}{x+1} - \frac{3}{x}\right) \div \frac{(3-x)}{x(x+1)}$.

b. If $x^4 + 2x^3 - 3x^2 - bx + 4$ is a perfect square, then find the value of b .

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Q.2.

(Total 3 Marks)

a. Convert $\frac{x^2 + 1}{x^2 + 2x + 1}$ into proper fraction.

(2 Marks)

b. Write correct form required to resolve $\frac{x^2 + 1}{x^2 + 2x + 1}$ into its partial fractions.

(1 Mark)

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

Q.3.

(Total 5 Marks)

- a. Find the solution set of the linear equation $\left(2\frac{1}{5}x - \frac{7}{15}x + \frac{x}{3}\right) \div \left(-18\frac{3}{5}\right) = \frac{2}{9}$. (5 Marks)

b.

- i. Find the value of x for the equation $\frac{5\sqrt{x}}{2} - \frac{7\sqrt{x}}{3} = \frac{7}{3}$. (3 Marks)

(**Note:** Verification is not required)

- ii. Find the solution set of $3 - x \leq 0$ in tabular form, where $x \in W$. (2 Marks)

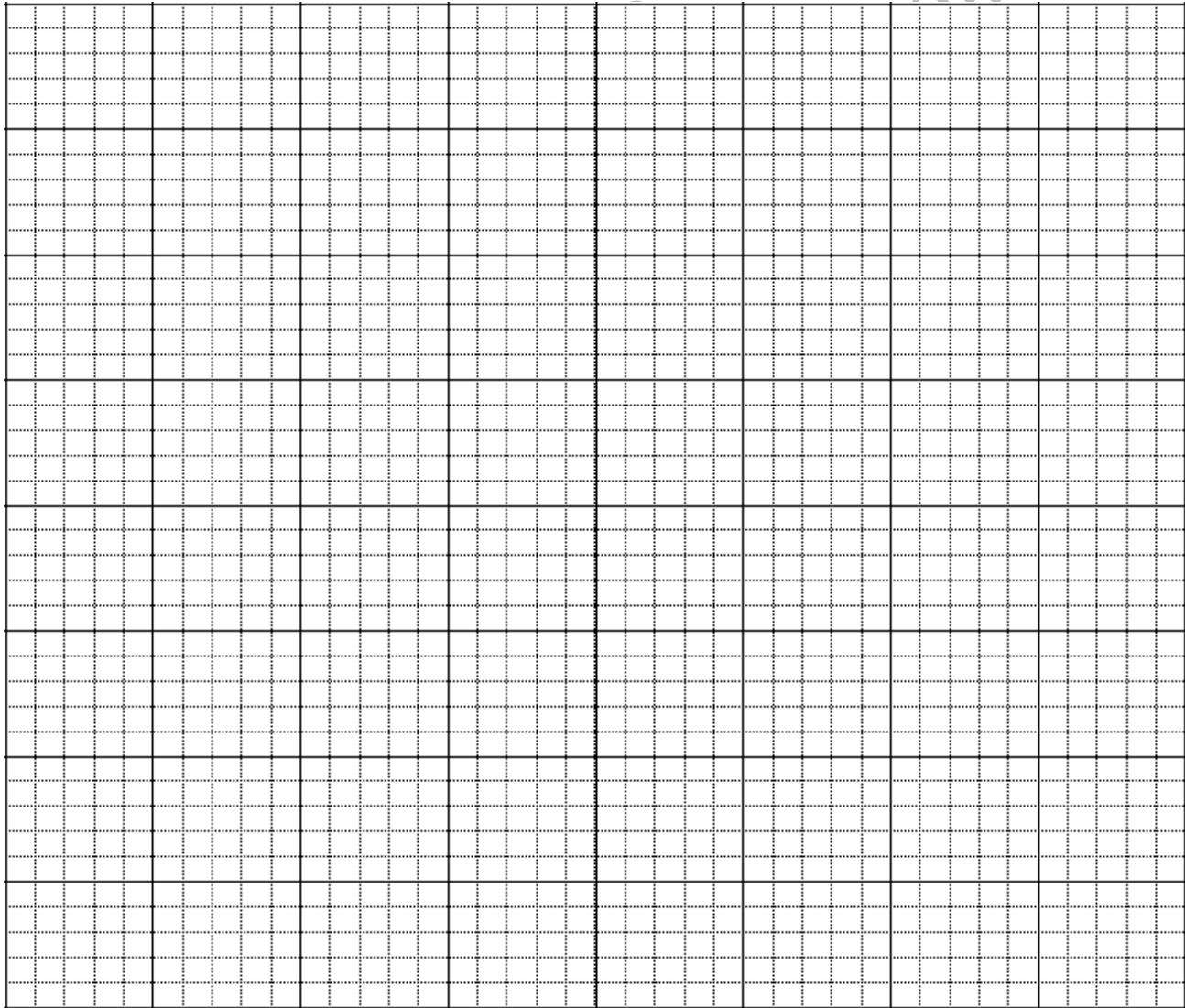
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Q.4.

