THE O.P. GUPTA
ADVANCED MATH CLASSES
Mathematics (Standard & Basic)
Topic - Triangles

RTS-06

CLICK HERE FOR ANSWERS

RANKERS
TEST SERIES FOR X

Max. Marks - 40
Time - 90 Minutes

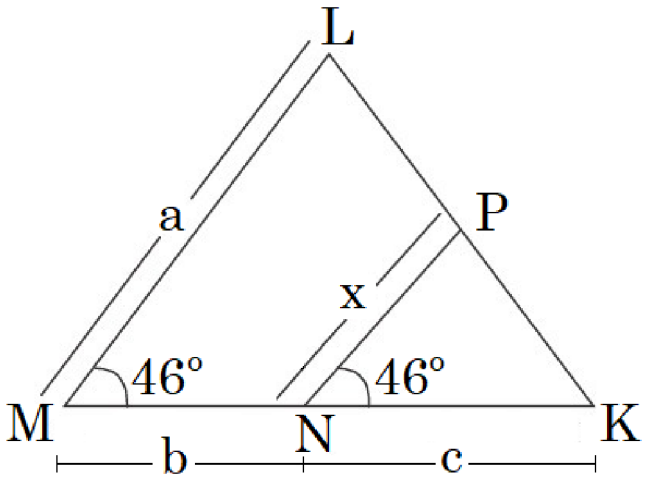
SECTION A

*Followings multiple choice questions are of **1 Mark** each (Q01-10).*
Select the correct option in each one of them.

Q01. If $\Delta ABC \sim \Delta PQR$, $PQ = 6$ cm, $AB = 8$ cm and the perimeter of the ΔABC is 36 cm, then the perimeter (in cm) of the ΔPQR is

(A) 27 (B) 27.25 (C) 48 (D) 64

Q02. In the given figure, find the value of x.



(A) $\frac{ab}{a+b}$ (B) $\frac{ac}{b+c}$ (C) $\frac{bc}{b+c}$ (D) $\frac{ac}{a+c}$

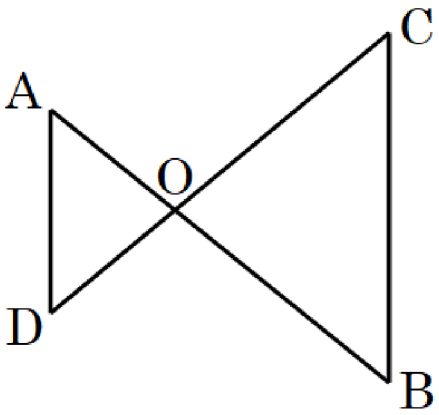
Q03. $\Delta ABC \sim \Delta PQR$, if AM and PN are the altitudes of ΔABC and ΔPQR respectively and $\frac{AB^2}{PQ^2} = \frac{4}{9}$, then $AM : PN$ is

(A) 4 : 9 (B) 2 : 3 (C) 3 : 2 (D) 9 : 4

Q04. In ΔABC and ΔDEF, $\angle B = \angle E$ and $\angle C = \angle F$ and $\frac{1}{3}AB = DE$, then two triangles are

(A) Congruent but not Similar
(B) Congruent and Similar
(C) Similar but not Congruent
(D) None of these

Q05. In the figure $\frac{OD}{OA} = \frac{OB}{OC}$, then which pair of the angles are correct?



(A) $\angle A = \angle B$ and $\angle D = \angle C$
(B) $\angle C = \angle B$ and $\angle A = \angle D$
(C) $\angle A = \angle C$ and $\angle B = \angle D$
(D) None of these

Q06. A vertical stick 20 m long casts a shadow 10 m long on the ground. At the same time, a tower casts a shadow 50 m long on the ground. The height of the tower is

(A) 100 m (B) 100 cm (C) 200 m (D) 150 m

Q07. ABC is an isosceles triangle in which $AB = AC = 10$ cm, $BC = 12$ cm. PQRS is a rectangle inside the isosceles triangle such that P and S lie on the sides AB and CA respectively; also Q and R both lie on the side BC. If it is given that $PQ = SR = y$ cm and $PS = QR = 2x$ cm, then $x =$

(A) $6+\frac{3y}{4}$ (B) $6-\frac{3y}{4}$ (C) $6+\frac{4y}{3}$ (D) $6+6y$

Q08. The parallel sides of a trapezium are 3 cm and 9 cm. The non parallel sides are 4 cm and 6 cm. A line parallel to the base divides the trapezium into two trapeziums of equal perimeters. The ratio in which each of the non parallel sides is divided, is

(A) 2:1 (B) 3:1 (C) 4:1 (D) 5:1

*Followings are **Assertion-Reason based questions** (Q09 & 10).*

In the following questions, a statement of Assertion (**A**) is followed by a statement of Reason (**R**). Choose the correct answer out of the following choices.

