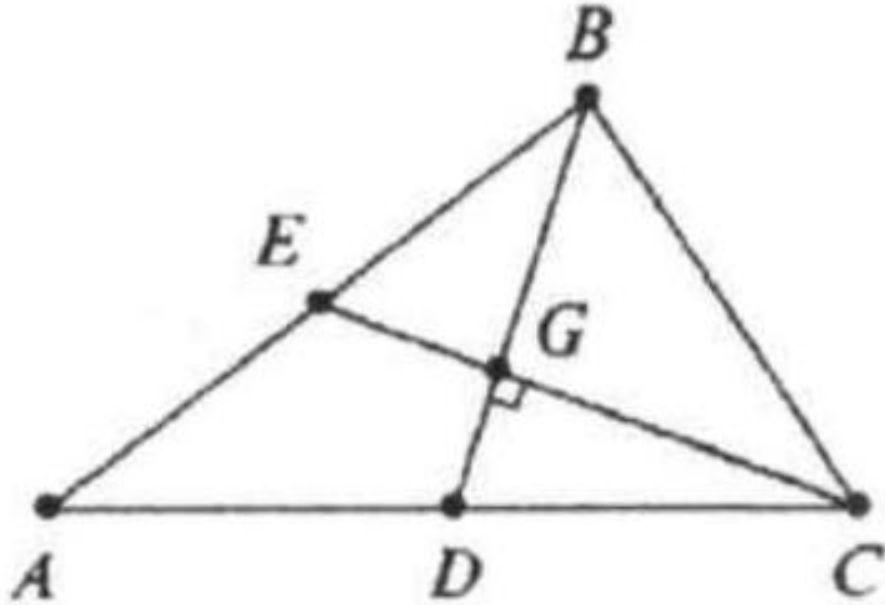


## Problem 3

### Problem

Medians  $BD$  and  $CE$  of a triangle  $ABC$  are perpendicular,  $CE = 24$  and the area of triangle  $ABC$  is 288 . Find the length of  $BD$ .



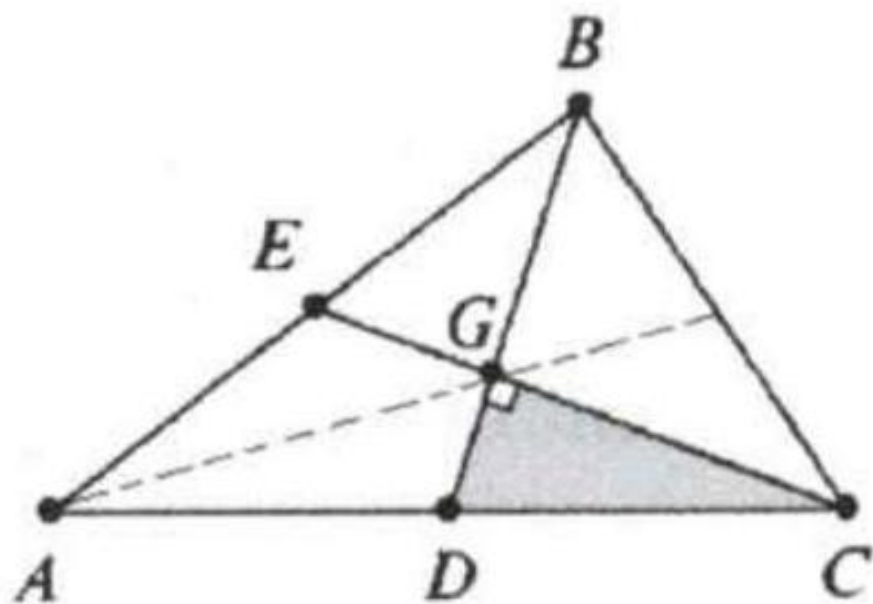
### Solution

18.

$$DG = \frac{1}{3}BD, \text{ and } CG = \frac{2}{3}CE = \frac{2}{3} \times 24 = 16$$

$$S_{\triangle CDGG} = \frac{1}{2}DG \times CG = \frac{1}{2} \times \frac{1}{3}BD \times 16 = \frac{8}{3}BD$$

$$\text{We know that } S_{\triangle CDG} = \frac{1}{6}S_{\triangle ABC}$$



$$\Rightarrow S_{\triangle CDG} = \frac{8}{3}BD = \frac{1}{6} \times 288 \Rightarrow BD = 18.$$