(Total 4 Marks)

Complete the following table for the equation $3x - 5y = 15$ and draw its graph on the given graph.

x	0		
y		0	3



Q.5.

(Total 4 Marks)

Use quadratic formula to find the values of x for $16x^2 + 28x = 4$.

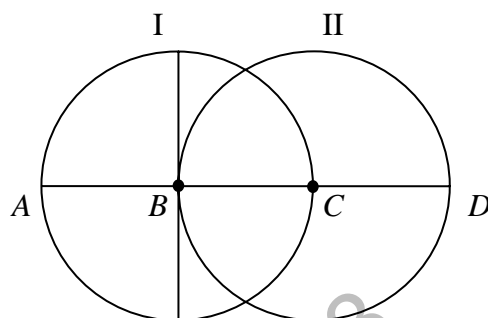
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(ATTEMPT EITHER PART a OR PART b OF Q.6.)

Q.6.

(Total 3 Marks)

- a. Prove that the points $A(0, 0)$, $B(3, 4)$ and $C(6, 8)$ are collinear points.
- b. In the given diagram, two circles I and II have same radii. B is the centre of circle I and C is the centre of circle II. If the coordinates of A are $(3, 6)$ and B are $(3, 8)$, then find coordinates of the centre of circle II.



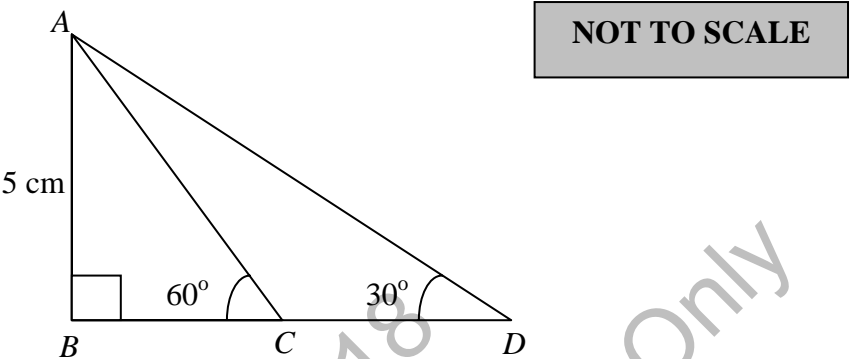
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(ATTEMPT EITHER PART a OR PART b OF Q.7.)

Q.7. (Total 4 Marks)

a. Prove that $\frac{(1 + \sin \theta)(1 - \sin \theta)}{\cos^4 \theta} = 1 + \tan^2 \theta$.

b. In the given diagram, find the length of CD .

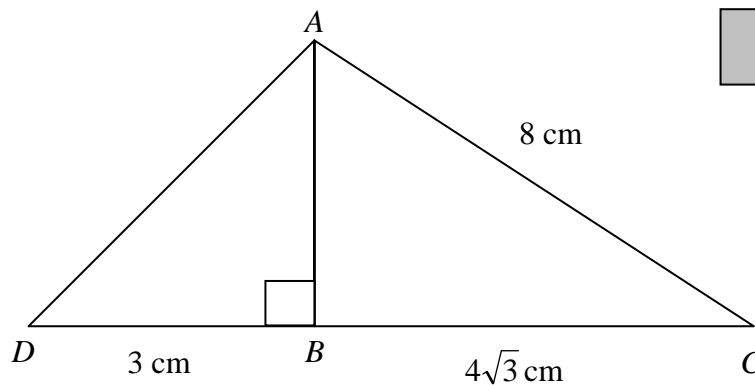


(ATTEMPT EITHER PART a OR PART b OF Q.8.)

Q.8.

(Total 4 Marks)

- a. In the given diagram, find the length of AD .



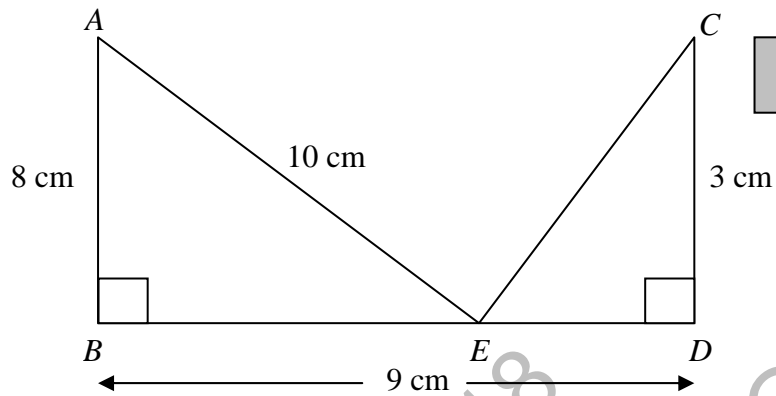
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(ATTEMPT EITHER PART a OR PART b OF Q.8.)

