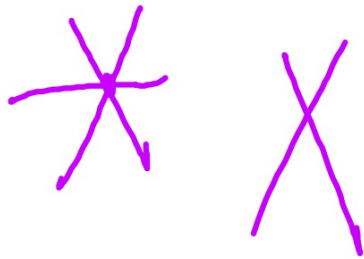


**SECTION 10.3:
CONCURRENT LINES**

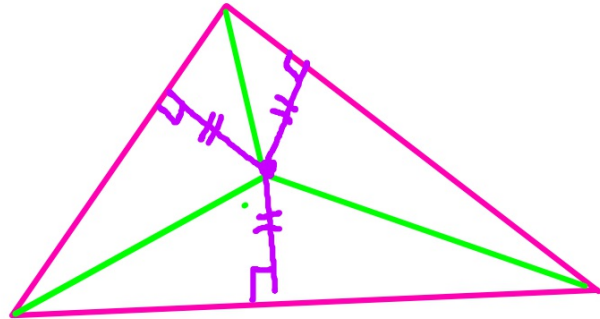
CONCURRENT

When two or more lines intersect in one point, the lines are concurrent.



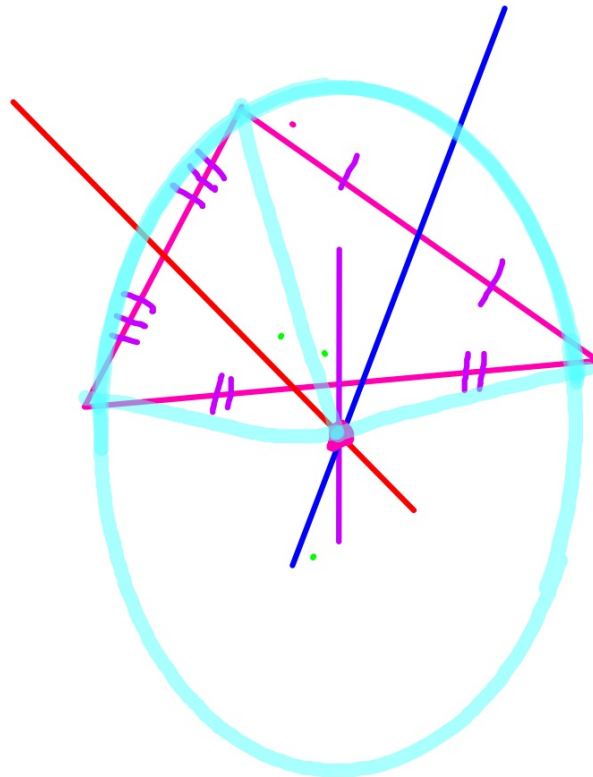
THEOREM

The bisectors of the angles of a triangle intersect in a point that is equidistant from the 3 sides of the triangle.



THEOREM

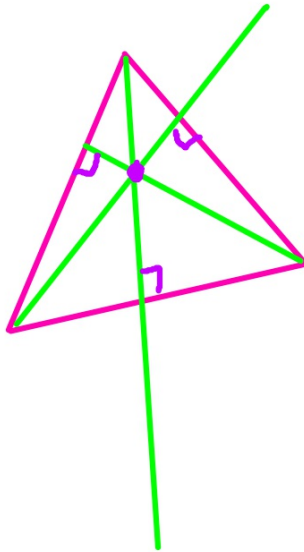
The perpendicular bisectors of the sides of a triangle intersect in a point that is equidistant from the 3 vertices.



