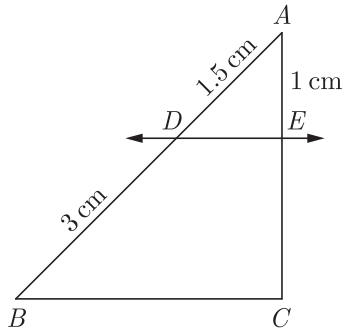


# CHAPTER 4

## TRIANGLES

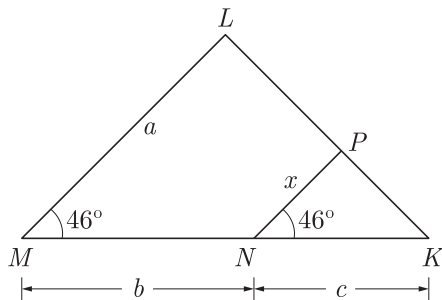
1. In the given figure,  $DE \parallel BC$ . The value of  $EC$  is



- (a) 1.5 cm  
 (b) 3 cm  
 (c) 2 cm  
 (d) 1 cm

Sol : [www.cbse.site/ma/fm101](http://www.cbse.site/ma/fm101)

2. In the given figure,  $x$  is



- (a)  $\frac{ab}{a+b}$   
 (b)  $\frac{ac}{b+c}$   
 (c)  $\frac{bc}{b+c}$   
 (d)  $\frac{bc}{a+c}$

Sol : [www.cbse.site/ma/fm102](http://www.cbse.site/ma/fm102)

3.  $\Delta ABC$  is an equilateral triangle with each side of

length  $2p$ . If  $AD \perp BC$  then the value of  $AD$  is

- (a)  $\sqrt{3}$   
 (b)  $\sqrt{3}p$   
 (c)  $2p$   
 (d)  $4p$

Sol : [www.cbse.site/ma/fm103](http://www.cbse.site/ma/fm103)

4. Which of the following statement is false?

- (a) All isosceles triangles are similar.  
 (b) All quadrilateral are similar.  
 (c) All circles are similar.  
 (d) None of the above

Sol : [www.cbse.site/ma/fm104](http://www.cbse.site/ma/fm104)

5. Two poles of height 6 m and 11 m stand vertically upright on a plane ground. If the distance between their foot is 12 m, then distance between their tops is

- (a) 12 m  
 (b) 14 m  
 (c) 13 m  
 (d) 11 m

Sol : [www.cbse.site/ma/fm105](http://www.cbse.site/ma/fm105)

Sol :

6. In a right angled  $\Delta ABC$  right angled at  $B$ , if  $P$  and  $Q$  are points on the sides  $AB$  and  $BC$  respectively, then

- (a)  $AQ^2 + CP^2 = 2(AC^2 + PQ^2)$   
 (b)  $2(AQ^2 + CP^2) = AC^2 + PQ^2$   
 (c)  $AQ^2 + CP^2 = AC^2 + PQ^2$   
 (d)  $AQ + CP = \frac{1}{2}(AC + PQ)$

Sol : [www.cbse.site/ma/fm106](http://www.cbse.site/ma/fm106)

7. It is given that,  $\Delta ABC \sim \Delta EDF$  such that  $AB = 5$  cm,  $AC = 7$  cm,  $DF = 15$  cm and  $DE = 12$  cm then the sum of the remaining sides of

the triangles is

- (a) 23.05 cm
- (b) 16.8 cm
- (c) 6.25 cm
- (d) 24 cm

Sol : [www.cbse.site/ma/fm107](http://www.cbse.site/ma/fm107)

8. The area of a right angled triangle is 40 sq cm and its perimeter is 40 cm. The length of its hypotenuse is
- (a) 16 cm
  - (b) 18 cm
  - (c) 17 cm
  - (d) data insufficient

Sol : [www.cbse.site/ma/fm108](http://www.cbse.site/ma/fm108)

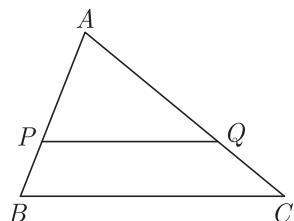
9. The areas of two similar triangles  $ABC$  and  $PQR$  are in the ratio 9:16. If  $BC = 4.5$  cm, then the length of  $QR$  is
- (a) 4 cm
  - (b) 4.5 cm
  - (c) 3 cm
  - (d) 6 cm

Sol : [www.cbse.site/ma/fm109](http://www.cbse.site/ma/fm109)

10. If ratio of corresponding sides of two similar triangles is 5:6, then what is the ratio of their areas?
- (a) 6 : 5
  - (b) 5 : 6
  - (c) 25 : 36
  - (d) 36 : 25

Sol : [www.cbse.site/ma/fm110](http://www.cbse.site/ma/fm110)

11. In the given figure,  $P$  and  $Q$  are points on the sides  $AB$  and  $AC$  respectively of a triangle  $ABC$ .  $PQ$  is parallel to  $BC$  and divides the triangle  $ABC$  into 2 parts, equal in area. The ratio of  $PA:AB =$



- (a) 1 : 1

- (b)  $(\sqrt{2} - 1) : \sqrt{2}$
- (c)  $1 : \sqrt{2}$
- (d)  $(\sqrt{2} - 1) : 1$

Sol : [www.cbse.site/ma/fm111](http://www.cbse.site/ma/fm111)

12. It is given that  $\Delta ABC \sim \Delta PQR$  with  $\frac{BC}{QR} = \frac{1}{4}$ . Then  $\frac{\text{ar}(\Delta PRQ)}{\text{ar}(\Delta BCA)}$  is equal to
- (a) 16
  - (b) 3
  - (c)  $\frac{1}{4}$
  - (d)  $\frac{1}{16}$

Sol : [www.cbse.site/ma/fm112](http://www.cbse.site/ma/fm112)

13. If  $\Delta ABC \sim \Delta APQ$  and  $\text{ar}(\Delta APQ) = 4\text{ar}(\Delta ABC)$ ,  $\text{ar}(\Delta ABC)$ , then the ratio of  $BC$  to  $PQ$  is
- (a) 2 : 1
  - (b) 1 : 2
  - (c) 1 : 4
  - (d) 4 : 1

Sol : [www.cbse.site/ma/fm113](http://www.cbse.site/ma/fm113)

14. The areas of two similar triangles are  $81\text{cm}^2$  and  $49\text{cm}^2$  respectively, then the ratio of their corresponding medians is
- (a) 7 : 9
  - (b) 9 : 81
  - (c) 9 : 7
  - (d) 81 : 7

Sol : [www.cbse.site/ma/fm114](http://www.cbse.site/ma/fm114)

15. Sides of two similar triangles are in the ratio 4 : 9. Areas of these triangles are in the ratio.
- (a) 2 : 3
  - (b) 4 : 9
  - (c) 81 : 16
  - (d) 16 : 81

Sol : [www.cbse.site/ma/fm115](http://www.cbse.site/ma/fm115)

16. **Assertion :** In the  $\Delta ABC$ ,  $AB = 24$  cm,  $BC = 10$  cm and  $AC = 26$  cm, then  $\Delta ABC$  is a right angle

triangle.

**Reason :** If in two triangles, their corresponding angles are equal, then the triangles are similar.

- (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.

**Sol :** [www.cbse.site/ma/fm116](http://www.cbse.site/ma/fm116)

17. **Assertion :**  $ABC$  and  $DEF$  are two similar triangles such that  $BC = 4$  cm,  $EF = 5$  cm and area of  $\Delta ABC = 64$  cm<sup>2</sup>, then area of  $\Delta DEF = 100$  cm<sup>2</sup>.

**Reason :** The areas of two similar triangles are in the ratio of the squares of the corresponding altitudes.

- (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.

**Sol :** [www.cbse.site/ma/fm117](http://www.cbse.site/ma/fm117)

18. **Assertion :**  $\Delta ABC \sim \Delta DEF$  such that  $ar(\Delta ABC) = 36$  cm<sup>2</sup> and  $ar(\Delta DEF) = 49$  cm<sup>2</sup> then,  $AB : DE = 6 : 7$ .

**Reason :** If  $\Delta ABC \sim \Delta DEF$ , then

$$\frac{ar(\Delta ABC)}{ar(\Delta DEF)} = \frac{AB^2}{DE^2} = \frac{BC^2}{EF^2} = \frac{AC^2}{DF^2}$$

- (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.

**Sol :** [www.cbse.site/ma/fm118](http://www.cbse.site/ma/fm118)

19.  $\Delta ABC$  is an equilateral triangle of side  $2a$ , then

length of one of its altitude is .....

- (a)  $a\sqrt{3}$   
 (b)  $a2\sqrt{3}$   
 (c)  $a3\sqrt{2}$   
 (d)  $a\sqrt{2}$

**Sol :** [www.cbse.site/ma/fm119](http://www.cbse.site/ma/fm119)

20.  $\Delta ABC$  and  $\Delta BDE$  are two equilateral triangle such that  $D$  is the mid-point of  $BC$ . Ratio of the areas of triangles  $ABC$  and  $BDE$  is .....

- (a) 1 : 1  
 (b) 3 : 1  
 (c) 2 : 1  
 (d) 4 : 1

**Sol :** [www.cbse.site/ma/fm120](http://www.cbse.site/ma/fm120)

21. A ladder 10 m long reaches a window 8 m above the ground. The distance of the foot of the ladder from the base of the wall is .....

- (a) 8 m  
 (b) 2 m  
 (c) 6 m  
 (d) 4 m

**Sol :** [www.cbse.site/ma/fm121](http://www.cbse.site/ma/fm121)

22. In  $\Delta ABC$ ,  $AB = 6\sqrt{3}$  cm,  $AC = 12$  cm and  $BC = 6$  cm, then  $\angle B =$  .....

- (a)  $30^\circ$   
 (b)  $60^\circ$   
 (c)  $45^\circ$   
 (d)  $90^\circ$

**Sol :** [www.cbse.site/ma/fm122](http://www.cbse.site/ma/fm122)

23. The perimeters of two similar triangles are 25 cm and 15 cm respectively. If one side of the first triangle is 9 cm, then the corresponding side of second triangle is .....

