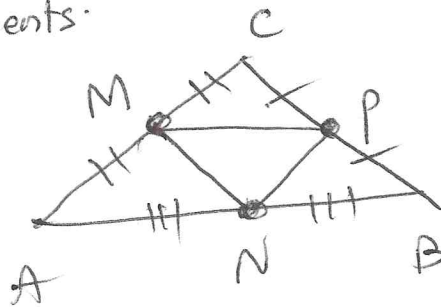


5.1 MID-SEGMENT THEOREM

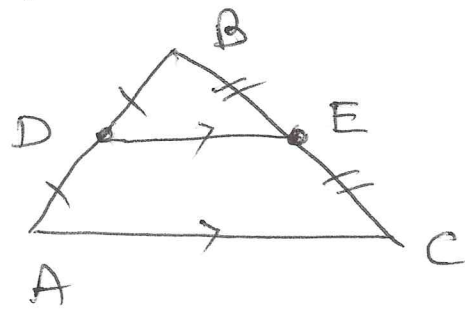
MR. REDDY'S
NOTES

1) MID-SEGMENT OF A TRIANGLE IS A SEGMENT THAT CONNECTS THE MID POINTS OF TWO SIDES OF THE TRIANGLE. Every Triangle has three mid-segments.

THE MID-SEGMENTS OF $\triangle ABC$ at the right are \overline{MP} , \overline{MN} and \overline{NP}



2) MID-SEGMENT THEOREM I - THE SEGMENT CONNECTING THE MIDPOINTS OF TWO SIDES OF A TRIANGLE IS PARALLEL TO THE THIRD SIDE AND IS HALF AS LONG AS THAT SIDE.



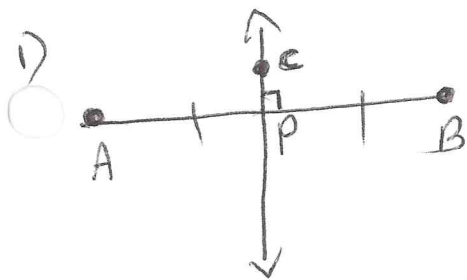
$$\overline{DE} \parallel \overline{AC}$$

$$DE = \frac{1}{2} AC \text{ OR}$$

$$AC = 2DE$$

3) Mid-point formula
 (x_1, y_1) (x_2, y_2)
 $\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$

4) Distance between two points (x_1, y_1) (x_2, y_2)
 $\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

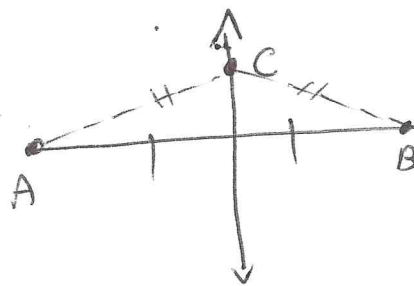


1) \overleftrightarrow{CP} is \perp bisector of \overline{AB}

2) $\overline{AP} = \overline{PB}$

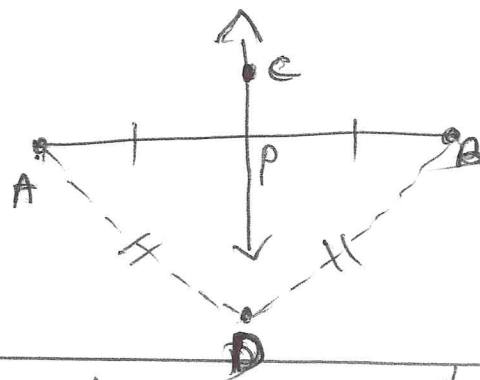
2) PERPENDICULAR BISECTOR THEOREM:- In a plane, if a point is on the perpendicular bisector of a segment, then it is equidistant from the end points of the segment.

IF \overleftrightarrow{CP} is the \perp bisector of \overline{AB} , then $\overline{CA} = \overline{CB}$.



3) In a plane, if a point is equidistant from the end points of a segment, then it is on the perpendicular bisector of the segment.

IF $\overline{DA} = \overline{DB}$, then D lies on the \perp bisector of \overline{AB} .

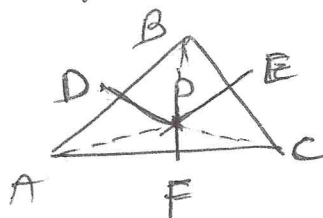


4) THE POINT OF CONCURRENCY OF \perp bisectors of a triangle

is called circum centre.

