



# RK VISION ACADEMY

NEET | IIT – JEE | FOUNDATION

CBSE PRACTICE PAPER(2024)

(Mathematics)

Grade : X  
marks

Marks: 40

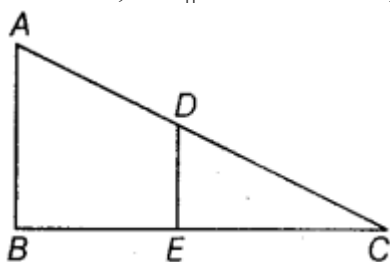
Chapter: TRIANGLES SET-1  
minutes

Time: 90

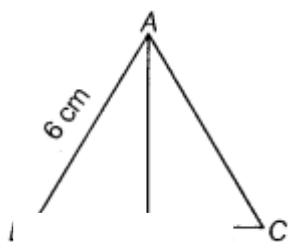
## SECTION A

(This section comprises of Multiple-choice questions (MCQ) of 1 mark each.)

- In a rectangle ABCD,  $AB = 40$  cm,  $\angle BAC = 30^\circ$ , then the side BC is  
(a)  $40\sqrt{3} / 3$  cm      (b)  $20\sqrt{3} / 3$  cm      (c)  $20/\sqrt{3}$  cm      (d) None of these
- $\triangle ABC$  and  $\triangle DEF$  are similar such that  $2AB = DE$  and  $BC = 8$  cm, then the value of EF is  
(a) 15 cm      (b) 16 cm      (c) 18 cm      (d) None of these
- It is given that  $\triangle ABC \sim \triangle DFE$ ,  $\angle A = 50^\circ$ ,  $\angle C = 30^\circ$ ,  $AB = 10$  cm,  $AC = 15$  cm, and  $DF = 8$  cm. Then, which of the following is true?  
(a)  $DE = 12$  cm and  $\angle F = 50^\circ$       (b)  $DE = 12$  cm and  $\angle F = 100^\circ$       (c)  $EF = 12$  cm and  $\angle D = 100^\circ$       (d)  $EF = 12$  cm and  $\angle D = 30^\circ$
- In an isosceles right-angled triangle, if the hypotenuse is  $5\sqrt{2}$  cm, then the length of the sides of triangle is  
(a) 4 cm      (b) 6 cm      (c) 5 cm      (d) None of these
- In  $\triangle ABC$ ,  $DE \parallel AB$ . If  $AB = a$ ,  $DE = x$ ,  $BE = b$  and  $EC = c$ . Express  $x$  in terms of  $a$ ,  $b$  and  $c$  [1]



- (a)  $ac/b$       (b)  $ac/b+c$       (c)  $ab/c$       (d)  $ab/b+c$
- In the given figure, AD is the bisector of  $\angle A$ . If  $BD = 4$  cm,  $DC = 3$  cm and  $AB = 6$  cm, then the value of AC is



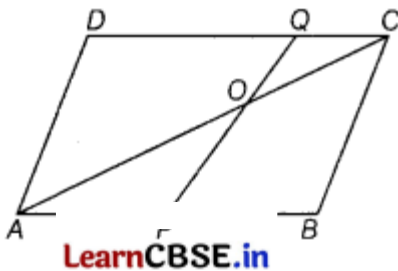
- (a) 4 cm      (b) 4.5 cm      (c) 6 cm      (d) 5 cm

