

I UNIT TEST 2017-2018
SUBJECT: MATHS II

STD: X
DATE: 01/08/17

MAX MARKS: 20
TIME: 1 HR

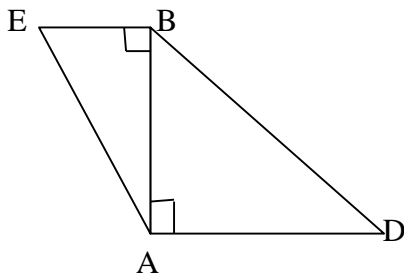
Note:

1. Solve all questions. Draw diagrams wherever necessary.
2. Figures to the right indicate full marks.
3. Diagrams are essential for the proof of the theorem.

I. Solve any two sub questions:

2

- a) In the following figure $\text{seg } BE \perp \text{seg } AD$, if $BE = 6$ and $AD = 9$, find $\frac{A(\triangle ABE)}{A(\triangle BAD)}$

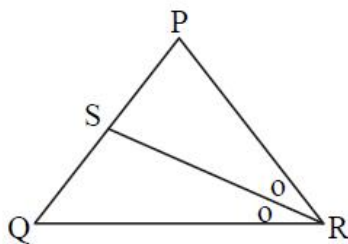


- b) If the side of a square is 8 cm. Find its diagonal.
 c) If $\sin \theta = \frac{1}{2}$, find the value of $\cos \theta$

II. Solve any three sub questions:

6

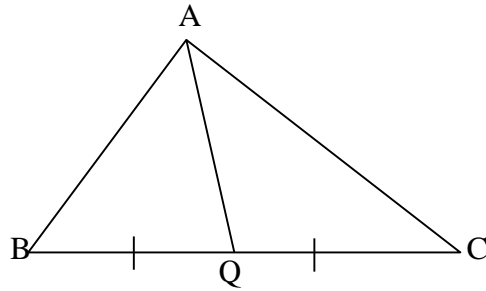
- i. In $\triangle PQR$, $\text{seg } RS$ is the bisector of $\angle PRQ$, $PS = 6$, $SQ = 8$, $PR = 15$. Find QR .



- ii. If $\sin \theta = \frac{5}{13}$, where θ is an acute angle, find the value of $\cos \theta$
 iii. In $\triangle PQR$, $\angle P = 30^\circ$, $\angle Q = 60^\circ$, $\angle R = 90^\circ$ and $PQ = 10$, then find PR and QR
 iv) Eliminate θ if $x = r \cos \theta$ and $y = r \sin \theta$

III. Solve any one sub question:**3**

- a) In the given figure, $AB^2 + AC^2 = 122$, $BC=10$. Find the length of the median on side BC.



- b) Find the possible values of $\sin x$ if $8 \sin x - \cos x = 4$

IV. Solve any one sub question:**4**

1. Prove the following:

$$\sec^6 x - \tan^6 x = 1 + 3 \sec^2 x \tan^2 x$$

2. Prove that the ratio of areas of two similar triangles is equal to the square of the ratio of their corresponding sides.

V. Solve any one sub question:**5**

1. ΔABC is a triangle where $\angle C = 90^\circ$. Let $BC = a$, $CA = b$, $AB = c$ and let ' p ' be the length of the perpendicular from C on AB. Prove that :

(i) $cp = ab$

(ii) $\frac{1}{p^2} = \frac{1}{a^2} + \frac{1}{b^2}$

2. From the top of a lighthouse, an observer looks at a ship and finds the angle of depression to be 60° . If the height of the lighthouse is 90 metres then find how far is that ship from the lighthouse? ($\sqrt{3} = 1.73$)
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