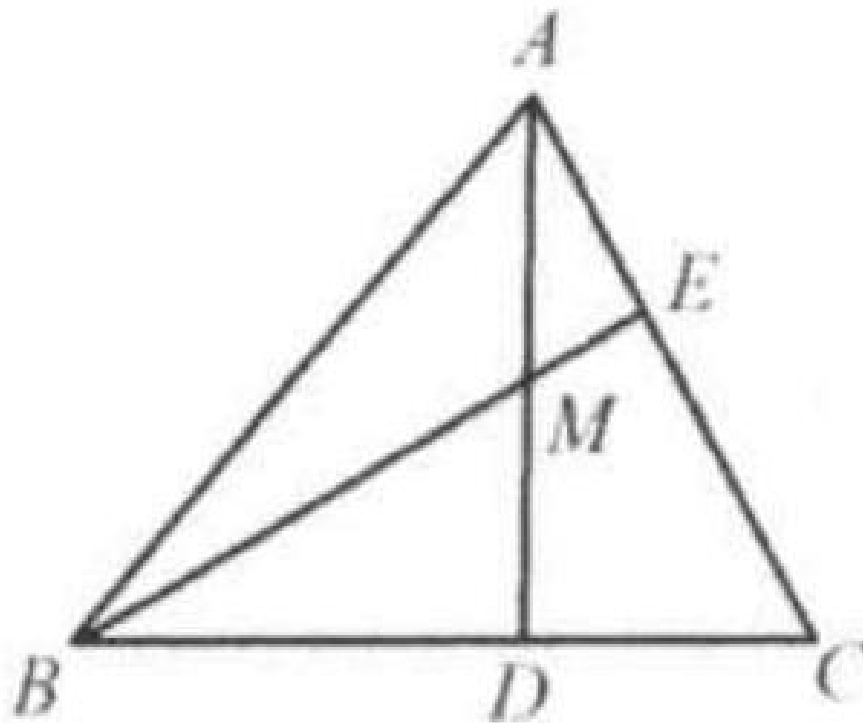


## Problem

In triangle  $ABC$ , a point  $D$  is taken on  $AB$  and a point  $E$  is taken on  $AC$  such that  $BD : DC = 3 : 2$ , and  $AE : EC = 3 : 4$ .  $AD$  and  $BE$  intersect at  $M$ .

Find the area of triangle  $AEM$  if the area of triangle  $ABC$  is 1 .



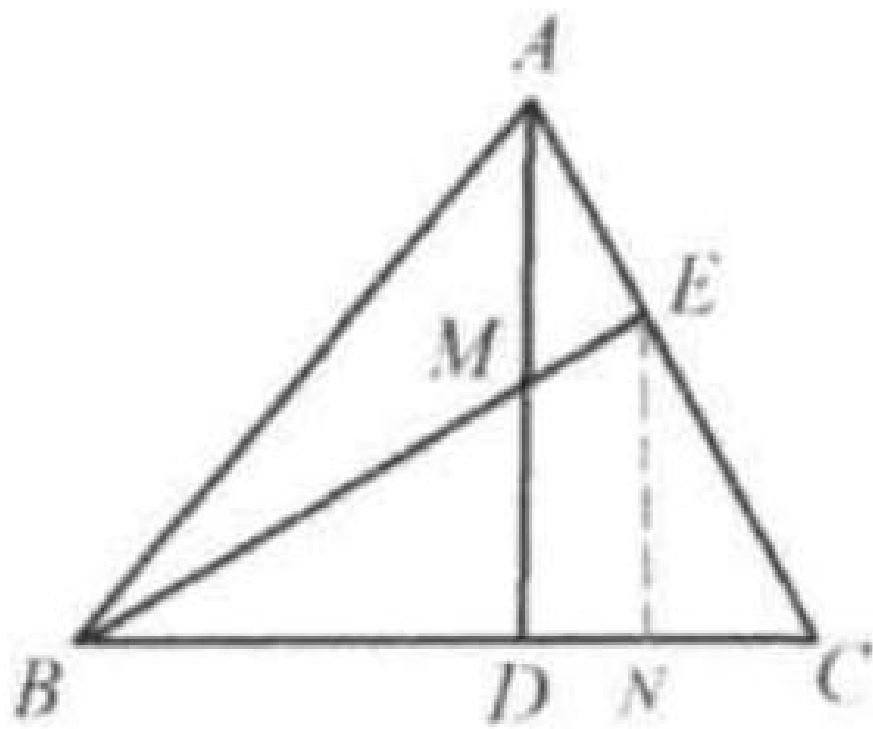
## Solution

Draw  $EN \parallel AD$  to meet  $BC$  at  $N$ .

Since  $BD : DC = 3 : 2$  and  $AE : EC = 3 : 4$ ,  $NC : DN : BD = 8 : 6 : 21$ . So

$$EM : MB = 6 : 21 = 2 : 7.$$

$$\text{We know that } \frac{S_{\triangle ABE}}{S_{\triangle ABC}} = \frac{3}{3+4} \Rightarrow S_{\triangle ABE} = \frac{3}{7} S_{\triangle ABC} = \frac{3}{7}.$$



$$S_{\triangle AEM} = \frac{2}{9}S_{\triangle ABE} = \frac{2}{9} \times \frac{3}{7} = \frac{2}{21}$$