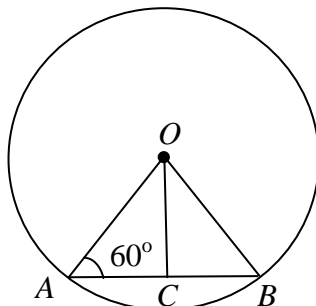
- b. In the given diagram, ABE and CDE are two right angled triangles. Calculate the length of CE .



Q.9.

(Total 4 Marks)

The given figure shows a circle having centre O . If $AC = BC$, then find $\angle AOC$ and $\angle AOB$. Also justify your answers.



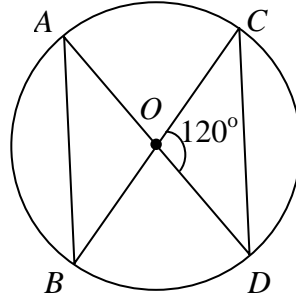
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Q.10.

(Total 4 Marks)

The given figure shows a circle having centre O . If $AB = CD$, then find



NOT TO SCALE

a. $\angle AOB$

(1 Mark)

b. $\angle AOC$

(1 Mark)

c. $\angle OCD$

(1 Mark)

d. $\angle OBA$

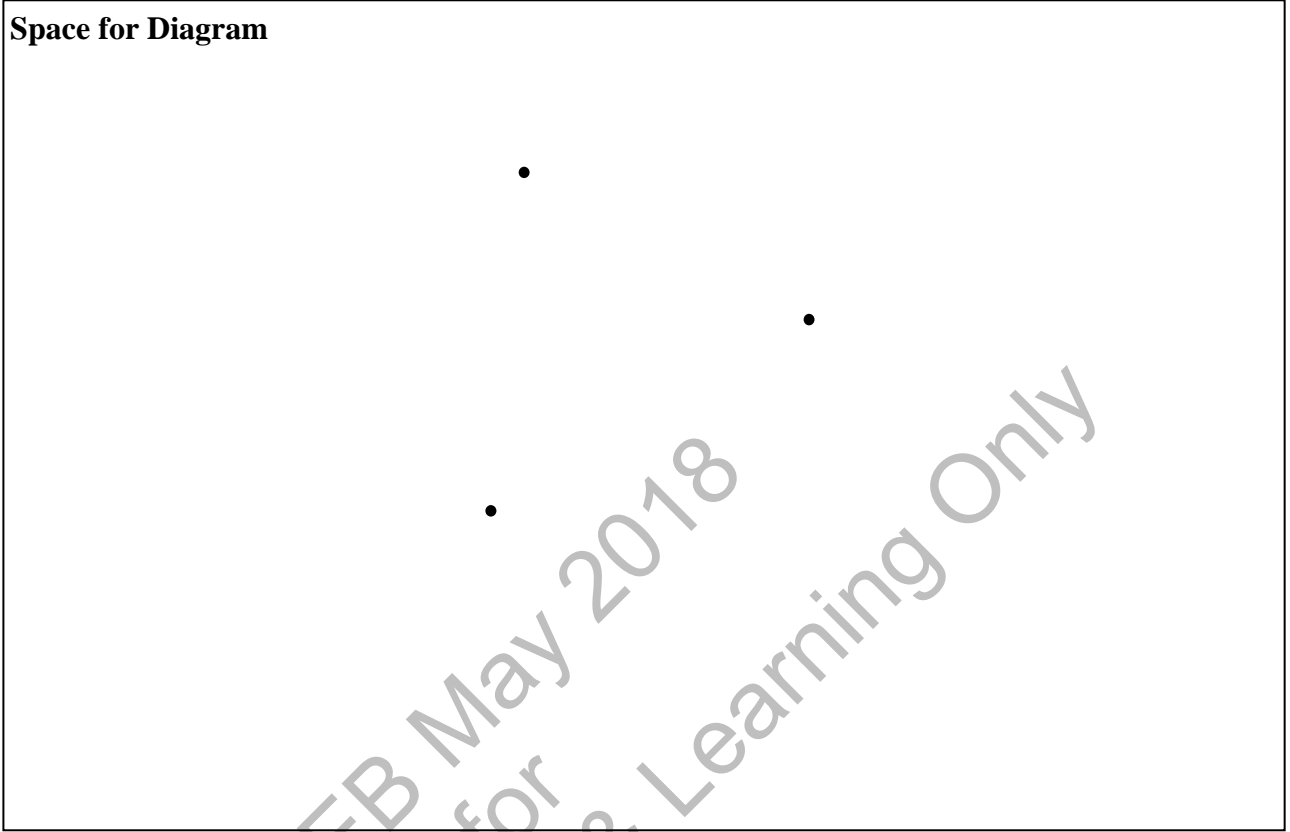
(1 Mark)

Q.11.

(Total 5 Marks)

Draw a circle passing through the given three points in the given space. All necessary steps should be demonstrated.

Space for Diagram



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