IF \overline{PD} , \overline{PE} , \overline{PF} are \perp bisectors,

then $\overline{PA} = \overline{PB} = \overline{PC}$



$$\text{MIDSEGMENT} = \frac{1}{2} \text{ LENGTH}$$

Name _____

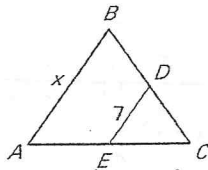
Date _____

LESSON 5.1 Practice
For use with pages 294-301

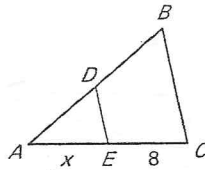
\overline{DE} is a midsegment of $\triangle ABC$. Find the value of x .

(MIDPOINT \rightarrow MIDPOINT)

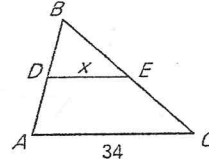
1.



2.



3.



In $\triangle JKL$, $\overline{JR} \cong \overline{RK}$, $\overline{KS} \cong \overline{SL}$, and $\overline{JT} \cong \overline{TL}$. Copy and complete the statement.

4. $\overline{RS} \parallel$?

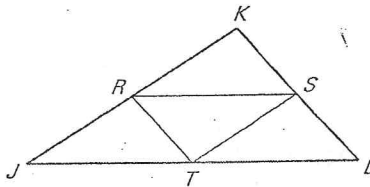
5. $\overline{ST} \parallel$?

6. $\overline{KL} \parallel$?

7. $\overline{SL} \cong$? \cong ?

8. $\overline{JR} \cong$? \cong ?

9. $\overline{JT} \cong$? \cong ?

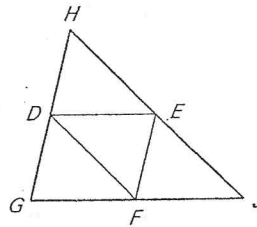


Use $\triangle GHJ$, where D , E , and F are midpoints of the sides.

14. If $DE = 4x + 5$ and $GJ = 3x + 25$, what is DE ?

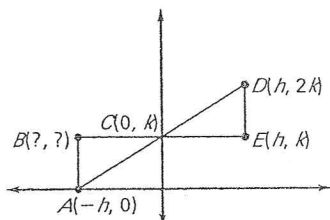
15. If $EF = 2x + 7$ and $GH = 5x - 1$, what is EF ?

16. If $HJ = 8x - 2$ and $DF = 2x + 11$, what is HJ ?

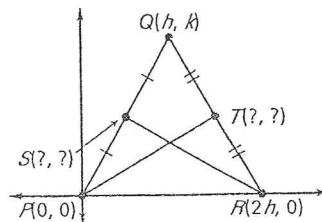


Find the unknown coordinates of the point(s) in the figure. Then show that the given statement is true.

17. $\triangle ABC \cong \triangle DEC$



18. $\overline{PT} \cong \overline{SR}$



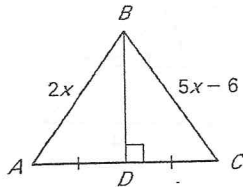
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Date _____

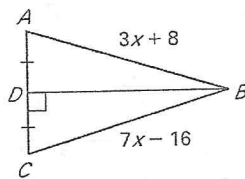
LESSON 5.2 Practice
For use with pages 303-309

Find the length of \overline{AB} .

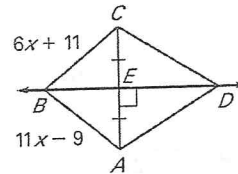
1.



2.



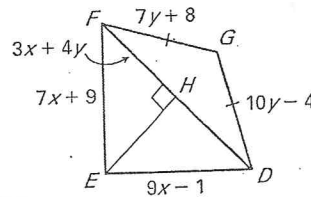
3.



Use the diagram. \overline{EH} is the perpendicular bisector of \overline{DF} . Find the indicated measure.

7. Find EF .

8. Find DE .



9. Find FG .

10. Find DG .

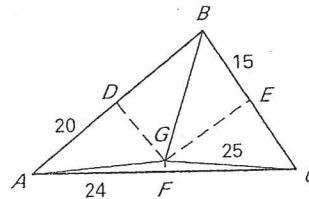
11. Find FH .

12. Find DF .

In the diagram, the perpendicular bisectors of $\triangle ABC$ meet at point G and are shown dashed. Find the indicated measure.

13. Find AG .

14. Find BD .



15. Find CF .

16. Find BG .

17. Find CE .

18. Find AC .