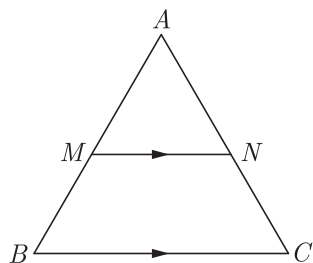
- (a) 4.2 cm  
 (b) 5.4 cm  
 (c) 20 cm  
 (d) 6 cm

**Sol :** [www.cbse.site/ma/fm123](http://www.cbse.site/ma/fm123)

24. If  $\Delta ABC \sim \Delta PQR$ , and  $\frac{AB}{PQ} = \frac{1}{3}$ , then  $\frac{ar(\Delta ABC)}{ar(\Delta PQR)} = ?$
- (a)  $\frac{1}{3}$   
 (b)  $\frac{1}{9}$   
 (c)  $\frac{8}{9}$   
 (d)  $\frac{5}{9}$

Sol : [www.cbse.site/ma/fm124](http://www.cbse.site/ma/fm124)

25. In figure,  $MN \parallel BC$  and  $AM:MB = 1:2$ , then  $\frac{ar(\Delta AMN)}{ar(\Delta ABC)} = \dots\dots\dots$



- (a)  $\frac{1}{3}$   
 (b)  $\frac{1}{9}$   
 (c)  $\frac{8}{9}$   
 (d)  $\frac{5}{9}$

Sol : [www.cbse.site/ma/fm125](http://www.cbse.site/ma/fm125)

26. The corresponding sides of two similar triangles are in the ratio 3 : 4, then the ratio of the areas of triangles is .....
- (a)  $\frac{1}{3}$   
 (b)  $\frac{1}{9}$   
 (c)  $\frac{9}{16}$   
 (d)  $\frac{3}{4}$

Sol : [www.cbse.site/ma/fm126](http://www.cbse.site/ma/fm126)

27. The perimeters of two similar triangles  $\Delta ABC$  and  $\Delta PQR$  are 35 cm and 45 cm respectively, then the ratio of the areas of the two triangles is .....
- (a)  $\frac{2}{9}$   
 (b)  $\frac{7}{9}$   
 (c)  $\frac{49}{81}$   
 (d)  $\frac{3}{4}$

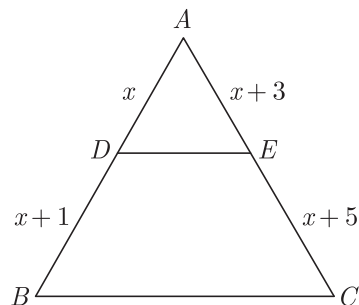
Sol : [www.cbse.site/ma/fm127](http://www.cbse.site/ma/fm127)

28. If  $\Delta ABC \sim \Delta PQR$ ,  $\frac{AB}{PQ} = \frac{1}{3}$ , then  $\frac{ar \Delta ABC}{ar \Delta PQR}$  will

- be  
 (a)  $\frac{1}{3}$   
 (b)  $\frac{1}{9}$   
 (c)  $\frac{8}{9}$   
 (d)  $\frac{5}{9}$

Sol : [www.cbse.site/ma/fm128](http://www.cbse.site/ma/fm128)

29. In  $\Delta ABC$ ,  $DE \parallel BC$ , the value of  $x$  will be



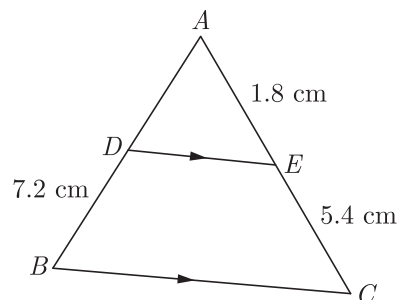
- (a) 1  
 (b) 2  
 (c) 3  
 (d) 4

Sol : [www.cbse.site/ma/fm129](http://www.cbse.site/ma/fm129)

30.  $\Delta ABC$  is isosceles with  $AC = BC$ . If  $AB^2 = 2AC^2$ , then the measure of  $\angle C$  will be
- (a)  $30^\circ$   
 (b)  $60^\circ$   
 (c)  $45^\circ$   
 (d)  $90^\circ$

Sol : [www.cbse.site/ma/fm130](http://www.cbse.site/ma/fm130)

31. In Figure,  $DE \parallel BC$  and given that  $AE = 1.8$  cm,  $BD = 7.2$  cm and  $CE = 5.4$  cm. The length of side  $AD$  will be

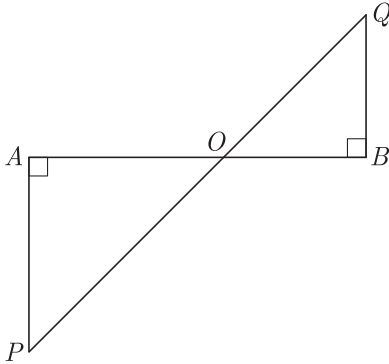


- (a) 1.6 cm

- (b) 1.9 cm
- (c) 2.1 cm
- (d) 2.4 cm

Sol : [www.cbse.site/ma/fm131](http://www.cbse.site/ma/fm131)

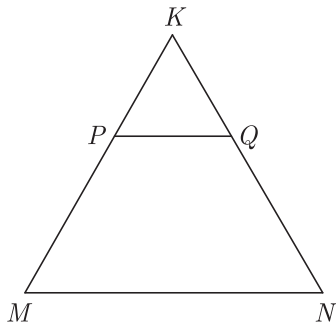
32. In the given figure, if  $\angle A = 90^\circ$ ,  $\angle B = 90^\circ$ ,  $OB = 4.5$  cm  $OA = 6$  cm and  $AP = 4$  cm then  $QB$  will be



- (a) 2 cm
- (b) 3 cm
- (c) 4 cm
- (d) 6 cm

Sol : [www.cbse.site/ma/fm132](http://www.cbse.site/ma/fm132)

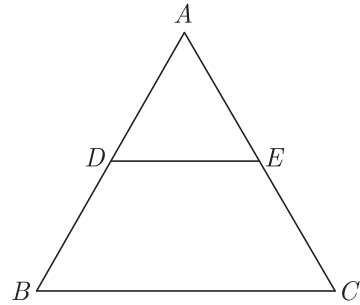
33. In the figure,  $PQ$  is parallel to  $MN$ . If  $\frac{KP}{PM} = \frac{4}{13}$  and  $KN = 20.4$  cm then  $KQ$  will be



- (a) 4.1 cm
- (b) 5.2 cm
- (c) 4.8 cm
- (d) 5.4 cm

Sol : [www.cbse.site/ma/fm133](http://www.cbse.site/ma/fm133)

34. In given figure  $DE \parallel BC$ . If  $AD = 3c$ ,  $DB = 4c$  cm and  $AE = 6$  cm then  $EC$  will be



- (a) 12 cm
- (b) 6 cm
- (c) 8 cm
- (d) 10 cm

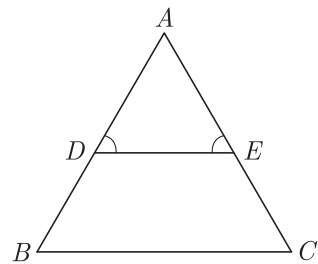
Sol : [www.cbse.site/ma/fm134](http://www.cbse.site/ma/fm134)

35. If triangle  $ABC$  is similar to triangle  $DEF$  such that  $2AB = DE$  and  $BC = 8$  cm then  $EF$  will be

- (a) 16 cm
- (b) 14 cm
- (c) 12 cm
- (d) 10 cm

Sol : [www.cbse.site/ma/fm135](http://www.cbse.site/ma/fm135)

36. In Figure  $\angle D = \angle E$  and  $\frac{AD}{DB} = \frac{AE}{EC}$ , then  $\Delta BAC$  is

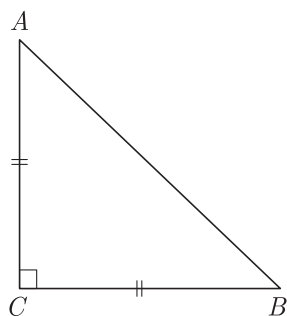


- (a) isosceles triangle
- (b) scalene triangle
- (c) equilateral triangle
- (d) right angle triangle

Sol : [www.cbse.site/ma/fm136](http://www.cbse.site/ma/fm136)

37. In Figure,  $ABC$  is an isosceles triangle right angled

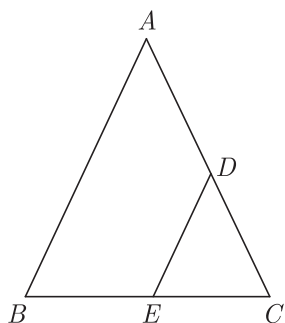
at  $C$  with  $AC = 4$  cm, the length of  $AB$  will be



- (a)  $4\sqrt{3}$
- (b)  $4\sqrt{2}$
- (c)  $2\sqrt{2}$
- (d)  $3\sqrt{2}$

Sol : [www.cbse.site/ma/fm137](http://www.cbse.site/ma/fm137)

38. In the figure of  $\triangle ABC$ , the points  $D$  and  $E$  are on the sides  $CA, CB$  respectively such that  $DE \parallel AB$ ,  $AD = 2x, DC = x + 3, BE = 2x - 1$  and  $CE = x$ . Then, value of  $x$  will be



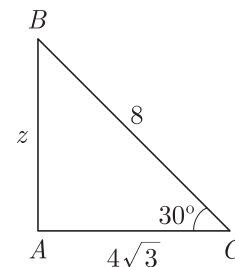
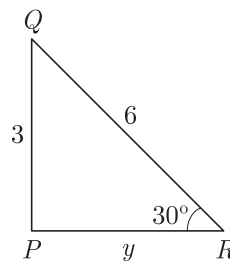
- (a)  $\frac{4}{5}$
- (b)  $\frac{1}{5}$
- (c)  $\frac{3}{5}$
- (d)  $\frac{2}{5}$

Sol : [www.cbse.site/ma/fm138](http://www.cbse.site/ma/fm138)

39. In an equilateral triangle of side  $3\sqrt{3}$  cm the length of the altitude will be
- (a) 6.5 cm
  - (b) 5.5 cm
  - (c) 4.5 cm
  - (d) 7.5 cm

Sol : [www.cbse.site/ma/fm139](http://www.cbse.site/ma/fm139)

40. In the given figure,  $\triangle ABC \sim \triangle PQR$ . The value of  $y + z$  will be



- (a)  $2\sqrt{2} + 3$
- (b)  $3\sqrt{3} + 4$
- (c)  $3\sqrt{2} + 1$
- (d)  $2\sqrt{3} + 2$

Sol : [www.cbse.site/ma/fm140](http://www.cbse.site/ma/fm140)

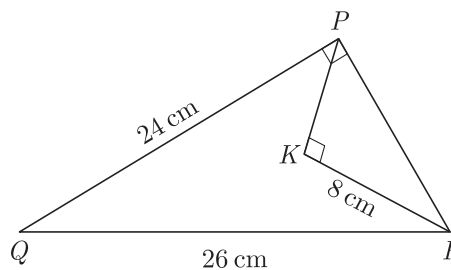
41. In an equilateral triangle of side 24 cm, the length of the altitude will be
- (a)  $8\sqrt{2}$
  - (b)  $8\sqrt{3}$
  - (c)  $12\sqrt{2}$
  - (d)  $12\sqrt{3}$

Sol : [www.cbse.site/ma/fm141](http://www.cbse.site/ma/fm141)

42. What is the altitude of an equilateral triangle when each of its side is  $a$  ?
- (a)  $\frac{1}{\sqrt{3}}a$
  - (b)  $\frac{\sqrt{3}}{3}a$
  - (c)  $\frac{\sqrt{3}}{4}a$
  - (d)  $\frac{\sqrt{3}}{2}a$

Sol : [www.cbse.site/ma/fm142](http://www.cbse.site/ma/fm142)

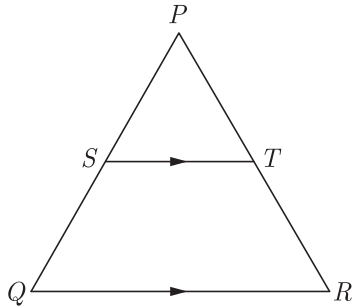
43. In the given triangle  $PQR$ ,  $\angle QPR = 90^\circ$ ,  $PQ = 24$  cm and  $QR = 26$  cm and in  $\triangle PKR$ ,  $\angle PKR = 90^\circ$  and  $KR = 8$  cm, the length of  $PK$  will be



- (a) 3 cm
- (b) 4 cm
- (c) 5 cm
- (d) 6 cm

Sol : [www.cbse.site/ma/fm143](http://www.cbse.site/ma/fm143)

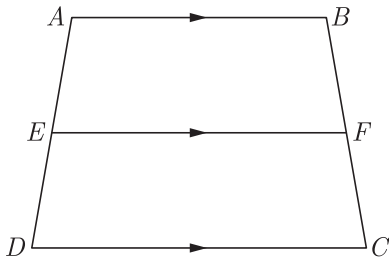
44. In the given figure, in a triangle  $PQR$ ,  $ST \parallel QR$  and  $\frac{PS}{SQ} = \frac{3}{5}$  and  $PR = 28$  cm, the length of  $PT$  will be