7. In  $\Delta PQR$ , if  $PS$  is the internal bisector of  $\angle P$  meeting  $QR$  at  $S$  and  $PQ = 13$  cm,  $QS = (3 + x)$  cm,  $SR = (x - 3)$  cm and  $PR = 7$  cm, then the value of  $x$  is  
 (a) 9 cm (b) 10 cm (c) 13 cm (d) 12 cm
8. If  $\Delta ADE \sim \Delta ACB$ ,  $\angle DEC = 105^\circ$  and  $\angle ECB = 65^\circ$ , then the value of  $x$  is  
 (a)  $60^\circ$  (b)  $90^\circ$  (c)  $30^\circ$  (d)  $40^\circ$
9.  $D$  and  $E$  are respectively the points on the sides  $AB$  and  $AC$  of a triangle  $ABC$  such that  $AD = 2$  cm,  $BD = 3$  cm,  $BC = 7.5$  cm and  $DE \parallel BC$ . Then, length of  $DE$  (in cm) is  
 (A) 2.5 (B) 3 (C) 5 (D) 6
10. Assertion (A) If in a  $\Delta ABC$ , a line  $DE \parallel BC$ , intersects  $AB$  at  $D$  and  $AC$  at  $E$ , then  $\frac{AD}{AB} = \frac{AE}{AC}$   
 Reason (R) If a line is drawn parallel to one side of a triangle intersecting the other two sides, then the other two sides are divided in the same ratio.  
 (a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A)  
 (b) Both Assertion (A) and Reason (R) are true but Reason (R) is not the correct explanation of Assertion (A)  
 (c) Assertion (A) is true but Reason (R) is false.  
 (d) Assertion (A) is false but Reason (R) is true.

### SECTION B

(This section comprises of very short answer type-questions (VSA) of 2 marks each)

11. If  $\Delta ABC \sim \Delta DEF$  such that  $DE = 6$  cm,  $EF = 4$  cm,  $DF = 5$  cm and  $BC = 8$  cm, then find perimeter of  $\Delta ABC$ .
12.  $ABCD$  is a parallelogram. Point  $P$  divides  $AB$  in the ratio  $2 : 3$  and point  $Q$  divides  $DC$  in the ratio  $4 : 1$ .  
 [2]



Prove that  $OC$  is half of  $OA$ .

13.  $A$  and  $B$  are respectively the points on the sides  $PQ$  and  $PR$  of a triangle  $PQR$  such that  $PQ = 12.5$  cm,  $PA = 5$  cm,  $BR = 6$  cm and  $PB = 4$  cm. Is  $AB \parallel QR$ ? Give reasons for your answer.

### SECTION C

(This section comprises of short answer type questions (SA) of 3 marks each)

14. Hypotenuse of a right triangle is 25 cm and out of the remaining two sides, one is longer than the other by 5 cm. Find the lengths of the other two sides.
15. Diagonals of a trapezium  $PQRS$  intersect each other at the point  $O$ ,  $PQ \parallel RS$  and  $PQ = 3 RS$ . Find the ratio of the areas of triangles  $POQ$  and  $ROS$ .

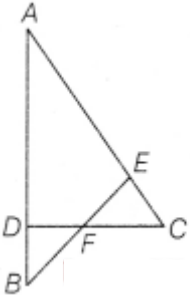
16 Find the altitude of an equilateral triangle of side 8 cm.

### SECTION D

(This section comprises of long answer-type questions (LA) of 5 marks each)

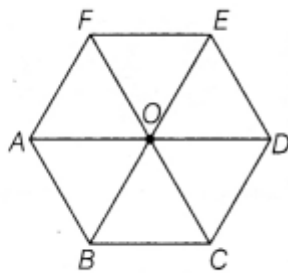
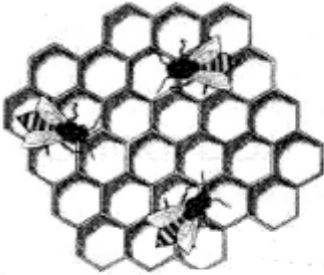
17 State and prove Basic Proportionality theorem.

18 In the given figure  $\angle CEF = \angle CFE$ . F is the mid-point of DC.  
Prove that  $AB/BD = AE/FD$ .



19 A beehive is an enclosed cell structure in which some honeybee species of the subgenus apis live and raise their young. Each cell is in the shape of a hexagon.

In a regular hexagon, there are six edges of equal lengths. Take O as centre and join all the vertices from the centre.



#### Similarity of Triangle

Two triangles are said to be similar, if their all corresponding angles are equal and all corresponding sides are proportional. Based on the above information, answer the following questions.

- (i) Find the number of equilateral triangles in the given figure. [1]
- (ii) If area of two triangles are equal, then they are always congruent or not. [1]
- (iii) How many triangles are similar in the given figure? [1]
- (iv) Find the area of the hexagon, if each edge is of length a. [2]