

11. The middle points of the parallel sides AB and CD of a parallelogram ABCD are P and Q respectively. If AQ and CP divide the diagonal BD into three parts BX, XY and YD, then which one of the following is correct?

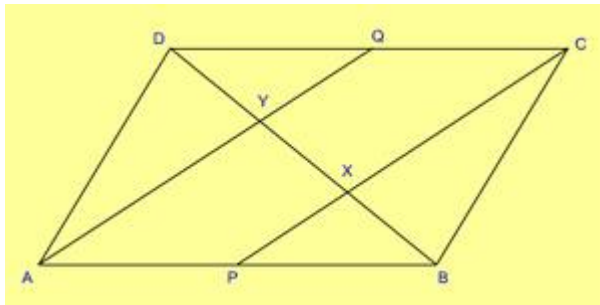
$$BX \neq XY \neq YD$$

$$BX = YD \neq XY$$

$$BX = XY = YD$$

$$XY = 2BX$$

**Answer (c)**



Clearly from the diagram

$$BX = YX = YD$$

So the answer (c) is correct.

12. A parallelogram and a rectangle stand on the same base and on the same side of the base with the same height. If  $L_1$ ,  $L_2$  be the perimeters of the parallelogram and the rectangle respectively, then which one of the following is correct?

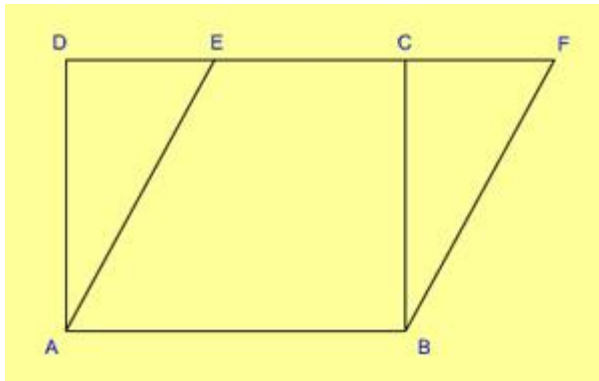
$$L_1 < L_2$$

$$L_1 = L_2$$

$$L_1 > L_2 \text{ but } L_1 \neq 2L_2$$

$$L_1 = 2L_2$$

**Answer (c)**



$$L_1 = 2(AB + BF)$$

$$L_2 = 2(AB + AD)$$

Since  $AE \text{ \& } BF > AD$

$$\Rightarrow L_1 > L_2.$$

13. Two similar parallelograms have corresponding sides in the ratio 1 : k. What is the ratio of their areas?

1 :  $3k^2$

1 :  $4k^2$

1 :  $k^2$

1 :  $2k^2$

**Answer (c)**

In two similar polygons, the ratio of their areas is the square of the ratio of their sides

14. Two sides of a parallelogram are 10 cm and 15 cm. If the altitude corresponding to the side of length 15 cm is 5 cm, then what is the altitude to the side of length 10 cm?

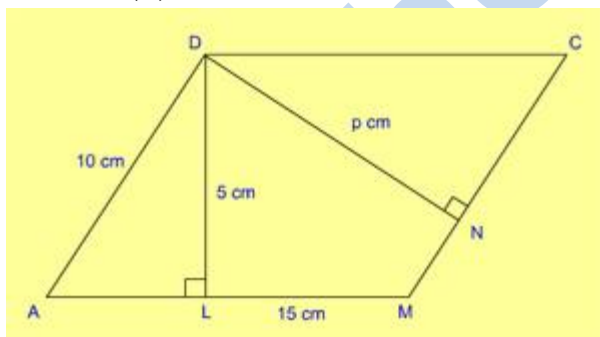
5 cm

7.5 cm

10 cm

15 cm

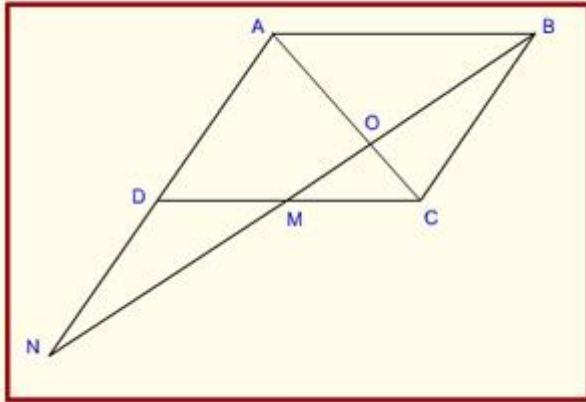
**Answer (b)**



Area of the parallelogram = Base x Altitude

$$\Rightarrow 15 \times 5 = 10 \times p$$

$$\Rightarrow p = 7.5 \text{ cm}$$



15. In the figure given above, M is the mid-point of the side CD of the parallelogram ABCD. What is  $ON : OB$ ?

3 : 2

2 : 1

3 : 1

5 : 2

**Answer (b)**

In similar triangles ABN and DMN, since  $AB = 2DM$ ,  $AN = 2DN$  and  $BN = 2MN$

In similar triangles AOB and COM, since  $AB = 2CM$ ,  $AO = 2OC$  and  $BO = 2OM$

Lastly, in similar triangles AON and COB, since  $AO = 2OC$  and  $AN = 2BC$ ,  $\therefore BN = 2OB$   
 $\therefore ON : OB = 2 : 1$