- (a) 21 cm
- (b) 10.5 cm
- (c) 15 cm
- (d) 15.5 cm

Sol : [www.cbse.site/ma/fm144](http://www.cbse.site/ma/fm144)

45. In the given figure, if  $ABCD$  is a trapezium in which  $AB \parallel CD \parallel EF$ , then  $\frac{AE}{ED} = ?$



- (a)  $\frac{2FC}{BF}$
- (b)  $\frac{2BF}{FC}$
- (c)  $\frac{FC}{BF}$
- (d)  $\frac{BF}{FC}$

Sol : [www.cbse.site/ma/fm145](http://www.cbse.site/ma/fm145)

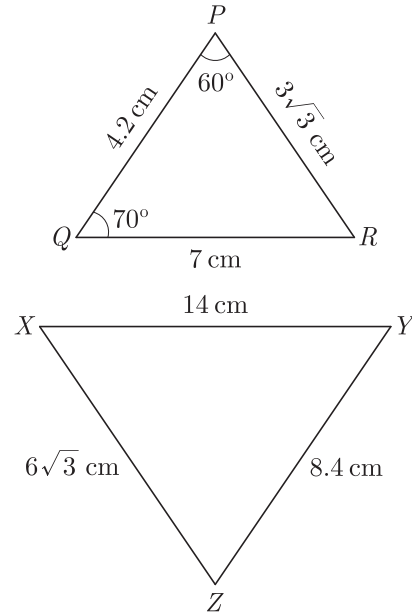
46. In a rectangle  $ABCD$ ,  $E$  is a point on  $AB$  such that  $AE = \frac{2}{3}AB$ . If  $AB = 6$  km and  $AD = 3$  km, then length of  $DE$  will be

- (a) 2 km
- (b) 3 km

- (c) 4 km
- (d) 5 km

Sol : [www.cbse.site/ma/fm146](http://www.cbse.site/ma/fm146)

47. In the given figures, the measure of  $\angle X$  will be



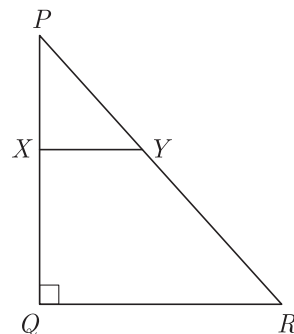
- (a)  $30^\circ$
- (b)  $60^\circ$
- (c)  $45^\circ$
- (d)  $50^\circ$

Sol : [www.cbse.site/ma/fm147](http://www.cbse.site/ma/fm147)

**Direction For Question :**

In the given figure,  $PQR$  is a triangle right angled at  $Q$  and  $XY \parallel QR$ . If  $PQ = 6$  cm,  $PY = 4$  cm and  $PX : XQ = 1 : 2$ .

48. The length of  $PR$  will be



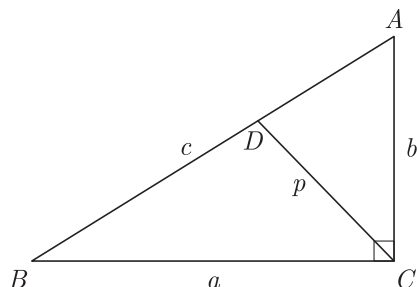
- (a) 12 cm
- (b)  $2\sqrt{3}$  cm
- (c)  $6\sqrt{3}$  cm
- (d) 18 cm

Sol : [www.cbse.site/ma/fm148](http://www.cbse.site/ma/fm148)

49. The length of  $QR$  will be
- (a) 16 cm
  - (b)  $2\sqrt{3}$  cm
  - (c)  $6\sqrt{3}$  cm
  - (d) 18 cm

Sol : [www.cbse.site/ma/fm148](http://www.cbse.site/ma/fm148)

50. Triangle  $ABC$  is right angled at  $C$ . Let  $BC = a$ ,  $CA = b$ ,  $AB = c$ .  $PQR, ST \parallel QR$  and  $p$  be the length of perpendicular from  $C$  to  $AB$ . The  $cp$  is equal to



- (a)  $ab$
- (b)  $\sqrt{ab}$
- (c)  $\frac{a+b}{2}$
- (d)  $2ab$

Sol : [www.cbse.site/ma/fm149](http://www.cbse.site/ma/fm149)

51.  $ABCD$  is a trapezium in which  $AB \parallel CD$  and its diagonals intersect each other at the point  $O$ . Which of the following is correct relation ?
- (a)  $\frac{AO}{BO} = \frac{DO}{CO}$
  - (b)  $\frac{AO}{BO} = \frac{CO}{DO}$
  - (c)  $\frac{AO}{BO} = \frac{DO}{BO}$
  - (d)  $\frac{AO}{BO} = \frac{CO}{DO}$

Sol : [www.cbse.site/ma/fm150](http://www.cbse.site/ma/fm150)

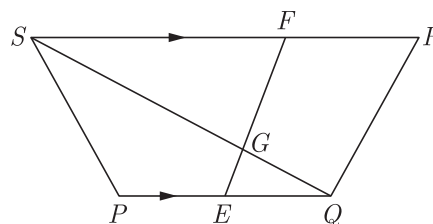
52. In an equilateral triangle  $ABC$ ,  $AD$  is drawn perpendicular to  $BC$  meeting  $BC$  in  $D$ . The term

$AD^2$  is equal to

- (a)  $3BD^2$
- (b)  $2BD^2$
- (c)  $BD^2$
- (d)  $\frac{1}{2}BD^2$

Sol : [www.cbse.site/ma/fm151](http://www.cbse.site/ma/fm151)

53. In the figure,  $PQRS$  is a trapezium in which  $PQ \parallel RS$ . On  $PQ$  and  $RS$ , there are points  $E$  and  $F$  respectively such that  $EF$  intersects  $SQ$  at  $G$ . Now the term  $EQ \times GS$  is equal to



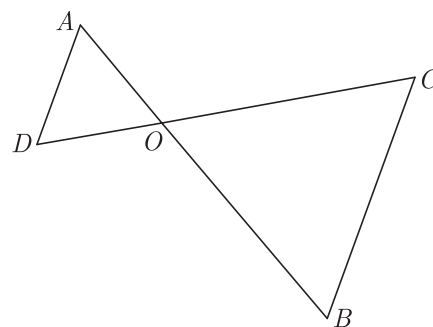
- (a)  $GQ \times FS$
- (b)  $2GQ \times FS$
- (c)  $3GQ \times FS$
- (d)  $4GQ \times FS$

Sol : [www.cbse.site/ma/fm152](http://www.cbse.site/ma/fm152)

54. A man steadily goes 10 m due east and then 24 m due north. What is the distance from the starting point.
- (a) 25 m
  - (b) 26 m
  - (c) 15 m
  - (d) 18 m

Sol : [www.cbse.site/ma/fm153](http://www.cbse.site/ma/fm153)

55. In the given figure, if  $OA \times OB = OC \times OD$ , which of the option is correct ?

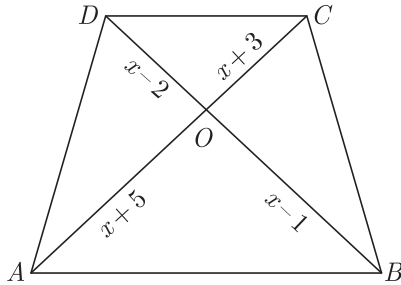




- (a)  $\angle A = \angle C$  and  $\angle B = \angle D$
- (b)  $\angle A = \angle B$  and  $\angle C = \angle D$
- (c)  $\angle A = \angle D$  and  $\angle B = \angle C$
- (d) Above all

Sol : [www.cbse.site/ma/fm154](http://www.cbse.site/ma/fm154)

56. In the given figure, if  $AB \parallel DC$ , the value of  $x$  will be

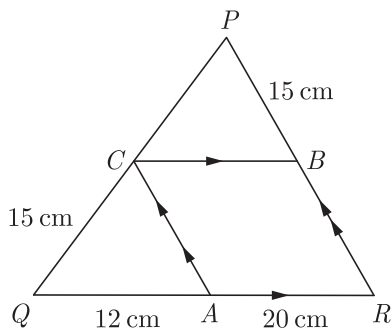


- (a) 3
- (b) 6
- (c) 7
- (d) 8

Sol : [www.cbse.site/ma/fm155](http://www.cbse.site/ma/fm155)

**Direction For Question :** (57-58)

In the given figure below,  $CB \parallel QR$  and  $CA \parallel PR$ . Also  $AQ = 12$  cm,  $AR = 20$  cm,  $PB = CQ = 15$  cm. Calculate  $PC$  and  $BR$ .



57. The length  $PC$  is
- (a) 15 cm
  - (b) 25 cm
  - (c) 12 cm

- (d) 9 cm

Sol : [www.cbse.site/ma/fm156](http://www.cbse.site/ma/fm156)

58. The length  $BR$  is

- (a) 15 cm
- (b) 25 cm
- (c) 12 cm
- (d) 9 cm

Sol : [www.cbse.site/ma/fm156](http://www.cbse.site/ma/fm156)

59. Triangle  $\Delta ABC$  is right angled at  $C$ . If  $p$  is the length of the perpendicular from  $C$  to  $AB$  and  $a, b, c$  are the lengths of the sides opposite  $\angle A, \angle B$  and  $\angle C$  respectively, then  $\frac{1}{p^2}$  is equal to

- (a)  $\frac{a-b}{a^2+b^2}$
- (b)  $\frac{a+b}{a^2+b^2}$
- (c)  $\frac{1}{a^2} + \frac{1}{b^2}$
- (d)  $\frac{2ab}{a^2+b^2}$

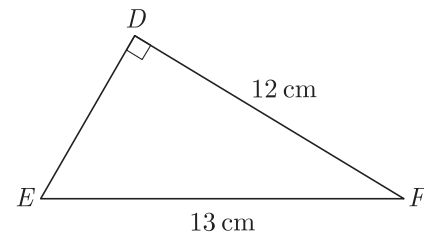
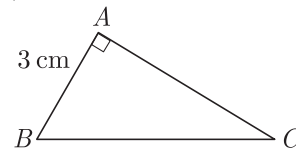
Sol : [www.cbse.site/ma/fm157](http://www.cbse.site/ma/fm157)

60. In  $\Delta ABC, DE \parallel BC$ . If  $AD = x + 2, DB = 3x + 16, AE = x$  and  $EC = 3x + 5$ , then  $x$  is equal to

- (a) 2
- (b) 3
- (c) 4
- (d) 5

Sol : [www.cbse.site/ma/fm158](http://www.cbse.site/ma/fm158)

61. Given  $\Delta ABC \sim \Delta DEF$ , what is the ratio of  $\frac{\text{ar}(\Delta ABC)}{\text{ar}(\Delta DEF)}$



- (a) 3 : 4
- (b) 9 : 25
- (c) 9 : 16
- (d) 1 : 16

Sol : [www.cbse.site/ma/fm159](http://www.cbse.site/ma/fm159)

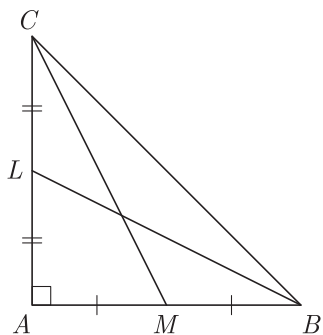
62. If in  $\triangle ABC$ ,  $AD$  is median and  $AE \perp BC$ , then  $AB^2 + AC^2$  equal to
- (a)  $2AD^2 + BC^2$
  - (b)  $\frac{1}{2}AD^2 + 2BC^2$
  - (c)  $AD^2 + 2BC^2$
  - (d)  $2AD^2 + \frac{1}{2}BC^2$