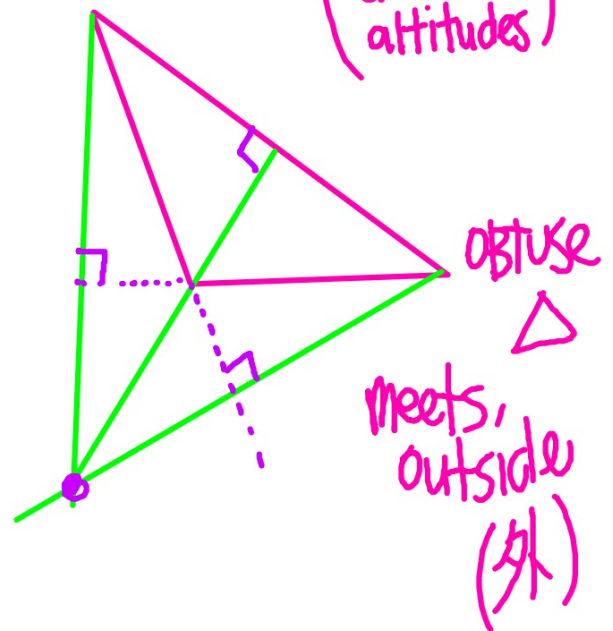
THEOREM

The lines that contain the altitudes of a triangle intersect in a point.

acute \triangle
meets
(ϕ) inside



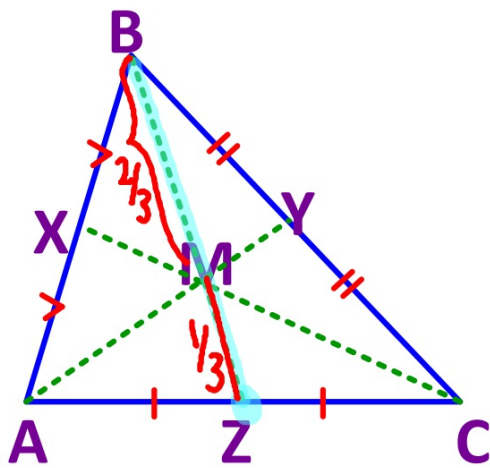
(Green lines
are
altitudes)



obtuse \triangle
meets
outside
(外)

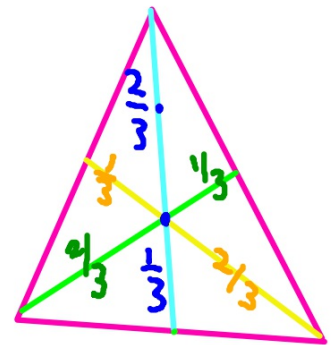
THEOREM

The medians of a triangle intersect in a point that is two thirds of the distance from each vertex to the midpoint of the opposite side.



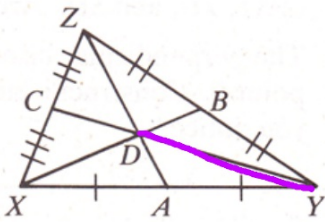
$$AM = \frac{2}{3} (AY)$$

$$MY = \frac{1}{3} (AY)$$



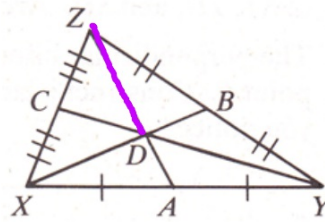
I-6: \overline{ZA} , \overline{CY} , and \overline{XB} are medians of $\triangle XYZ$ intersecting at D .

1) If $YD = 6$, then $DC = 3$.



$$9 - 6 = 3$$

2) If $DZ = 8$, then $AZ = 12$.



$$\frac{2}{3} = \frac{6}{x} \quad 2x = 18$$

$$x = 9$$

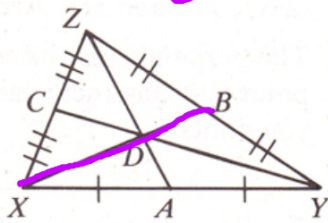


$$\frac{2}{3} = \frac{8}{x} \quad 2x = 24$$

$$x = 12$$

I-6: \overline{ZA} , \overline{CY} , and \overline{XB} are medians of $\triangle XYZ$ intersecting at D .

