Lesson 5.1 - 5.3 Review

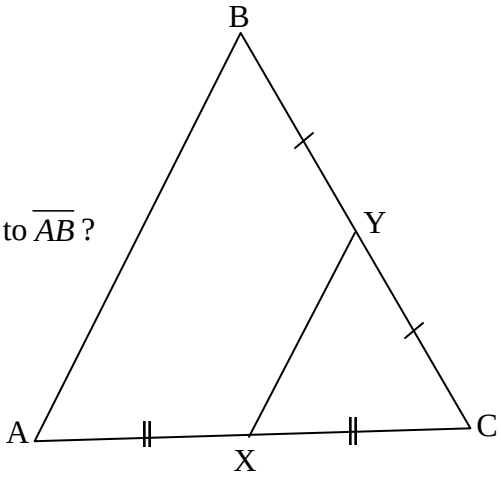
1) Classify $\overline{XY}$: midsegment of ΔABC

2) What two things can we say about how $\overline{XY}$ relates to $\overline{AB}$?

a) $\overline{XY} \parallel \overline{AB}$

b) $2 \cdot XY = AB$

Thm 5-1



---

3) Classify pt. X: midpoint of $\overline{AB}$

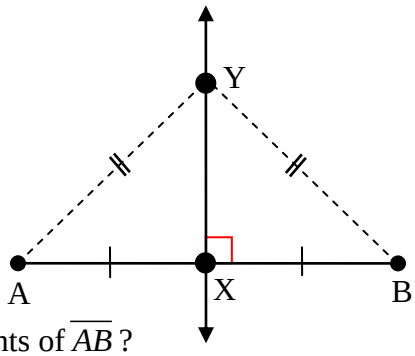
4) Classify $\overline{XY}$: perpendicular bisector of $\overline{AB}$

5) What can we say about any pt. on $\overline{XY}$?

It is equidistant from the endpoints of $\overline{AB}$ (Thm 5.2)

6) What can we say about any pt. equidistant from the endpoints of $\overline{AB}$?

It is on the perpendicular bisector of $\overline{AB}$ (Thm 5.3)



---

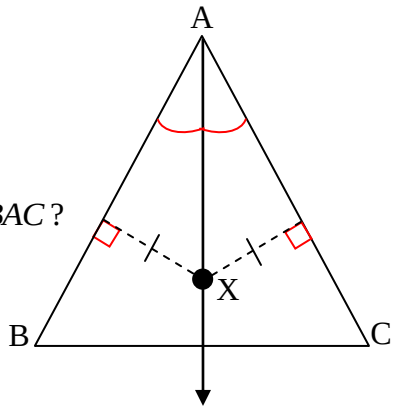
7) Classify $\overrightarrow{AX}$: $\angle$ bisector of $\angle BAC$

8) What can we say about any pt. on $\overrightarrow{AX}$?

It is equidistant from the sides of $\angle BAC$ (Thm 5.4)

9) What can we say about any pt. equidistant from the sides of $\angle BAC$?

It is on the angle bisector of $\angle BAC$ (Thm 5.5)



Lesson 5.1 - 5.3 Review

10) Classify the red lines meeting at pt. *X*

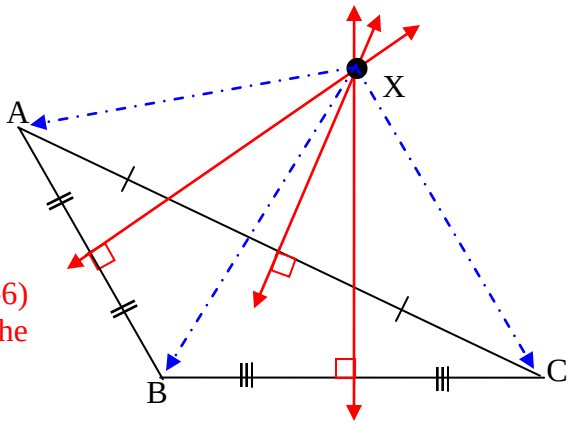
Perpendicular bisectors

11) Classify pt. *X*

Circumcenter of ΔABC (Thm 5-6)

12) How does pt. *X* relate to ΔABC?

It is equidistant from the vertices. (Thm 5-6)
It is the center of a circle whose radius is the distance from *X* to a vertex.



13) What do we call the circle whose center is *X* and radius is the distance from *X* to a vertex?

