Name ______________________________ Date ______________

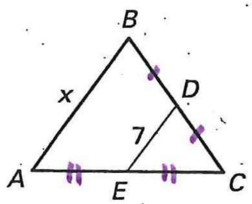
LESSON 5.1

Practice

For use with pages 294–301

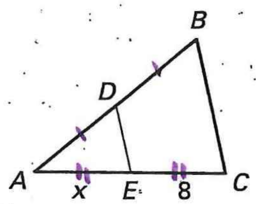
$\overline{DE}$ is a midsegment of $\triangle ABC$. Find the value of x.

1.



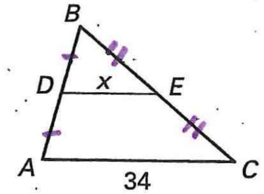
AB = 2(DE)
X = 2(7)
$\boxed{X = 14}$

2.



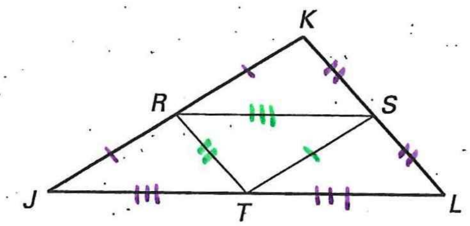
AE = EC
$\boxed{X = 8}$

3.



DE = ½(AC)
DE = ½(34)
$\boxed{DE = 17}$

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. $\overline{RS} \parallel$ _?_ $\overline{JL}$

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

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

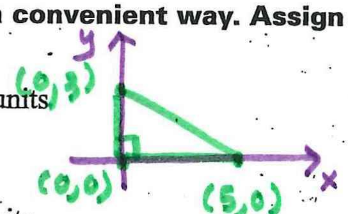
7. $\overline{SL} \cong$ _?_ $\overline{KS}$ $\cong$ _?_ $\overline{RT}$

8. $\overline{JR} \cong$ _?_ $\overline{RK}$ $\cong$ _?_ $\overline{TS}$

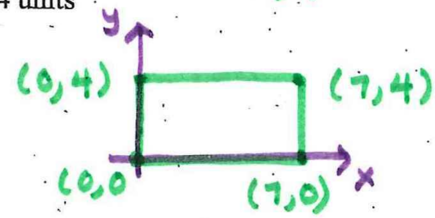
9. $\overline{JT} \cong$ _?_ $\overline{TL}$ $\cong$ _?_ $\overline{RS}$

Place the figure in a coordinate plane in a convenient way. Assign coordinates to each vertex.

10. Right triangle: leg lengths are 5 units and 3 units



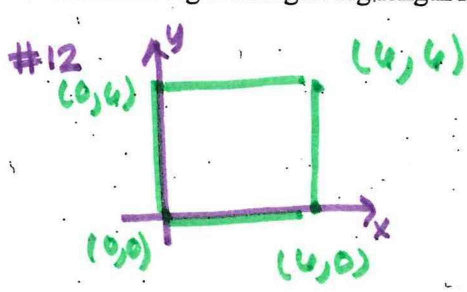
11. Rectangle: length is 7 units and width is 4 units



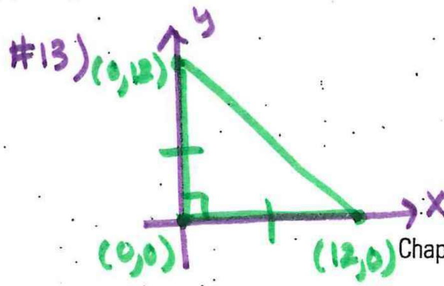
12. Square: side length is 6 units

13. Isosceles right triangle: leg length is 12 units

#12



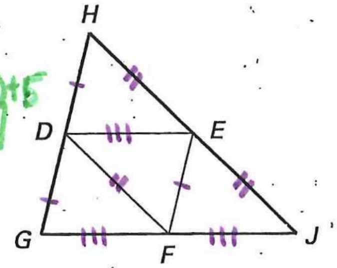
#13



Name ______________________ Date ______________

LESSON 5.1 **Practice** *continued* Third side = 2(midsegment)
For use with pages 294–301

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?