(A) Both **A** and **R** are true and **R** is the correct explanation of **A**.
(B) Both **A** and **R** are true and **R** is not the correct explanation of **A**.
(C) **A** is true but **R** is false.
(D) **A** is false but **R** is true.

Q09. **Assertion (A) :** Two congruent triangles are always similar.
Reason (R) : Two similar triangles are always congruent.

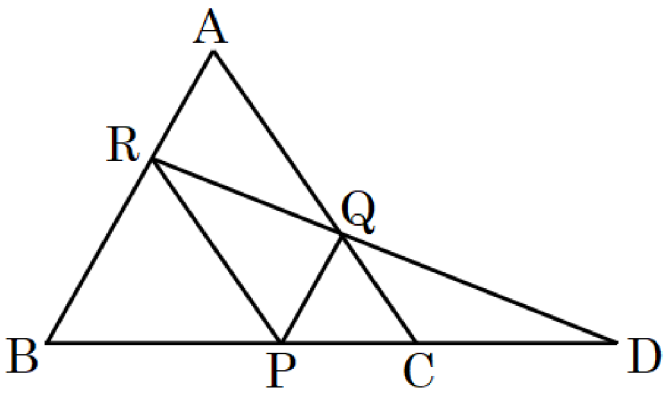
Q10. **Assertion (A) :** In two triangles, if corresponding angles are equal, then the triangles are similar.
Reason (R) : If a line is parallel to one side of a triangle, then the line divides the other two sides in the same ratio.

$[1\times10 = 10$

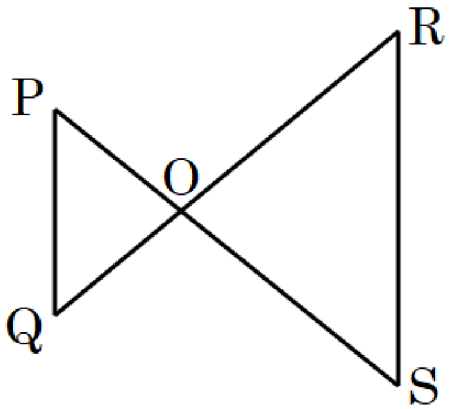
SECTION B

*Followings are of **2 Marks** each (Q11-12).*

Q11. In the given figure, $PQ \parallel BA$, $PR \parallel CA$.
If $PD = 12$ cm, then find $BD \times CD$.

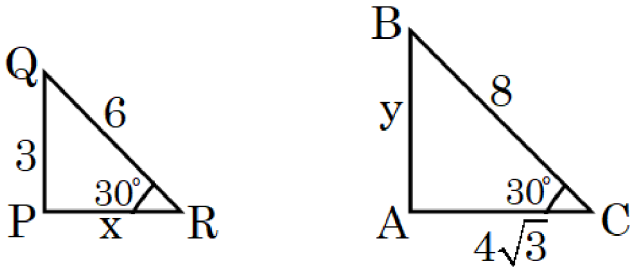


Q12. (a) In the figure, $PQ \parallel RS$. Prove that $\Delta POQ \sim \Delta SOR$.



OR

(b) In the given figure, $\Delta ABC \sim \Delta PQR$. Find the value of $(x+y)$. Assume that, all the side lengths are in centimeters.