Sol : [www.cbse.site/ma/fm160](http://www.cbse.site/ma/fm160)

63. From an airport, two aeroplanes start at the same time. If speed of first aeroplane due North is 500 km/h and that of other due East is 650 km/h then the approximate distance between the two aeroplanes after 2 hours will be
- (a) 1890 km
  - (b) 1120 km
  - (c) 1640 km
  - (d) 2240 km

Sol : [www.cbse.site/ma/fm161](http://www.cbse.site/ma/fm161)

64. In the given figure,  $BL$  and  $CM$  are medians of  $\triangle ABC$ , right angled at  $A$ . The term  $4(BL^2 + CM^2)$  is equal to



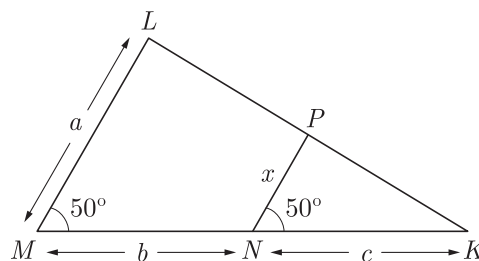
- (a)  $5BC^2$
- (b)  $4BC^2$
- (c)  $3BC^2$
- (d)  $2BC^2$

Sol : [www.cbse.site/ma/fm163](http://www.cbse.site/ma/fm163)

65. Two similar triangles  $ABC$  and  $PQR$  have their areas  $25 \text{ cm}^2$  and  $49 \text{ cm}^2$  respectively. If  $QR = 9.8 \text{ cm}$ , what is the length of side  $BC$ ?
- (a) 2 cm
  - (b) 5 cm
  - (c) 7 cm
  - (d) 4 cm

Sol : [www.cbse.site/ma/fm162](http://www.cbse.site/ma/fm162)

66. In the given figure, the value of  $x$  is



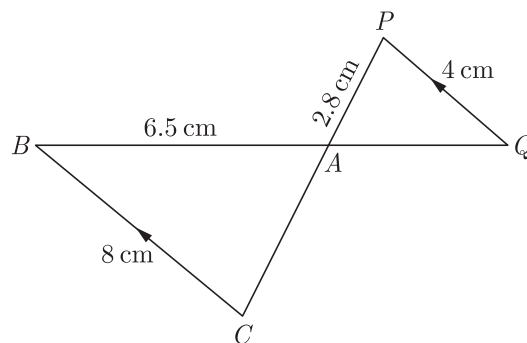
- (a)  $\frac{bc}{a+c}$
- (b)  $\frac{ac}{b+c}$
- (c)  $\frac{ac}{a+b}$
- (d)  $\frac{bc}{a+b}$

Sol : [www.cbse.site/ma/fm164](http://www.cbse.site/ma/fm164)

**Direction For Question :** (67-68)

In the given figure,  $BC \parallel PQ$  and  $BC = 8 \text{ cm}$ ,  $PQ = 4 \text{ cm}$ ,  $BA = 6.5 \text{ cm}$   $AP = 2.8 \text{ cm}$ .

67. The length of  $CA$  is



- (a) 2.80 cm
- (b) 5.60 cm
- (c) 3.25 cm

(d) 2.10 cm

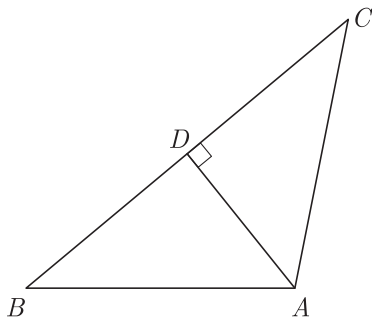
Sol : [www.cbse.site/ma/fm165](http://www.cbse.site/ma/fm165)

68. The length of  $AQ$  is

- (a) 2.80 cm
- (b) 5.60 cm
- (c) 3.25 cm
- (d) 2.10 cm

Sol : [www.cbse.site/ma/fm165](http://www.cbse.site/ma/fm165)

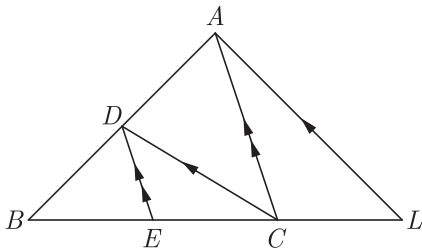
69. In the given figure, if  $AD \perp BC$ , the term  $AB^2 + CD^2$  is equal to



- (a)  $2BD^2 + 3AC^2$
- (b)  $\frac{1}{2}BD^2 + AC^2$
- (c)  $BD^2 + \frac{1}{2}AC^2$
- (d)  $BD^2 + AC^2$

Sol : [www.cbse.site/ma/fm166](http://www.cbse.site/ma/fm166)

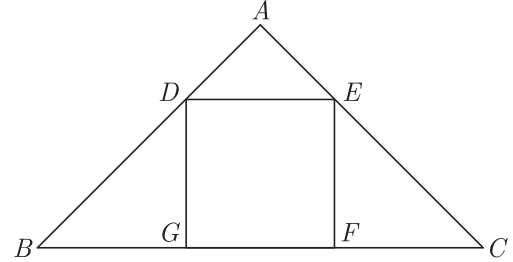
70. In the given figure,  $CD \parallel LA$  and  $DE \parallel AC$ . If  $BE = 4$  cm and  $EC = 2$  cm, the length of  $CL$  will be



- (a) 3 cm
- (b) 6 cm
- (c) 8 cm
- (d) 12 cm

Sol : [www.cbse.site/ma/fm167](http://www.cbse.site/ma/fm167)

71. In the given figure,  $DEFG$  is a square and  $\angle BAC = 90^\circ$ . The term  $FG^2$  is equal to



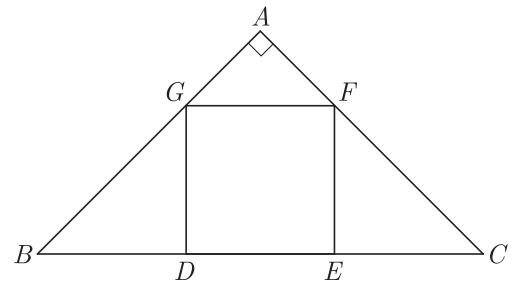
- (a)  $\frac{1}{3}BG \times FC$
- (b)  $BG \times FC$
- (c)  $\frac{2}{3}BG \times FC$
- (d)  $\frac{1}{4}BG \times FC$

Sol : [www.cbse.site/ma/fm168](http://www.cbse.site/ma/fm168)

72. In Figure  $DEFG$  is a square in a triangle  $ABC$  right angled at  $A$ .

Which of the following statement is/are correct?

- (i)  $\triangle AGF \sim \triangle DBG$
- (ii)  $\triangle AGF \sim \triangle EFC$

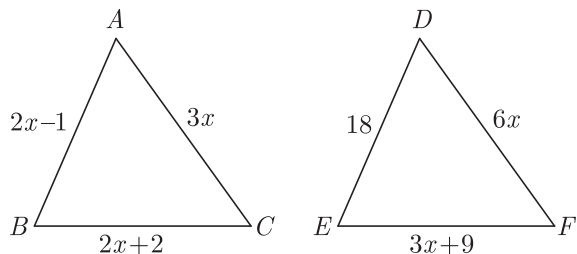


- (a) Only (i) is correct
- (b) Only (ii) is correct
- (c) Both (i) and (ii) are correct.
- (d) Both are wrong.

Sol : [www.cbse.site/ma/fm169](http://www.cbse.site/ma/fm169)

**Direction For Question : (73-75)**

In Figure, if  $\triangle ABC \sim \triangle DEF$  and their sides of lengths (in cm) are marked along them, then find the lengths of sides of each triangle.



73. The length of side  $AB$  is  
 (a) 9  
 (b) 12  
 (c) 15  
 (d) 24

Sol : [www.cbse.site/ma/fm170](http://www.cbse.site/ma/fm170)

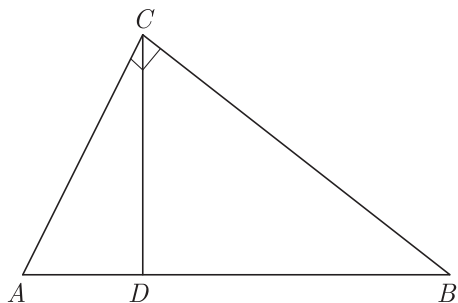
74. The length of side  $AC$  is  
 (a) 10  
 (b) 12  
 (c) 15  
 (d) 24

Sol : [www.cbse.site/ma/fm170](http://www.cbse.site/ma/fm170)

75. The length of side  $DE$  is  
 (a) 30  
 (b) 18  
 (c) 15  
 (d) 24

Sol : [www.cbse.site/ma/fm170](http://www.cbse.site/ma/fm170)

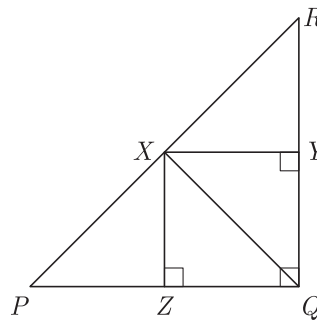
76. In given figure,  $\angle ACB = 90^\circ$  and  $CD \perp AB$ , the term  $CD^2$  is equal to



- (a)  $\frac{1}{2}BD \times AD$   
 (b)  $BD \times AD$   
 (c)  $\frac{1}{3}BD \times AD$   
 (d)  $\frac{1}{4}BD \times AD$

Sol : [www.cbse.site/ma/fm171](http://www.cbse.site/ma/fm171)

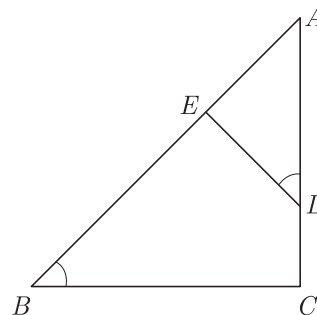
77. Triangle  $\triangle PQR$  is right angled at  $Q$ .  $QX \perp PR$ ,  $XY \perp RQ$  and  $XZ \perp PQ$  are drawn. The term  $XZ^2$  is equal to



- (a)  $\frac{1}{2}PZ \times ZQ$   
 (b)  $\frac{2}{3}PZ \times ZQ$   
 (c)  $\frac{1}{4}PZ \times ZQ$   
 (d)  $PZ \times ZQ$

Sol : [www.cbse.site/ma/fm172](http://www.cbse.site/ma/fm172)

78. In  $\triangle ABC$ , if  $\angle ADE = \angle B$ , then prove that  $\triangle ADE \sim \triangle ABC$ . Also, if  $AD = 7.6$  cm,  $AE = 7.2$  cm,  $BE = 4.2$  cm and  $BC = 8.4$  cm, then length  $DE$  will be



- (a) 5.6 cm  
 (b) 2.8 cm  
 (c) 4.8 cm  
 (d) 3.8 cm

Sol : [www.cbse.site/ma/fm173](http://www.cbse.site/ma/fm173)

79. In  $\triangle ABC$ , the mid-points of sides  $BC$ ,  $CA$  and  $AB$  are  $D$ ,  $E$  and  $F$  respectively. The ratio of  $ar(\triangle DEF)$

to  $ar(\Delta ABC)$  is

- (a)  $\frac{2}{3}$
- (b)  $\frac{1}{3}$
- (c)  $\frac{1}{4}$
- (d)  $\frac{1}{2}$

Sol : [www.cbse.site/ma/fm174](http://www.cbse.site/ma/fm174)

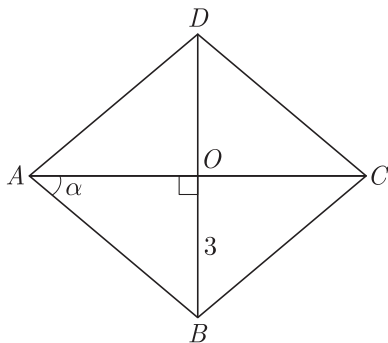
80. In the right triangle,  $B$  is a point on  $AC$  such that  $AB + AD = BC + CD$ . If  $AB = x$ ,  $BC = h$  and  $CD = d$ , then  $x$  will be

- (a)  $\frac{2hd}{2h+d}$
- (b)  $\frac{2hd}{h+d}$
- (c)  $\frac{hd}{h+2d}$
- (d)  $\frac{hd}{2h+d}$

Sol : [www.cbse.site/ma/fm175](http://www.cbse.site/ma/fm175)

**Direction For Question :** (81-82)

$ABCD$  is a rhombus whose diagonal  $AC$  makes an angle  $\alpha$  with  $AB$ . Here  $\cos \alpha = \frac{2}{3}$  and  $OB = 3$  cm.



