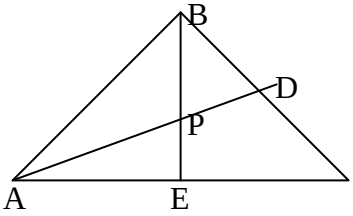
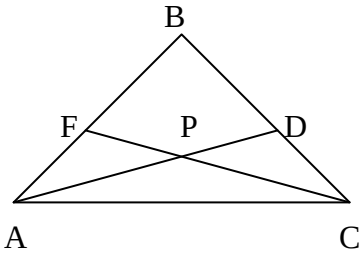
Centroid Exercises:

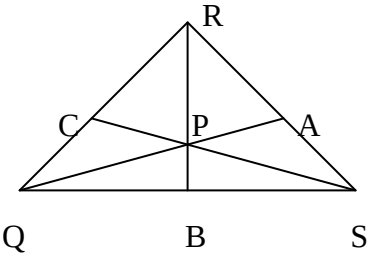
1. In ΔABC, medians $\overline{AD}$ and $\overline{BE}$ intersect at P.
   If BE = 3x and BP = 8x – 12, find BE, BP, and PE.



2. In ΔABC, medians $\overline{CF}$ and $\overline{AD}$ intersect at P.
   If CF = 6x and CP = 5x – 6, find CF, CP, and FP.

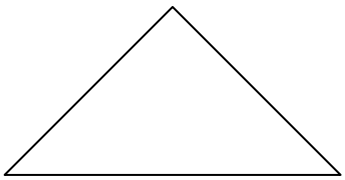


3. In ΔQRS with medians $\overline{QA}$, $\overline{RB}$, and $\overline{SC}$ are concurrent at point P. If QA = 15, find QP.



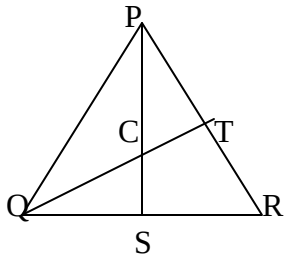
4. In ΔQRS with medians $\overline{QA}$, $\overline{RB}$, and $\overline{SC}$ are concurrent at point P. If RP = 6. Find PB.

5. In ΔABC, medians $\overline{AD}$, $\overline{BE}$, and $\overline{CF}$ are concurrent at point P. If AP = 18, find PD and AD.



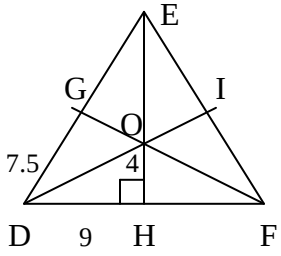
6. Given Δ ABC with medians $\overline{AM}$, $\overline{BN}$, and $\overline{CP}$ that intersect at T
   a) If AM = 9, find AT
   b) If TN = 5, find BN
   c) If TC = 8, find PT
   d) If BN = $\sqrt{18}$, find TN

7. In Δ PQR, medians $\overline{QT}$ and $\overline{PS}$ are concurrent at C.
   If PC = 4x – 6 and CS = x, find a) x
   b) PS



8. O is the centroid of Δ DEF, $\overline{EH} \perp \overline{DF}$, DH = 9, DG = 7.5, and OH = 4

   a) Find the length of HF
   b) Find the length of EO
   c) Find the ratio of OI to OD
   d) Find the ratio of OI to ID
   e) Given DE = EF, find the perimeter of Δ DEF



9. Given Δ ABC with coordinates A(0,0), B(4,0), and C(2,6), show that the medians of Δ ABC all intersect at (2,2).

10. Given Δ PQR with P(0,0), Q(5,12), and R(10,0), find the coordinates of its centroid.

Thought Question: Why is the centroid known as the "center of gravity"?