$GJ = 2(DE)$ $3x+25 = 8x+10$ $x = 3$
$3x+25 = 2(4x+5)$ $-5x+25 = 10$ $DE = 4(3)+5$
$-5x = -15$ $\boxed{DE = 17}$

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

$GH = 2(EF)$ $5x-1 = 4x+14$ $x = 15$
$5x-1 = 2(2x+7)$ $x-1 = 14$ $EF = 2(15)+7$
$\boxed{EF = 37}$

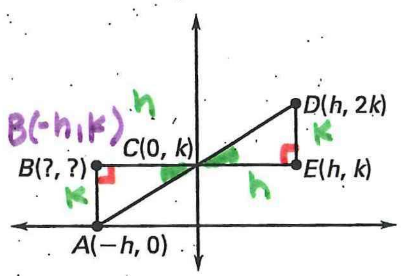
16. If $HJ = 8x - 2$ and $DF = 2x + 11$, what is HJ?

$HJ = 2(DF)$ $8x-2 = 4x+22$ $x = 6$
$8x-2 = 2(2x+11)$ $4x-2 = 22$ $HJ = 8(6)-2$
$4x = 24$ $\boxed{HJ = 46}$

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

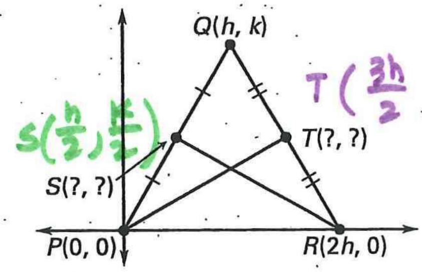
$m = \left(\dfrac{x_1+x_2}{2}, \dfrac{y_1+y_2}{2}\right)$

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



$B(-h, k)$ $\angle ACB \cong \angle DCE$ VA

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

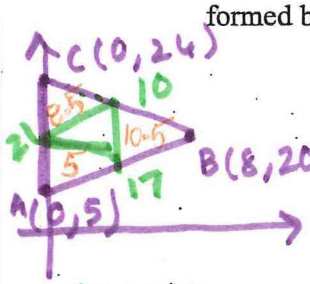


$S(\text{midpoint}) = \left(\dfrac{0+h}{2}, \dfrac{0+k}{2}\right)$ $S\left(\dfrac{h}{2}, \dfrac{k}{2}\right)$

$T(\text{midpoint}) = \left(\dfrac{h+2h}{2}, \dfrac{k+0}{2}\right)$ $T\left(\dfrac{3h}{2}, \dfrac{k}{2}\right)$

19. The coordinates of $\triangle ABC$ are $A(0, 5)$, $B(8, 20)$, and $C(0, 26)$. Find the length of each side and the perimeter of $\triangle ABC$. Then find the perimeter of the triangle formed by connecting the three midsegments of $\triangle ABC$.

$d = \sqrt{(x_2-x_1)^2 + (y_2-y_1)^2}$



$AC = |5-26|$

$AC = 21$

$AB = \sqrt{(8-0)^2 + (20-5)^2}$
$= \sqrt{(8)^2 + (15)^2}$
$= \sqrt{64+225}$
$= \sqrt{289}$
$= 17$

$BC = \sqrt{(8-0)^2 + (20-26)^2}$
$= \sqrt{(8)^2 + (6)^2}$
$= \sqrt{64+36}$
$= \sqrt{100}$
$BC = 10$

$P(\triangle ABC) = 21 + 10 + 17$
$= 48$

$P(\triangle \text{midsegments}) = \dfrac{48}{2}$ $\boxed{=24}$