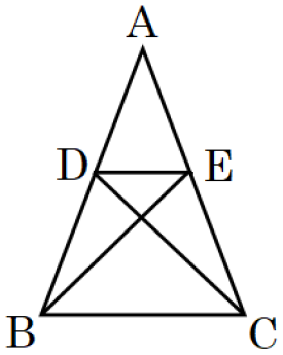


$[2 \times 2 = 4$

SECTION C

*Followings are of **3 Marks** each (Q13-16).*

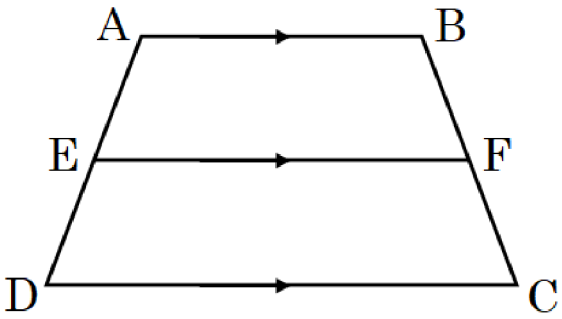
Q13. (a) In the following figure, if $\Delta ABE \cong \Delta ACD$, show that $\Delta ADE \sim \Delta ABC$.



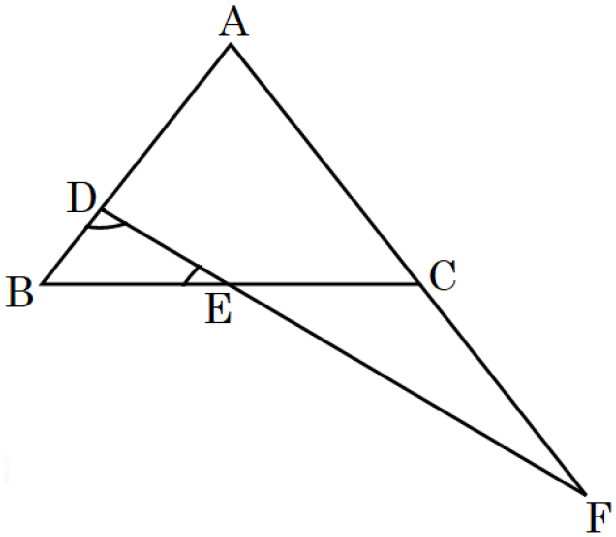
OR

(b) A vertical pole of length 6 m casts a shadow 4 m long on the ground and at the same time a tower casts a shadow 28 m long. Find the height of the tower.

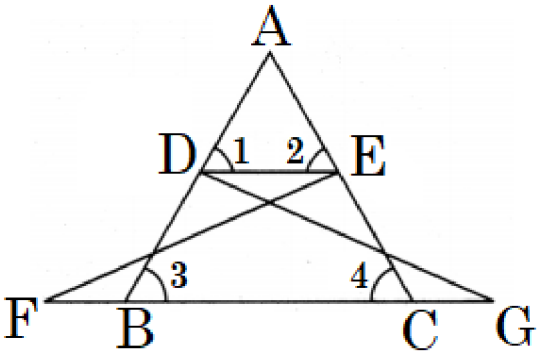
Q14. In the given figure, if ABCD is a trapezium in which $AB \| EF \| DC$, then prove that $\frac{AE}{ED} = \frac{BF}{FC}$.



Q15. In the figure, $\angle BED = \angle BDE$ and E is the midpoint of BC. Prove that $\frac{AF}{CF} = \frac{AD}{BE}$.



Q16. In the following figure, $\Delta FEC \cong \Delta GBD$ and $\angle 1 = \angle 2$. Prove that $\Delta ADE \sim \Delta ABC$.



[3×4=12

SECTION D

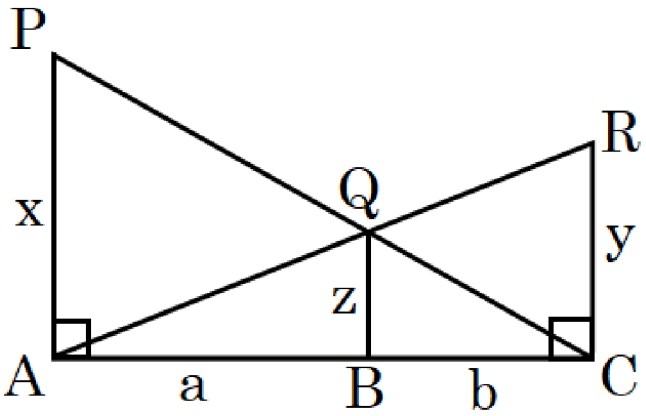
*Followings are of **5 Marks** each (Q17-18).*

Q17. (a) Sides AB and AC and median AD of a triangle ABC are respectively proportional to sides PQ and PR and median PM of another triangle PQR. Show that $\Delta ABC \sim \Delta PQR$.

