

Exercise 15(D)

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1. A triangle ABC has been enlarged by scale factor $m = 2.5$ to the triangle $A' B' C'$. Calculate:

- (i) the length of AB, if $A' B' = 6$ cm.
- (ii) the length of $C' A'$ if $CA = 4$ cm.

Solution:

Given that, ΔABC has been enlarged by scale factor m of 2.5 to $\Delta A' B' C'$.

- (i) $A' B' = 6$ cm
So,
 $AB(2.5) = A' B' = 6$ cm
 $AB = 2.4$ cm

- (ii) $CA = 4$ cm
We know that,
 $CA(2.5) = C' A'$
 $C' A' = 4 \times 2.5 = 10$ cm

2. A triangle LMN has been reduced by scale factor 0.8 to the triangle $L' M' N'$. Calculate:

- (i) the length of $M' N'$, if $MN = 8$ cm.
- (ii) the length of LM, if $L' M' = 5.4$ cm.

Solution:

Given, ΔLMN has been reduced by a scale factor $m = 0.8$ to $\Delta L' M' N'$.

- (i) $MN = 8$ cm
So, $MN (0.8) = M' N'$
 $(8)(0.8) = M' N'$
 $M' N' = 6.4$ cm

- (ii) $L' M' = 5.4$ cm
So, $LM (0.8) = L' M'$
 $LM (0.8) = 5.4$
 $LM = 6.75$ cm

3. A triangle ABC is enlarged, about the point O as centre of enlargement, and the scale factor is 3.

Find:

- (i) $A' B'$, if $AB = 4$ cm.
- (ii) BC, if $B' C' = 15$ cm.
- (iii) OA, if $OA' = 6$ cm
- (iv) OC' , if $OC = 21$ cm

Also, state the value of:

- (a) OB'/OB
- (b) $C' A'/CA$

Solution:

Given that, ΔABC is enlarged and the scale factor $m = 3$ to the $\Delta A' B' C'$.

- (i) $AB = 4$ cm

$$\begin{aligned}\text{So, } AB(3) &= A'B' \\ (4)(3) &= A'B' \\ A'B' &= 12 \text{ cm}\end{aligned}$$

$$\begin{aligned}\text{(ii) } B'C' &= 15 \text{ cm} \\ \text{So, } BC(3) &= B'C' \\ BC(3) &= 15 \\ BC &= 5 \text{ cm}\end{aligned}$$

$$\begin{aligned}\text{(iii) } OA' &= 6 \text{ cm} \\ \text{So, } OA(3) &= OA' \\ OA(3) &= 6 \\ OA &= 2 \text{ cm}\end{aligned}$$

$$\begin{aligned}\text{(iv) } OC &= 21 \text{ cm} \\ \text{So, } OC(3) &= OC' \\ 21 \times 3 &= OC' \\ OC' &= 63 \text{ cm}\end{aligned}$$

The ratio of the lengths of the two corresponding sides of two triangles.

ΔABC is enlarged and the scale factor $m = 3$ to the $\Delta A'B'C'$

Hence,

- (a) $OB'/OB = 3$
(b) $C'A'/CA = 3$