The circumscribed circle.

---

14) Classify the red lines meeting at pt. *X*.

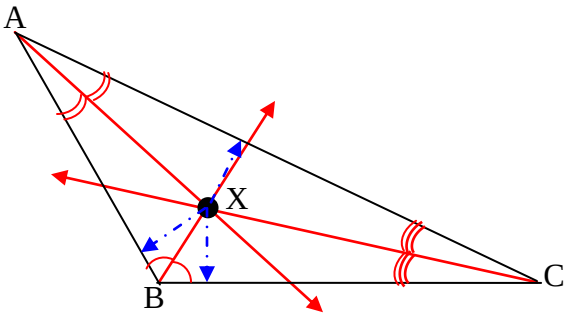
Angle bisectors

15) Classify pt. *X*.

Incenter of ΔABC (Thm 5-7)

16) How does pt. *X* relate to ΔABC?

It is equidistant from the sides. (Thm 5-7)
It is the center of a circle whose radius is the distance from *X* to a side.



17) What do we call the circle whose center is *X* and radius is the distance from *X* to a side?

The inscribed circle.

---

18) Classify the red lines meeting at pt. *X*.

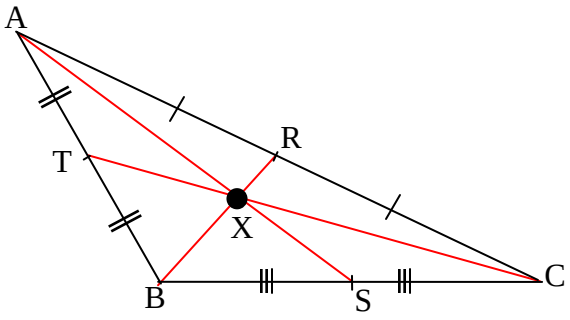
Medians

19) Classify pt. *X*.

Centroid ΔABC (Thm 5-8)

20) How does pt. *X* relate to ΔABC?

Pt. *X* is $\frac{2}{3}$ of the distance from the vertex to the midpoint of the opposite side (Thm 5-8)
It is also the "balance point" of the triangle…its center of gravity.



Lesson 5.1 - 5.3 Review

21) Classify the red lines meeting at pt. *X*.

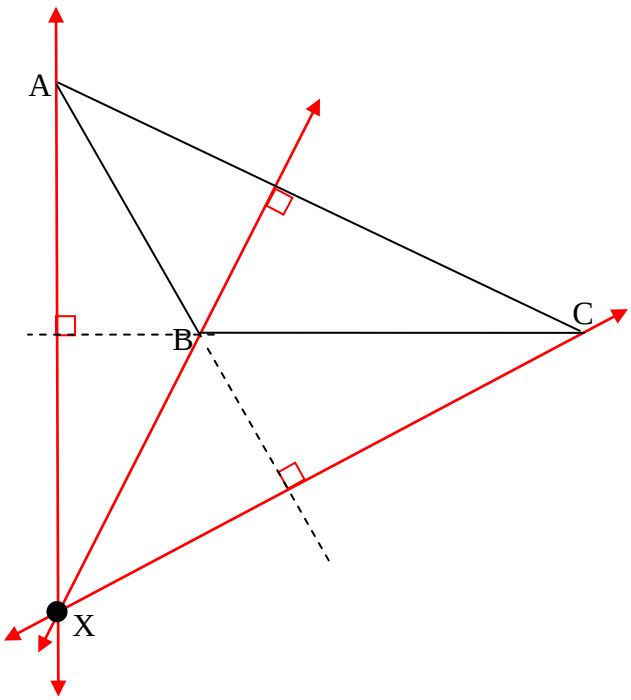
Altitudes of ΔABC

22) Classify pt. *X*.

Orthocenter of ΔABC (Thm 5-9)

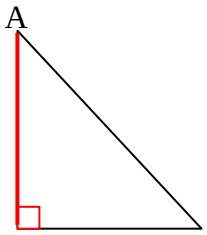
23) For an obtuse triangle, can an altitude lie inside the triangle, on a side, or outside the triangle?

Outside & inside (see this diagram →)



24) For a right triangle, does the altitude for a leg lie inside the triangle, on the leg, or outside the triangle?

It is the leg of the triangle.



25) For an acute triangle, do the altitudes lie inside the triangle, on a side, or outside the triangle?

Inside