OR

(b) State the converse of Basic Proportionality theorem. Also state and prove BPT.

Q18. In the given figure, PA, QB and RC each is perpendicular to AC such that $PA = x$, $RC = y$, $QB = z$, $AB = a$ and $BC = b$. Prove that $\frac{1}{x}+\frac{1}{y}=\frac{1}{z}$.

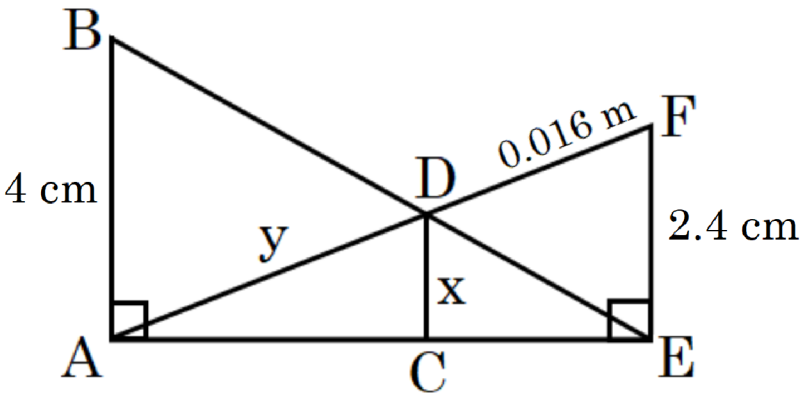


[5×2=10

SECTION E

*Following is a case-study based question of **4 Marks** (Q19); having three sub-parts (i), (ii) and (iii).*

Q19. **CASE STUDY BASED QUESTION :** In the given figure, $AB \parallel CD \parallel EF$.
Given that $AB = 4$ cm, $CD = x$ cm, $EF = 2.4$ cm, $DF = 0.016$ m and $DA = y$ cm.



Based on the information provided above, answer the following questions.

(i) Prove that $\Delta AEF \sim \Delta ACD$.

(ii) Prove that $\Delta ABE \sim \Delta CDE$.

(iii) (a) Find the value of x.

OR

(b) Find the value of y.

[1 + 1 + 2 = 4

theopgupta.com
THE OPGUPTA

MATHEMATICIA BY O.P. GUPTA

...a name you can bank upon!

Feel Safe to **Share this Document** with other math scholars

CLICK NOW

TO Download

or, just type - theopgupta.com

FREE PDF TESTS AND ASSIGNMENTS OF THE CLASSES XII, XI & X

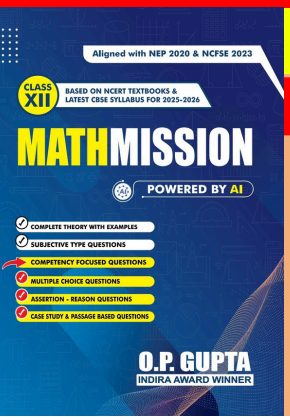
To get FREE PDF Materials, join WhatsApp Teachers Group by Clicking on the Logo

Click on the Book cover to buy!

If you are a **Student**, then you may join our **Students Group**

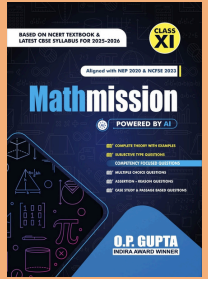
CLICK HERE FOR CLASSES IX & X

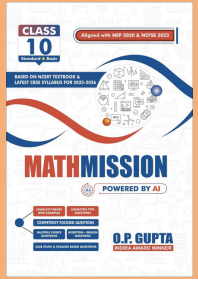
CLICK HERE FOR CLASSES XI & XII



You can add our WhatsApp no. +919650350480 to your Groups also

Many **Direct Questions from our Books** have been asked in the recent CBSE Exams





MATHMISSION FOR XII, XI & X

2025-26 Edition

/theopgupta /theopgupta /theopgupta /@theopgupta

Buy our books on amazon Flipkart

For Bulk Orders of our Books at Discounted Price, contact on +91-9650350480