81. The length of its diagonal  $BD$  is

- (a) 6 cm
- (b) 5 cm
- (c)  $\frac{9}{\sqrt{5}}$  cm
- (d)  $\frac{12}{\sqrt{5}}$  cm

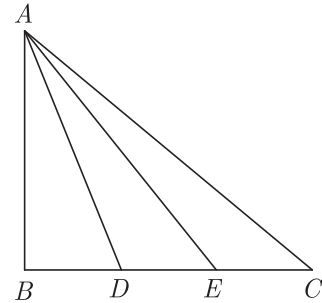
Sol : [www.cbse.site/ma/fm176](http://www.cbse.site/ma/fm176)

82. The length of its diagonal  $AC$  is

- (a) 6 cm
- (b) 5 cm
- (c)  $\frac{9}{\sqrt{5}}$  cm
- (d)  $\frac{12}{\sqrt{5}}$  cm

Sol : [www.cbse.site/ma/fm176](http://www.cbse.site/ma/fm176)

83. In the given figure,  $D$  and  $E$  trisect  $BC$ . The term  $3AC^2 + 5AD^2$



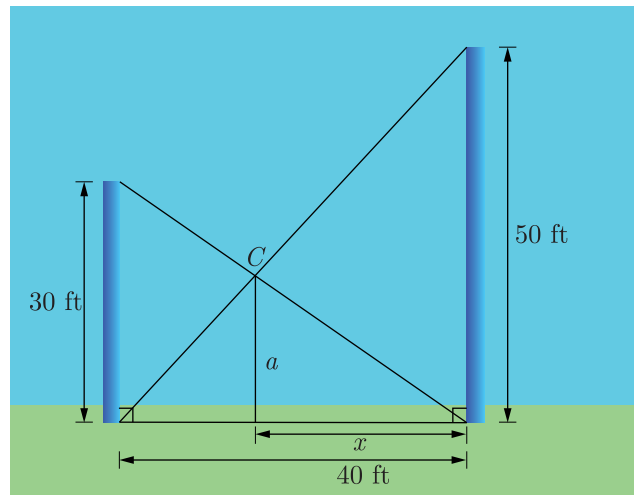
- (a)  $2AE^2$
- (b)  $4AE^2$
- (c)  $6AE^2$
- (d)  $8AE^2$

Sol : [www.cbse.site/ma/fm177](http://www.cbse.site/ma/fm177)

**COMPETENCY BASED QUESTIONS**

**Direction For Question :** (84-86)

Two poles, 30 feet and 50 feet tall, are 40 feet apart and perpendicular to the ground. The poles are supported by wires attached from the top of each pole to the bottom of the other, as in the figure. A coupling is placed at  $C$  where the two wires cross.



84. What is the horizontal distance from  $C$  to the taller pole?

- (a) 32 feet
- (b) 25 feet
- (c) 18 feet

(d) 30 feet

Sol : [www.cbse.site/ma/fm178](http://www.cbse.site/ma/fm178)

85. How high above the ground is the coupling ?

(a) 12.75 feet

(b) 18.75 feet

(c) 25.25 feet

(d) 30.50 feet

Sol : [www.cbse.site/ma/fm178](http://www.cbse.site/ma/fm178)

86. How far down the wire from the smaller pole is the coupling ?

(a) 12.75 feet

(b) 18.75 feet

(c) 25.25 feet

(d) 30.50 feet

Sol : [www.cbse.site/ma/fm178](http://www.cbse.site/ma/fm178)

87. Aakesh wanted to determine the height of a tree on the corner of his block. He knew that a certain fence by the tree was 4 feet tall. At 3 PM, he measured the shadow of the fence to be 2.5 feet tall. Then he measured the tree's shadow to be 11.3 feet. What is the height of the tree?



(a) 12 feet

(b) 11 feet

(c) 18 feet

(d) 30 feet

Sol : [www.cbse.site/ma/fm179](http://www.cbse.site/ma/fm179)

88. Wall Paint : A painter sets a ladder up to reach the bottom of a second-story window 16 feet above the ground. The base of the ladder is 12 feet from the house. While the painter mixes the paint, a

neighbour's dog bumps the ladder, which moves the base 2 feet farther away from the house. How far up the side of the house does the ladder reach?



(a) 12 feet

(b) 20 feet

(c) 15 feet

(d) 30 feet

Sol : [www.cbse.site/ma/fm180](http://www.cbse.site/ma/fm180)

89. Windmill : A windmill is a device for tapping the energy of the wind by means of sails mounted on a rotating shaft. Windmills still used today, mainly in parts of the world which have traditionally relied on them, are powered by electricity or water.



Anil is constructing a 8 m tall windmill supported by two wires. One wire must be 10 m long and the distance between the wires must be 21 m. Anil wanted to know what length to cut for the other wire.

(a) 17 m

- (b) 11 m
- (c) 18 m
- (d) 30 m

Sol : [www.cbse.site/ma/fm181](http://www.cbse.site/ma/fm181)

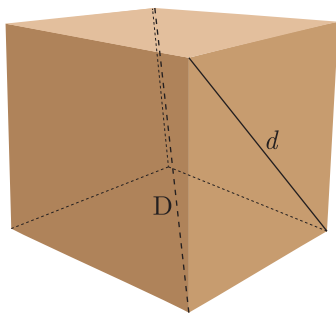
90. Helicopter Patrolling : A helicopter is hovering over a crowd of people watching a police standoff in a parking garage across the street. Stewart notices the shadow of the helicopter is lagging approximately 57 m behind a point directly below the helicopter. If he is 160 cm tall and casts a shadow of 38 cm at this time, what is the altitude of the helicopter?



- (a) 120 m
- (b) 240 m
- (c) 140 m
- (d) 210 m

Sol : [www.cbse.site/ma/fm182](http://www.cbse.site/ma/fm182)

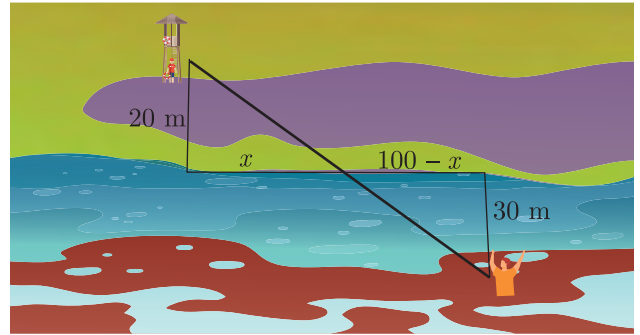
91. The boxes used to ship some washing machines are perfect cubes with edges  $a$ . What is the length of the diagonal  $d$  of one side, and the length of the interior diagonal  $D$  (through the middle of the box)?



- (a)  $\sqrt{2} a$  and  $\sqrt{2} a$
- (b)  $a\sqrt{3}$  and  $\sqrt{2} a$
- (c)  $\sqrt{2} a$  and  $a\sqrt{3}$
- (d)  $2\sqrt{2} a$  and  $2a\sqrt{3}$

Sol : [www.cbse.site/ma/fm183](http://www.cbse.site/ma/fm183)

92. Swimmer in Distress : A lifeguard located 20 metre from the water spots a swimmer in distress. The swimmer is 30 metre from shore and 100 metre east of the lifeguard. Suppose the lifeguard runs and then swims to the swimmer in a direct line, as shown in the figure. How far east from his original position will he enter the water? (Hint: Find the value of  $x$  in the sketch.)



- (a) 20 m
- (b) 40 m
- (c) 60 m
- (d) 80 m

Sol : [www.cbse.site/ma/fm184](http://www.cbse.site/ma/fm184)

93. Two Ships : Two ships are cruising together on the open ocean at 6 nautical miles per hour. One of them turns to make a angle  $90^\circ$  with the first and increases speed, heading for port. Assuming the first ship continues traveling at 6 knots, what is the speed of the other ship if they are 10 mi apart after 1 hr.



- (a) 6 nautical mile/hour.
- (b) 8 nautical mile/hour.
- (c) 10 nautical mile/hour.
- (d) 12 nautical mile/hour.

Sol : [www.cbse.site/ma/fm185](http://www.cbse.site/ma/fm185)

94. Statue of a Pineapple : The Big Pineapple is a heritage-listed tourist attraction at Nambour Connection Road, Woombye, Sunshine Coast Region, Queensland, Australia. It was designed by Peddle Thorp and Harvey, Paul Luff, and Gary Smallcombe and Associates. It is also known as Sunshine Plantation. It was added to the Queensland Heritage Register on 6 March 2009.



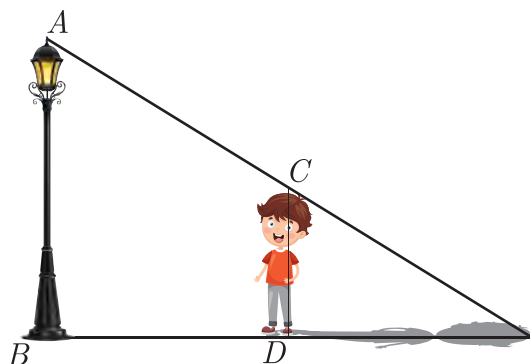
Ishita last year visited Nambour and wanted to find the height of a statue of a pineapple. She measured the pineapple's shadow and her own shadow. Her height is 156 cm and casts a shadow of 39 cm. The length of shadow of pineapple is 4 m. What is the height of the pineapple?

- (a) 10 m
- (b) 12 m
- (c) 14 m
- (d) 16 m

Sol : [www.cbse.site/ma/fm186](http://www.cbse.site/ma/fm186)

**Direction For Question :** (95-99)

Rohan is very intelligent in maths. He always try to relate the concept of maths in daily life. One day he is walking away from the base of a lamp post at a speed of 1 m/s. Lamp is 4.5 m above the ground.



95. If after 2 second, length of shadow is 1 meter, what

is the height of Rohan ?

