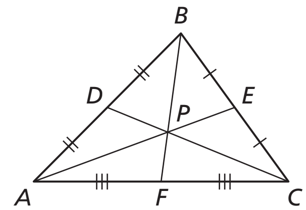
Name____ Date__________

6.3 Notetaking with Vocabulary (continued)

Theorems

Theorem 6.7 Centroid Theorem

The centroid of a triangle is two-thirds of the distance from each vertex to the midpoint of the opposite side.



The medians of $\triangle ABC$ meet at point P, and

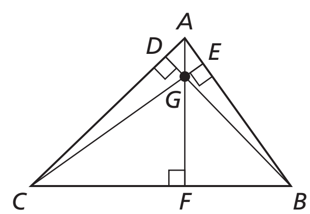
$AP = \frac{2}{3}AE$, $BP = \frac{2}{3}BF$, and $CP = \frac{2}{3}CD$.

Notes:

Core Concepts

Orthocenter

The lines containing the altitudes of a triangle are concurrent. This point of concurrency is the **orthocenter** of the triangle.



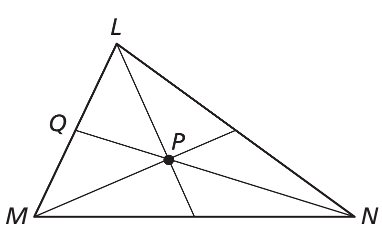
The lines containing $\overline{AF}$, $\overline{BD}$, and $\overline{CE}$ meet at the orthocenter G of $\triangle ABC$.

Notes:

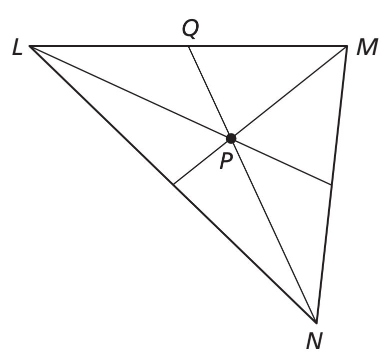
Extra Practice

In Exercises 1–3, point *P* is the centroid of $\triangle LMN$. Find *PN* and *QP*.

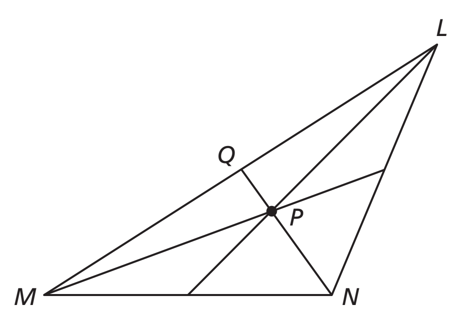
1. $QN = 33$



2. $QN = 45$



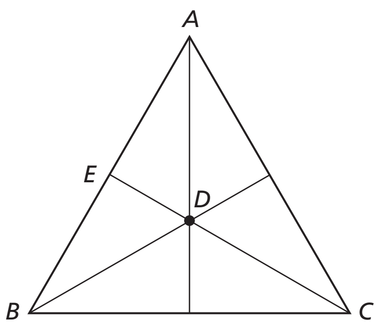
3. $QN = 39$



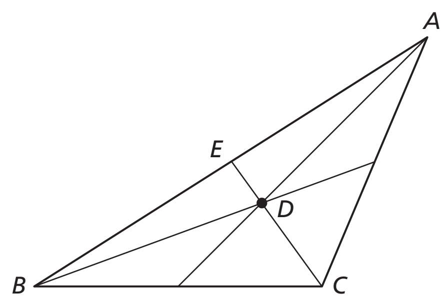
6.3 Notetaking with Vocabulary (continued)

In Exercises 4 and 5, point *D* is the centroid of $\triangle ABC$. Find *CD* and *CE*.

4. $DE = 7$



5. $DE = 12$



In Exercises 6–8, find the coordinates of the centroid of the triangle with the given vertices.

6. $A(-2, -1), B(1, 8), C(4, -1)$

7. $D(-5, 4), E(-3, -2), F(-1, 4)$

8. $J(8, 7), K(20, 5), L(8, 3)$

In Exercises 9–11, tell whether the orthocenter is *inside, on,* or *outside* the triangle. Then find the coordinates of the orthocenter.

9. $X(3, 6), Y(3, 0), Z(11, 0)$

10. $L(-4, -4), M(1, 1), N(6, -4)$

11. $P(3, 4), Q(11, 4), R(9, -2)$