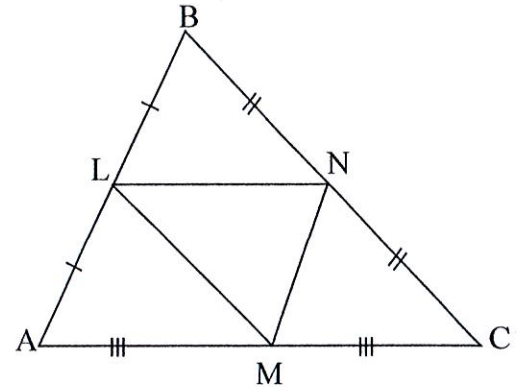


Name _____ Date _____

Day 2 – Triangle Midsegment and Proportionality Theorem

Triangle Midsegment Theorem: The segment connecting the midpoints of two sides of the triangle is parallel to the third side and half the length of the third side.

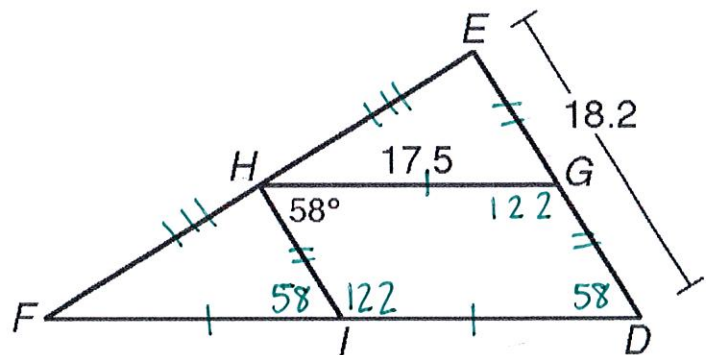
Use $\triangle ABC$, where L, M, and N are midpoints of the sides.



1. $\overline{LM} \parallel \underline{BC}$
2. $\overline{AB} \parallel \underline{MN}$
3. If $AC = 20$, then $LN = \underline{10}$
4. If $MN = 7$, then $AB = \underline{14}$
5. If $NC = 9$, then $LM = \underline{9}$
6. If $LM = 3x + 7$, and $BC = 7x + 6$, then $LM = \underline{31}$
 $2(3x+7) = 7x+6$ $LM = 3x+7$
 $6x+14 = 7x+6$ $= 3(8)+7$
 $-x = -8$ $\boxed{LM = 31}$
 $\boxed{x = 8}$
7. If $MN = x - 1$, and $AB = 6x - 18$, then $AB = \underline{6}$
 $2(x-1) = 6x-18$ $AB = 6x-18$
 $2x-2 = 6x-18$ $= 6(4)-18$
 $-4x = -16$ $\boxed{AB = 6}$
 $\boxed{x = 4}$

8. Find each measure. H, G, and I are all midpoints.

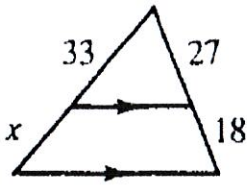
- a) $HI \underline{9.1}$ b) $DF \underline{35}$
- c) $GE \underline{9.1}$ d) $m\angle HIF \underline{58^\circ}$
- e) $m\angle HGD \underline{122^\circ}$ f) $m\angle D \underline{58^\circ}$



Triangle Proportionality Theorem: If a line parallel to one side of a triangle intersects the other two sides, then it divides the two sides proportionally.

Find the value of x:

9.

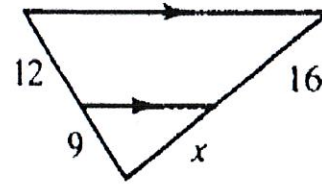


$$\frac{33}{x} = \frac{27}{18}$$

$$27x = 594$$

$$x = 22$$

10.

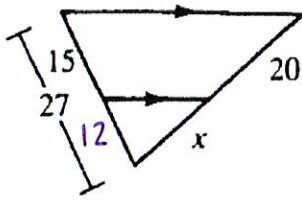


$$\frac{12}{9} = \frac{16}{x}$$

$$12x = 144$$

$$x = 12$$

11.



$$\frac{15}{12} = \frac{20}{x}$$

$$15x = 240$$

$$x = 16$$

12.

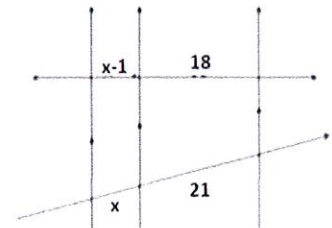
$$\frac{18}{x-1} = \frac{21}{x}$$

$$18x = 21(x-1)$$

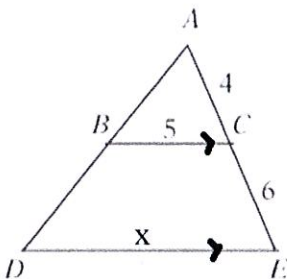
$$18x = 21x - 21$$

$$-3x = -21$$

$$x = 7$$



13.

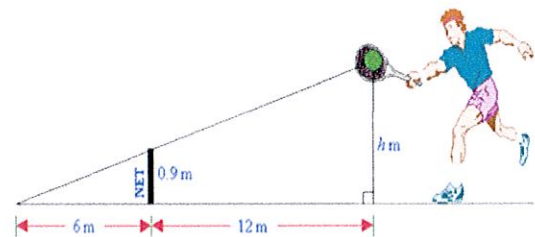


$$\frac{4}{5} = \frac{10}{x}$$

$$4x = 50$$

$$x = 12.5$$

14.



$$\frac{0.9}{6} = \frac{h}{18}$$

$$6h = 16.2$$

$$h = 2.7$$