- (a) 145 cm
- (b) 120 cm
- (c) 150 cm
- (d) 175 cm

Sol : [www.cbse.site/ma/fm187](http://www.cbse.site/ma/fm187)

96. What is the minimum time after which his shadow will become larger than his original height?

- (a) 1 sec
- (b) 2 sec
- (c) 3 sec
- (d) 4 sec

Sol : [www.cbse.site/ma/fm187](http://www.cbse.site/ma/fm187)

97. What is the distance of Rohan from pole at this point ?

- (a) 2 m
- (b) 1 m
- (c) 3 m
- (d) 4 m

Sol : [www.cbse.site/ma/fm187](http://www.cbse.site/ma/fm187)

98. What will be the length of his shadow after 4 seconds?

- (a) 2 m
- (b) 1 m
- (c) 3 m
- (d) 4 m

Sol : [www.cbse.site/ma/fm187](http://www.cbse.site/ma/fm187)

99. Which similarity criterion is used in solving the above problem

- (a) SAS similarity criterion
- (b) AA similarity criterion
- (c) SSS similarity criterion
- (d) None of these

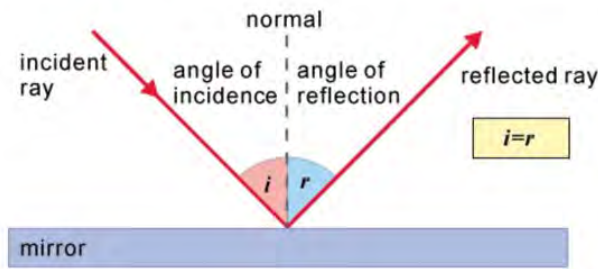
Sol : [www.cbse.site/ma/fm187](http://www.cbse.site/ma/fm187)

**Direction For Question :** (100-104)

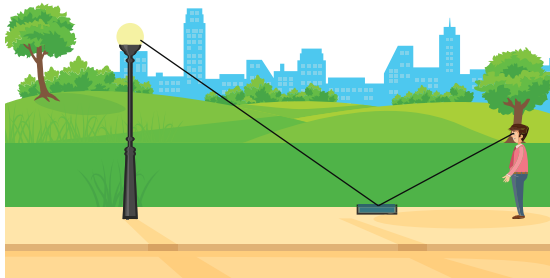
The law of reflection states that when a ray of light reflects off a surface, the angle of incidence is equal



to the angle of reflection.



Ramesh places a mirror on level ground to determine the height of a pole (with traffic light fired on it). He stands at a certain distance so that he can see the reflection of light in right position. Ramesh's eye level is 1.5 m above the ground. The distance of Ramesh and the pole from the mirror are 1.8 m and 6 m respectively.



100. Which criterion of similarity is applicable to similar triangles?
- (a) SSA
  - (b) ASA
  - (c) SSS
  - (d) AA

Sol : [www.cbse.site/ma/fm188](http://www.cbse.site/ma/fm188)

101. What is the height of the pole?
- (a) 6 metres
  - (b) 8 metres
  - (c) 5 metres
  - (d) 4 metres

Sol : [www.cbse.site/ma/fm188](http://www.cbse.site/ma/fm188)

102. If angle of incidence is  $i$ , find  $\tan i$ .
- (a)  $\tan i = \frac{5}{6}$
  - (b)  $\tan i = \frac{6}{5}$
  - (c)  $\tan i = \frac{3}{5}$
  - (d)  $\tan i = \frac{5}{3}$

Sol : [www.cbse.site/ma/fm188](http://www.cbse.site/ma/fm188)

103. Now Ramesh move behind such that distance between pole and Ramesh is 13 meters. He place mirror between him and pole to see the reflection of light in right position. What is the distance between mirror and Ramesh ?
- (a) 7 metres
  - (b) 3 metres
  - (c) 5 metres
  - (d) 4 metres

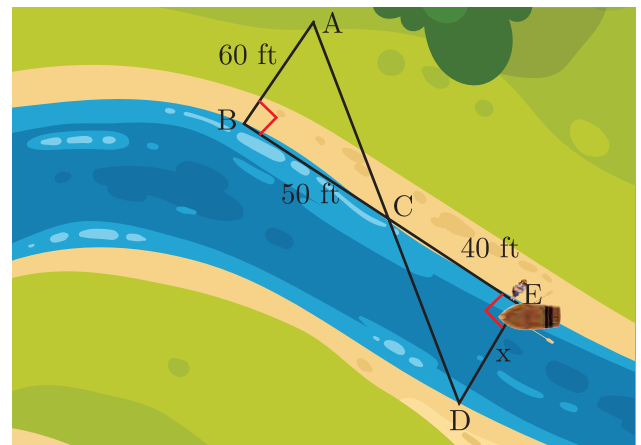
Sol : [www.cbse.site/ma/fm188](http://www.cbse.site/ma/fm188)

104. What is the distance between mirror and pole?
- (a) 9 metres
  - (b) 8 metres
  - (c) 12 metres
  - (d) 10 metres

Sol : [www.cbse.site/ma/fm188](http://www.cbse.site/ma/fm188)

**Direction For Question : (105-109)**

Tania is very intelligent in maths. She always try to relate the concept of maths in daily life. One day she plans to cross a river and want to know how far it is to the other side. She takes measurements on her side of the river and make the drawing as shown below.



105. Which similarity criterion is used in solving the above problem ?
- (a) SAS similarity criterion
  - (b) AA similarity criterion

- (c) SSS similarity criterion
- (d) None of these

Sol : [www.cbse.site/ma/fm189](http://www.cbse.site/ma/fm189)

106. Consider the following statement :

$$S_1 : \angle ACB = \angle DCE$$

$$S_2 : \angle BAC = \angle CDE$$

Which of the above statement is/are correct.

- (a)  $S_1$  and  $S_2$  both
- (b)  $S_1$
- (c)  $S_2$
- (d) None

Sol : [www.cbse.site/ma/fm189](http://www.cbse.site/ma/fm189)

107. Consider the following statement :

$$S_3 : \frac{AB}{DE} = \frac{CA}{CD}$$

$$S_4 : \frac{BC}{CE} = \frac{AB}{DE}$$

$$S_5 : \frac{CA}{CD} = \frac{DE}{AB}$$

Which of the above statements are correct ?

- (a)  $S_3$  and  $S_5$
- (b)  $S_4$  and  $S_5$
- (c)  $S_3$  and  $S_4$
- (d) All three

Sol : [www.cbse.site/ma/fm189](http://www.cbse.site/ma/fm189)

108. What is the distance  $x$  across the river?

- (a) 96 ft
- (b) 48 ft
- (c) 24 ft
- (d) 16 ft

Sol : [www.cbse.site/ma/fm189](http://www.cbse.site/ma/fm189)

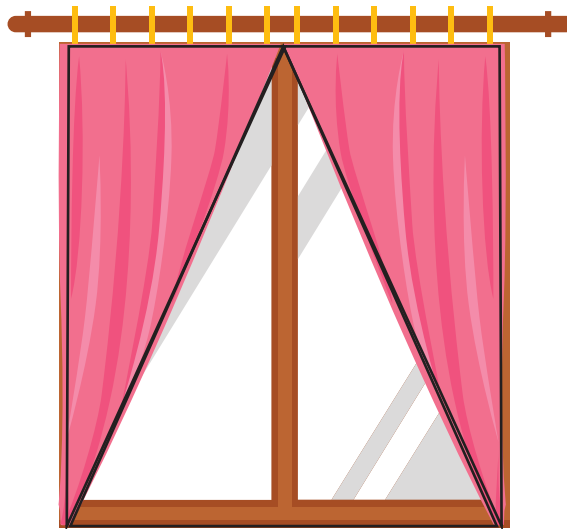
109. What is the approximate length of AD shown in the figure?

- (a) 120 ft
- (b) 160 ft
- (c) 140 ft
- (d) 100 ft

Sol : [www.cbse.site/ma/fm189](http://www.cbse.site/ma/fm189)

Direction For Question : (110-114)

Rani wants to make the curtains for her window as shown in the figure. The window is in the shape of a rectangle, whose width and height are in the ratio 2:3. The area of the window is 9600 square cm.



110. What is the shape of the window that is uncovered?

- (a) Right triangle
- (b) Equilateral triangle
- (c) Isosceles triangle
- (d) Rectangle

Sol : [www.cbse.site/ma/fm190](http://www.cbse.site/ma/fm190)

111. What will be the ratio of two sides of each curtain (other than hypotenuse) ?

- (a) 1 : 3
- (b) 2 : 3
- (c) 1 : 1
- (d) 3 : 2

Sol : [www.cbse.site/ma/fm190](http://www.cbse.site/ma/fm190)

112. What are the dimensions of the window ?

- (a) 40 cm  $\times$  80 cm
- (b) 20 cm  $\times$  60 cm
- (c) 80 cm  $\times$  120 cm
- (d) 40 cm  $\times$  120 cm

Sol : [www.cbse.site/ma/fm190](http://www.cbse.site/ma/fm190)

113. What will be the perimeter of the window ?

- (a) 200 cm

- (b) 100 cm
- (c) 400 cm
- (d) 450 cm

Sol : [www.cbse.site/ma/fm190](http://www.cbse.site/ma/fm190)

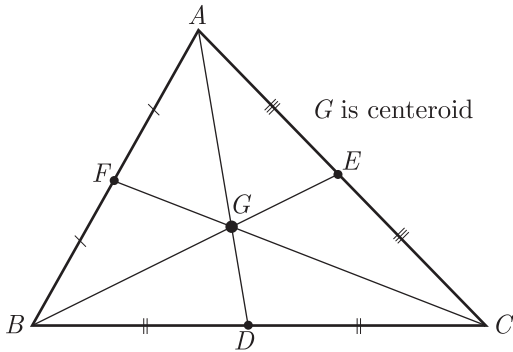
114. How much window area is covered by the curtains?
- (a) 50%
  - (b) 75%
  - (c) 25%
  - (d) 80%

Sol : [www.cbse.site/ma/fm190](http://www.cbse.site/ma/fm190)

**Direction For Question :** (115-118)

The centroid is the centre point of the object. It is also defined as the point of intersection of all the three medians. The median is a line that joins the midpoint of a side and the opposite vertex of the triangle. The centroid of the triangle separates the median in the ratio of 2 : 1. It can be found by taking the average of x- coordinate points and y-coordinate points of all the vertices of the triangle.

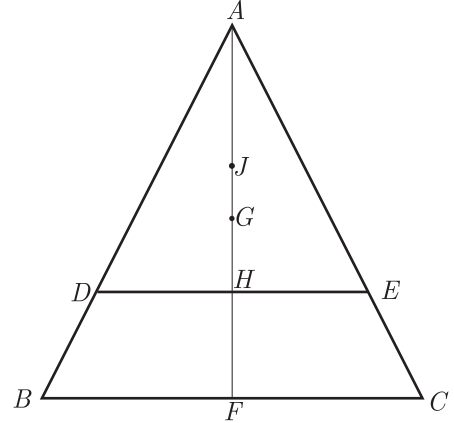
See the figure given below



Here  $D, E$  and  $F$  are mid points of sides  $BC, AC$  and  $AB$  in same order.  $G$  is centroid, the centroid divides the median in the ratio 2 : 1 with the larger part towards the vertex. Thus  $AG : GD = 2 : 1$

On the basis of above information read the question below.

If  $G$  is Centroid of  $\triangle ABC$  with height  $h$  and  $J$  is centroid of  $\triangle ADE$ . Line  $DE$  parallel to  $BC$ , cuts the  $\triangle ABC$  at a height  $\frac{h}{4}$  from  $BC$ .  $HF = \frac{h}{4}$ .



