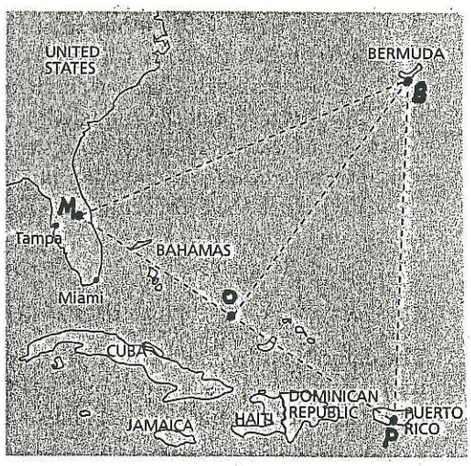
5.1-3 WS #1

Bermuda Triangle In Exercises 1–6, use the map of the Bermuda Triangle and the given information to decide whether $\overline{OB}$ is a perpendicular bisector, an angle bisector, a median, or an altitude of $\triangle MBP$.

1. Given: $\overline{MO} \cong \overline{OP}$ Median
2. Given: $\overline{OB} \perp \overline{MP}$ altitude
3. Given: $\angle MBO \cong \angle PBO$ angle bisector
4. Given: $\overline{OB} \perp \overline{MP}$ and $\overline{MO} \cong \overline{OP}$ PB, med, alt
5. Given: $\triangle MOB \cong \triangle POB$ all 4
6. Given: $\overrightarrow{BO}$ bisects $\angle MBP$ angle bisector

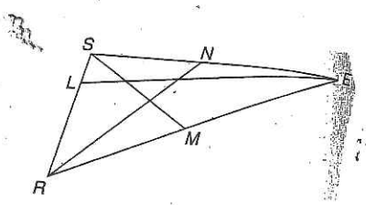


The Bermuda Triangle is a region in the Atlantic Ocean where many ships and airplanes have had accidents.

In Exercises 7–10, complete the statement using *always, sometimes,* or *never.*

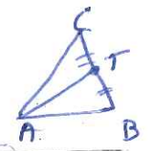
7. A median A has a midpoint as an endpoint.
8. An altitude S lies outside a triangle.
9. A perpendicular bisector S has a vertex as an endpoint.
10. The angle bisectors of a triangle A intersect at a single point.

Refer to $\triangle RES$. Write at least one conclusion you can make from each statement.



Example answer

11. $\overline{SM}$ is an altitude to $\overline{RE}$. $\angle SME = 90°$
12. $\overline{SN} \cong \overline{NE}$ $\overline{NR}$ is a median
13. M is equidistant from R and E, and $\angle RMS$ is a right angle. $\overline{SM}$ is a perp. bisector
14. $\angle ERN \cong \angle SRN$ $\overline{RN}$ is an angle bisector
15. $\overline{EL} \perp \overline{SR}$ $\overline{LE}$ is an altitude
16. $\triangle ABC$ has vertices $A(-3, -9)$, $B(5, 11)$, and $C(9, -1)$. $\overline{AT}$ is a median of $\triangle ABC$ with T on $\overline{BC}$.
    a. What are the coordinates of T? (7, 5)
    b. Find the slope of $\overline{AT}$. $\frac{7}{5}$
    c. Is $\overline{AT}$ an altitude of $\triangle ABC$? Explain. not (7/5 compared to −3)

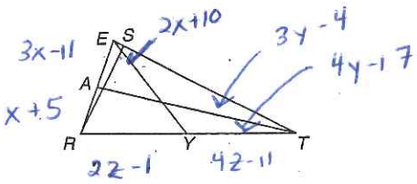


BC slope $\frac{11 - -1}{5 - 9} = \frac{12}{-4} = \frac{-3}{1}$

AT slope $\frac{-9 - 5}{-3 - 7} = \frac{-14}{-10} = \frac{7}{5}$

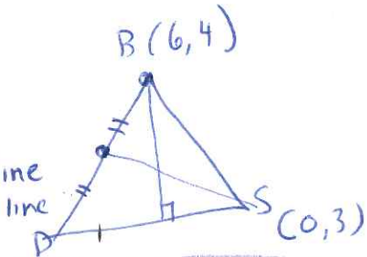
#17-19, Use the diagram of ΔRTE. Label these parts: AE=3x -11, AR = x + 5, RY = 2z -1, YT = 4z - 11, m<RTA = 4y -17, m<ATE = 3y - 4 and m<RST = 2x + 10

17. $\overline{RS}$ is an altitude of ΔRTE. Solve for x.
    $2x + 10 = 90$
    $2x = 80$
    $x = 40$



18. If $\overline{TA}$ is an angle bisector of $\angle RTE$, find $m\angle RTA$.
    $3y - 4 = 4y - 17$
    $13 = y$
    $4(13) - 17$
    $52 - 17 = 35°$
19. $\overline{EY}$ is a median of ΔRTE. Find RT.
    $2z - 1 = 4z - 11$
    $10 = 2z$
    $5 = z$
    $2(5) - 1 = 9$
    18

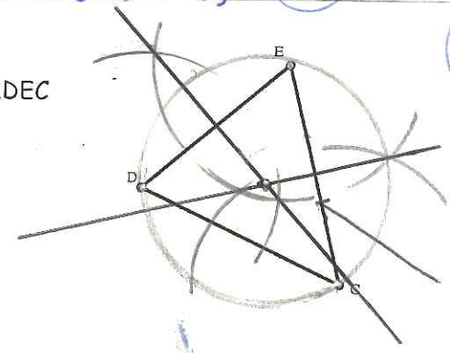
#20-21, ΔDSB has vertices of: D(4,1) S(0,3) B(6,4)
Find the equation of the indicated segment. Show your work. A sketch may help.



20. Altitude of $\overline{DS}$ (6,4) on line
    $\frac{3-1}{0-4} = \frac{2}{-4} = -\frac{1}{2}$ 2 = slope
    $y - 4 = 2(x - 6)$

21. Median of $\overline{DB}$ (0,3) on line
    $\frac{6+4}{2}$ $\frac{4+1}{2}$ (5, 2.5) on line
    $\frac{3 - 2.5}{0 - 5} = \frac{.5}{-5} = \frac{-1}{10}$
    $y - 3 = -\frac{1}{10}(x - 0)$
    or
    $y - 2.5 = \frac{-1}{10}(x - 5)$

22. Construct a circle that circumscribes for ΔDEC



circumcenter