3) If $XB = 5$, then $DB = \frac{5}{3} = 1\frac{2}{3}$

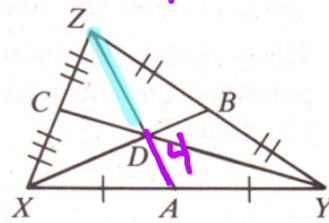


$$\frac{1}{3} = \frac{x}{5}$$

$$3x = 5$$

$$x = \frac{5}{3}$$

4) If $AD = 4$, then $DZ = \frac{4}{3}$ and $AZ = 12$.



$AZ = 12$
 $12 - 4$

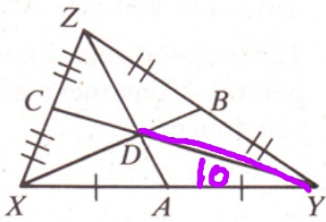


$$\frac{1}{3} = \frac{4}{x}$$

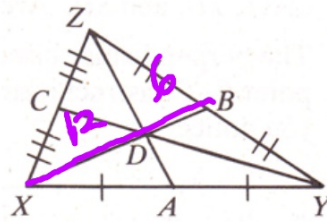
$$Ax = 12$$

I-6: \overline{ZA} , \overline{CY} , and \overline{XB} are medians of $\triangle XYZ$ intersecting at D .

5) If $YD = 10$, then $DC = 5$ and $YC = 15$.



6) If $XB = 18$, then $XD = 12$ and $DB = 6$.



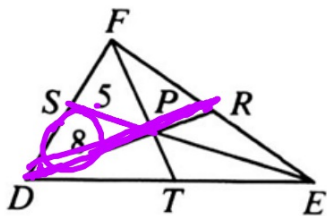
$$\frac{2}{3} = \frac{10}{x} \quad \text{XC} = 15$$



$$\frac{1}{3}(18) \quad \frac{2}{3}(18)$$

7-8: The medians of $\triangle DEF$ are shown. Find the lengths indicated.

7) $EP = 10$ and $PR = 4$



$$\frac{2}{3} = \frac{8}{DR}$$

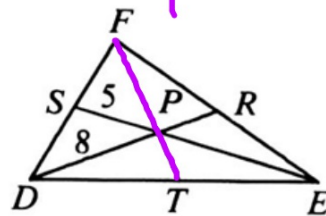
$$\frac{1}{3} = \frac{5}{x} \quad (SE)$$

$$x = 15$$

$$2 \cdot DR = 24$$

$$DR = 12$$

8) If $FT = 9$, then $PT = 3$ and $FP = 6$.



$$\frac{1}{3}(9)$$

HOMEWORK

Assignment #10.3

- **10.2c Worksheet**
- **Pages 388-389 #2-5, 12-14**

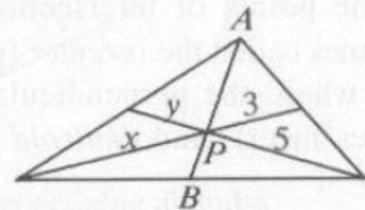
****TUES MAY 8 - QUIZ CHAPTER 10****

****THURS MAY 10 - TEST CHAPTER 10****

■ HW 10.3 Pages 388-389 #2-5, 12-14

Exercises 2–5 refer to the diagram in which the medians of a triangle are shown.

2. Find the values of x and y .
3. If $AB = 6$, then $BP = \underline{\quad?}$ and $AP = \underline{\quad?}$.
4. If $AB = 7$, then $BP = \underline{\quad?}$ and $AP = \underline{\quad?}$.
5. If $PB = 1.9$, then $AP = \underline{\quad?}$ and $AB = \underline{\quad?}$.



\overline{AU} , \overline{BV} , and \overline{CW} are the medians of $\triangle ABC$.

12. If $AP = x^2$ and $PU = 2x$, then $x = \underline{\quad?}$.
13. If $BP = y^2 + 1$ and $PV = y + 2$, then $y = \underline{\quad?}$ or $y = \underline{\quad?}$.
14. If $CW = 2z^2 - 5z - 12$ and $CP = z^2 - 15$, then $z = \underline{\quad?}$ and $PW = \underline{\quad?}$.