115. What is the length of  $AH$  ?
- (a)  $\frac{h}{2}$
  - (b)  $\frac{2h}{3}$
  - (c)  $\frac{3h}{4}$
  - (d)  $\frac{h}{4}$

Sol : [www.cbse.site/ma/fm191](http://www.cbse.site/ma/fm191)

116. What is the distance of point  $A$  from point  $G$  ?
- (a)  $\frac{2AF}{3}$
  - (b)  $\frac{3AF}{2}$
  - (c)  $\frac{AF}{3}$
  - (d)  $\frac{AF}{2}$

Sol : [www.cbse.site/ma/fm191](http://www.cbse.site/ma/fm191)

117. What is the distance of point  $A$  from point  $J$  ?
- (a)  $\frac{2AG}{3}$
  - (b)  $\frac{3AG}{4}$
  - (c)  $\frac{AG}{3}$
  - (d)  $\frac{AG}{2}$

Sol : [www.cbse.site/ma/fm191](http://www.cbse.site/ma/fm191)

118. What is the distance  $GJ$  ?
- (a)  $\frac{AG}{3}$
  - (b)  $\frac{AG}{4}$
  - (c)  $\frac{2AG}{3}$
  - (d)  $\frac{AG}{2}$

Sol : [www.cbse.site/ma/fm191](http://www.cbse.site/ma/fm191)

SELF TEST QUESTIONS

119. Given  $\Delta ABC \sim \Delta PQR$ , if  $\frac{AB}{PQ} = \frac{1}{3}$ , then  $\frac{\text{ar}(\Delta ABC)}{\text{ar}(\Delta PQR)} = \dots\dots\dots$

- (a) 1 : 4
- (b) 1 : 8
- (c) 1 : 9
- (d) 1 : 16

Sol : [www.cbse.site/ma/fm219](http://www.cbse.site/ma/fm219)

120. It is given that  $\Delta ABC \sim \Delta PQR$  with  $\frac{BC}{QR} = \frac{1}{4}$ . Then  $\frac{\text{ar}(\Delta PRQ)}{\text{ar}(\Delta BCA)}$  is equal to

- (a) 16
- (b) 3
- (c)  $\frac{1}{4}$
- (d)  $\frac{1}{16}$

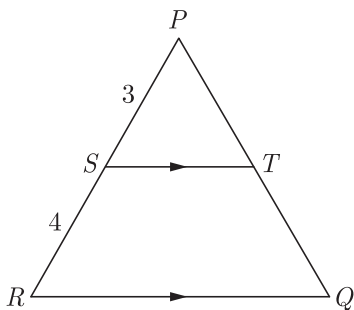
Sol : [www.cbse.site/ma/fm220](http://www.cbse.site/ma/fm220)

121. In  $\Delta PQR$ ,  $S$  and  $T$  are points on the sides  $PQ$  and  $PR$  respectively, such that  $ST \parallel QR$ . If  $PT = 2$  cm and  $TR = 4$  cm, what is the ratio of the areas of  $\Delta PST$  and  $\Delta PQR$ ?

- (a) 1 : 4
- (b) 1 : 8
- (c) 1 : 9
- (d) 1 : 16

Sol : [www.cbse.site/ma/fm221](http://www.cbse.site/ma/fm221)

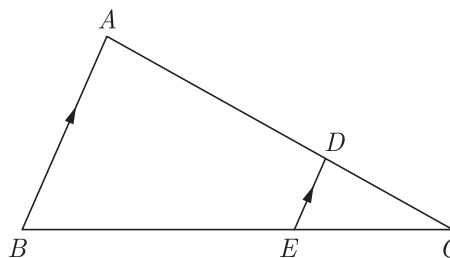
122. In the given figure,  $ST \parallel RQ$ ,  $PS = 3$  cm and  $SR = 4$  cm. What is the ratio of the area of  $\Delta PST$  to the area of  $\Delta PRQ$  ?



- (a) 9 : 7
- (b) 16 : 49
- (c) 8 : 36
- (d) 9 : 49

Sol : [www.cbse.site/ma/fm222](http://www.cbse.site/ma/fm222)

123. In given figure,  $D$  is a point on  $AC$  such that  $AD = 2CD$ , also  $DE \parallel AB$ . What is the value of ratio  $\frac{\text{ar}(\Delta ACB)}{\text{ar}(\Delta DCE)}$  ?



- (a) 1 : 4
- (b) 1 : 8
- (c) 1 : 9
- (d) 1 : 16

Sol : [www.cbse.site/ma/fm223](http://www.cbse.site/ma/fm223)

124.  $ABC$  is a triangle,  $PQ$  is the line segment intersecting  $AB$  in  $P$  and  $AC$  in  $Q$  such that  $PQ \parallel BC$  and divides  $\Delta ABC$  into two parts, the ratio  $BP : AB$  is equal to

- (a)  $(\sqrt{2} - 1) : \sqrt{2}$
- (b)  $(\sqrt{2} + 1) : \sqrt{2}$
- (c)  $\sqrt{2} : (\sqrt{2} + 1)$
- (d)  $\sqrt{2} : (\sqrt{2} - 1)$

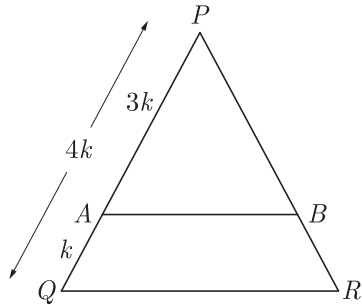
Sol : [www.cbse.site/ma/fm224](http://www.cbse.site/ma/fm224)

125. A ladder 25 m long just reaches the top of a building 24 m high from the ground. What is the distance of the foot of ladder from the base of the building?

- (a) 9 m
- (b) 10.5 m
- (c) 14 m
- (d) 7 m

Sol : [www.cbse.site/ma/fm225](http://www.cbse.site/ma/fm225)

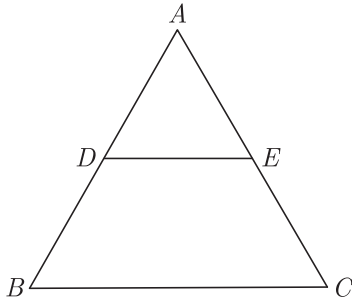
126. In the given figure,  $\frac{PA}{AQ} = \frac{BR}{RR} = 3$ . If the area of  $\Delta PQR$  is  $32 \text{ cm}^2$ , then the area of the quadrilateral  $AQRB$  will be



- (a)  $14 \text{ cm}^2$
- (b)  $7 \text{ cm}^2$
- (c)  $12 \text{ cm}^2$
- (d)  $6 \text{ cm}^2$

Sol : [www.cbse.site/ma/fm226](http://www.cbse.site/ma/fm226)

127. In Figure,  $DE \parallel BC$ ,  $AD = 1 \text{ cm}$  and  $BD = 2 \text{ cm}$ . What is the ratio of the ar( $\Delta ABC$ ) to the ar( $\Delta ADE$ )?



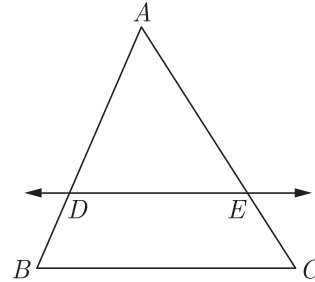
- (a) 9 : 1
- (b) 4 : 1
- (c) 3 : 1
- (d) 8 : 1

Sol : [www.cbse.site/ma/fm227](http://www.cbse.site/ma/fm227)

128. Vertical angles of two isosceles triangles are equal. If their areas are in the ratio 16:25, then the ratio of their altitudes drawn from vertex to the opposite side will be
- (a)  $\frac{1}{5}$
  - (b)  $\frac{3}{5}$
  - (c)  $\frac{2}{5}$
  - (d)  $\frac{4}{5}$

Sol : [www.cbse.site/ma/fm232](http://www.cbse.site/ma/fm232)

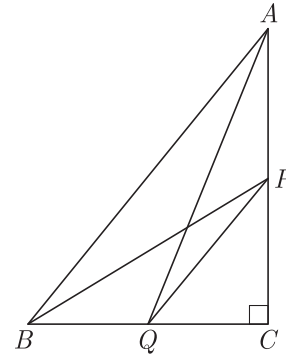
129. In Figure, in  $\Delta ABC$ ,  $DE \parallel BC$  such that  $AD = 2.4 \text{ cm}$ ,  $AB = 3.2 \text{ cm}$  and  $AC = 8 \text{ cm}$ , then what is the length of  $AE$ ?



- (a) 2 cm
- (b) 4 cm
- (c) 5 cm
- (d) 6 cm

Sol : [www.cbse.site/ma/fm228](http://www.cbse.site/ma/fm228)

130. If  $P$  and  $Q$  are the points on side  $CA$  and  $CB$  respectively of  $\Delta ABC$ , right angled at  $C$ , then that  $(AQ^2 + BP^2) = (AB^2 + PQ^2)$  is equal to



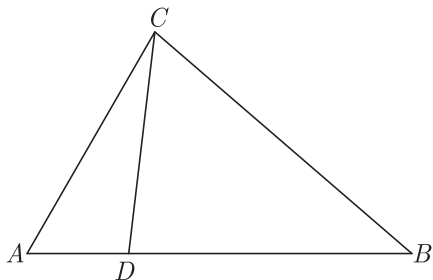
- (a)  $2(AB^2 + PQ^2)$
- (b)  $(2AB^2 + PQ^2)$
- (c)  $(AB^2 + 2PQ^2)$
- (d)  $(AB^2 + PQ^2)$

Sol : [www.cbse.site/ma/fm229](http://www.cbse.site/ma/fm229)

131. Two right triangles  $ABC$  and  $DBC$  are drawn on the same hypotenuse  $BC$  and on the same side of  $BC$ . If  $AC$  and  $BD$  intersect at  $P$ , then  $AP \times PC$  is equal to
- (a)  $3BP \times DP$
  - (b)  $2BP \times DP$
  - (c)  $BP \times DP$
  - (d)  $\frac{1}{2}BP \times DP$

Sol : [www.cbse.site/ma/fm230](http://www.cbse.site/ma/fm230)

132. In the given figure, if  $\angle ACB = \angle CDA$ ,  $AC = 6$  cm and  $AD = 3$  cm, then the length of  $AB$  will be



- (a) 6 cm  
 (b) 4 cm  
 (c) 12 cm  
 (d) 8 cm

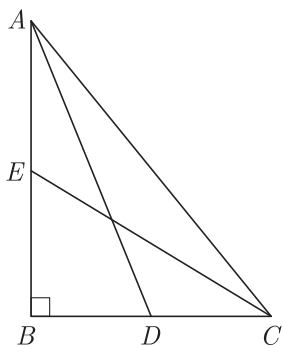
Sol : [www.cbse.site/ma/fm231](http://www.cbse.site/ma/fm231)

133. In  $\triangle ABC$ ,  $AD \perp BC$  and point  $D$  lies on  $BC$  such that  $2DB = 3CD$ . The term  $AB^2$ .

- (a)  $\frac{1}{5}AC^2 + BC^2$   
 (b)  $AC^2 + \frac{1}{5}BC^2$   
 (c)  $AC^2 + 5BC^2$   
 (d)  $5AC^2 + BC^2$

Sol : [www.cbse.site/ma/fm233](http://www.cbse.site/ma/fm233)

134. In the figure,  $ABC$  is a right triangle, right angled at  $B$ .  $AD$  and  $CE$  are two medians drawn from  $A$  and  $C$  respectively. If  $AC = 5$  cm and  $AD = \frac{3\sqrt{5}}{2}$  cm, the length of  $CE$  will be



- (a) 4 cm  
 (b) 6 cm  
 (c)  $2\sqrt{5}$  cm  
 (d)  $4\sqrt{5}$  cm

Sol : [www.cbse.site/ma/fm234](http://www.cbse.site/ma/fm234)

**Direction For Question :** (17-18)

In a right triangle  $ABC$ , right angled at  $C$ .  $P$  and  $Q$  are points of the sides  $CA$  and  $CB$  respectively, which divide these sides in the ratio 2:1.

135. The term  $AQ^2$  is equal to

- (a)  $BC^2 + \frac{9}{4}AC^2$   
 (b)  $\frac{4}{9}BC^2 + AC^2$   
 (c)  $BC^2 + \frac{4}{9}AC^2$   
 (d)  $BC^2 + \frac{4}{9}AC^2$

Sol : [www.cbse.site/ma/fm235](http://www.cbse.site/ma/fm235)

136. The term  $AQ^2 + BP^2$  is equal to

- (a)  $\frac{13}{9}AB^2$   
 (b)  $\frac{9}{13}AB^2$   
 (c)  $\frac{9}{8}AB^2$   
 (d)  $\frac{8}{9}AB^2$

Sol : [www.cbse.site/ma/fm236](http://www.cbse.site/ma/fm236)

137. What is the length of the second diagonal of a rhombus, whose side is 5 cm and one of the diagonals is 6 cm?

- (a) 8 cm  
 (b) 4 cm  
 (c) 12 cm  
 (d) 16 cm

Sol : [www.cbse.site/ma/fm237](http://www.cbse.site/ma/fm237)

138. Triangle  $ABC$  is an isosceles triangle in which  $AB = AC = 10$  cm  $BC = 12$  cm. A rectangle  $PQRS$  is inside the isosceles triangle. Given  $PQ = SR = y$ ,  $PS = PR = 2x$ . The value of  $x$  is

- (a)  $3 - \frac{1}{4}y$   
 (b)  $3 - \frac{3}{4}y$   
 (c)  $6 - \frac{1}{4}y$   
 (d)  $6 - \frac{3}{4}y$

Sol : [www.cbse.site/ma/fm238](http://www.cbse.site/ma/fm238)

139. If  $\triangle ABC$  is an obtuse angled triangle, obtuse angled at  $B$  and if  $AD \perp CB$ . Term  $AC^2$  is equal to

- (a)  $2AB^2 + 2BC^2 + BC \times BD$   
 (b)  $AB^2 + BC^2 + 2BC \times BD$   
 (c)  $AB^2 + BC^2 + BC \times BD$   
 (d)  $AB^2 + BC^2 + \frac{1}{2}BC \times BD$

Sol : [www.cbse.site/ma/fm239](http://www.cbse.site/ma/fm239)

140. If  $A$  be the area of a right triangle and  $b$  be one of the sides containing the right angle, the length of the altitude on the hypotenuse is

- (a)  $\frac{4Ab}{\sqrt{b^2+2A^2}}$
- (b)  $\frac{2Ab}{\sqrt{b^2+A^2}}$
- (c)  $\frac{2Ab}{\sqrt{b^2+4A^2}}$
- (d)  $\frac{4Ab}{\sqrt{b^2+A^2}}$

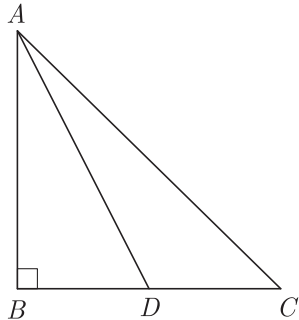
Sol : [www.cbse.site/ma/fm240](http://www.cbse.site/ma/fm240)

141. In an equilateral triangle  $ABC$ ,  $D$  is a point on the side  $BC$  such the  $BD = \frac{1}{3}BC$ . The term  $AD^2$  is equal to

- (a)  $\frac{9}{7}AB^2$
- (b)  $\frac{7}{9}AB^2$
- (c)  $\frac{4}{5}AB^2$
- (d)  $\frac{5}{4}AB^2$

Sol : [www.cbse.site/ma/fm241](http://www.cbse.site/ma/fm241)

142. In the given figure,  $ABC$  is a right angled triangle,  $\angle B = 90^\circ$ . If  $D$  is the mid-point of  $BC$ , then  $AC^2$  equal to



- (a)  $3AD^2 + CD^2$
- (b)  $AD^2 + 3CD^2$
- (c)  $3AD^2 + \frac{1}{3}CD^2$
- (d)  $\frac{1}{3}AD^2 + 3CD^2$

Sol : [www.cbse.site/ma/fm242](http://www.cbse.site/ma/fm242)

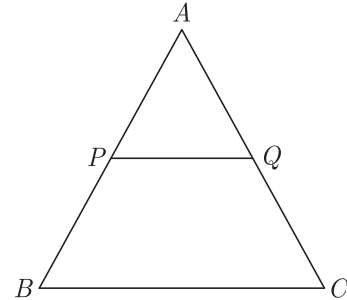
143. If the diagonals of a quadrilateral divide each other proportionally, then it is a

- (a) trapezium
- (b) square

- (c) rectangle
- (d) rhombus

Sol : [www.cbse.site/ma/fm243](http://www.cbse.site/ma/fm243)

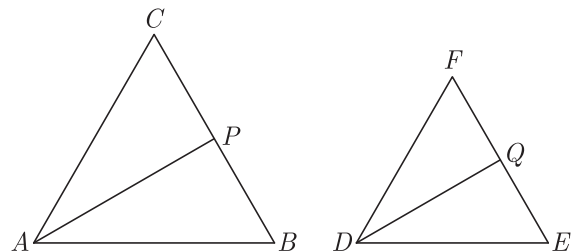
144. In the given figure,  $P$  and  $Q$  are the points on the sides  $AB$  and  $AC$  respectively of  $\Delta ABC$ , such that  $AP = 3.5$  cm,  $PB = 7$  cm,  $AQ = 3$  cm and  $QC = 6$  cm. If  $PQ = 4.5$  cm, the length  $BC$ . will be



- (a) 10.5 cm
- (b) 12.5 cm
- (c) 13.5 cm
- (d) 11.5 cm

Sol : [www.cbse.site/ma/fm244](http://www.cbse.site/ma/fm244)

145. In given figure  $\Delta ABC \sim \Delta DEF$ .  $AP$  bisects  $\angle CAB$  and  $DQ$  bisects  $\angle FDE$ .



Consider the following statement:

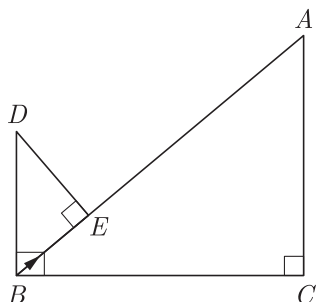
- (1)  $\frac{AP}{DQ} = \frac{AB}{DE}$
- (2)  $\Delta CAP \sim \Delta FDQ$

Which of the above are correct statement?

- (a) only 1
- (b) only 2
- (c) both 1 and 2
- (d) none

Sol : [www.cbse.site/ma/fm245](http://www.cbse.site/ma/fm245)

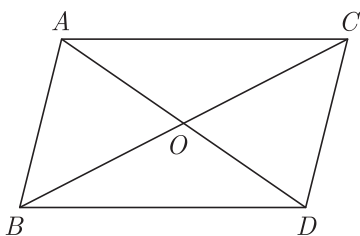
146. In the given figure,  $DB \perp BC, DE \perp AB$  and  $AC \perp BC$ . The term  $\frac{BE}{DE}$  is equal to



- (a)  $\frac{AC}{BC}$
- (b)  $\frac{BC}{AC}$
- (c)  $AC \times BC$
- (d)  $AC + BC$

Sol : [www.cbse.site/ma/fm246](http://www.cbse.site/ma/fm246)

147. In the given figure,  $\triangle ABC$  and  $\triangle DBC$  are on the same base  $BC$ .  $AD$  and  $BC$  intersect at  $O$ . Term  $\frac{ar(\triangle ABC)}{ar(\triangle DBC)}$  is equal to

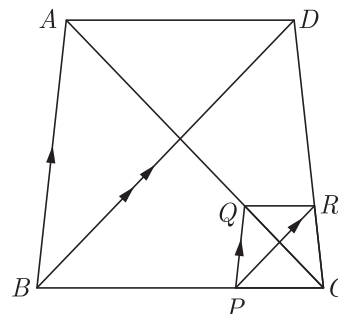


- (a)  $\frac{DO}{AO}$
- (b)  $\frac{AO}{DO}$
- (c)  $\frac{DO+AO}{AO}$
- (d)  $\frac{DO+AO}{DO}$

Sol : [www.cbse.site/ma/fm247](http://www.cbse.site/ma/fm247)

148. In the given figure, two triangles  $ABC$  and  $DBC$  lie on the same side of  $BC$  such that  $PQ \parallel BA$  and

$PR \parallel BD$ . Which of the following is correct option ?



- (a)  $PR \parallel BD$
- (b)  $QR \parallel AD$
- (c) (a) and (b)
- (d) none

Sol : [www.cbse.site/ma/fm248](http://www.cbse.site/ma/fm248)

149. The perpendicular  $AD$  on the base  $BC$  of a  $\triangle ABC$  intersects  $BC$  at  $D$  so that  $DB = 3CD$ . The term  $AB^2$  is equal to
- (a)  $2AC^2 + BC^2$
  - (b)  $AC^2 + 2BC^2$
  - (c)  $\frac{1}{2}AC^2 + 2BC^2$
  - (d)  $AC^2 + \frac{1}{2}BC^2$

Sol : [www.cbse.site/ma/fm249](http://www.cbse.site/ma/fm249)

150. Diagonals of a trapezium  $PQRS$  intersect each other at the point  $O, PQ \parallel RS$  and  $PQ = 3RS$ . What is the ratio of the areas of triangles  $POQ$  and  $ROS$ ?
- (a) 9 : 1
  - (b) 8 : 1
  - (c) 3 : 1
  - (d) 16 : 1

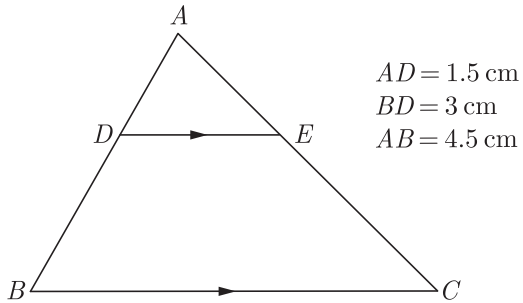
Sol : [www.cbse.site/ma/fm250](http://www.cbse.site/ma/fm250)

151. Let  $\triangle ABC \sim \triangle DEF$ . if  $ar(\triangle ABC) = 100 \text{ cm}^2$ ,  $ar(\triangle DEF) = 196 \text{ cm}^2$ , and  $DE = 7$ , then what is the length of side  $AB$ ?
- (a) 2 cm
  - (b) 5 cm
  - (c) 7 cm
  - (d) 4 cm

Sol : [www.cbse.site/ma/fm251](http://www.cbse.site/ma/fm251)



152. In the given figure,  $DE \parallel BC$ . If  $AD = 1.5$  cm  
 $BD = 2AD$ , then what is the value of  $\frac{\text{ar}(\Delta ADE)}{\text{ar}(\square BCED)}$ ?



- (a) 1 : 4  
 (b) 1 : 8  
 (c) 1 : 9  
 (d) 1 : 16

Sol : [www.cbse.site/ma/fm252](http://www.cbse.site/ma/fm252)

153. The sides  $AB$  and  $AC$  and the perimeter  $P_1$  of  $\Delta ABC$  are respectively three times the corresponding sides  $DE$  and  $DF$  and the parameter  $P_2$  of  $\Delta DEF$ . What is the value of  $\frac{\text{ar}(\Delta ABC)}{\text{ar}(\Delta DEF)}$ ?

- (a) 4  
 (b) 8  
 (c) 9  
 (d) 16

Sol : [www.cbse.site/ma/fm253](http://www.cbse.site/ma/fm253)