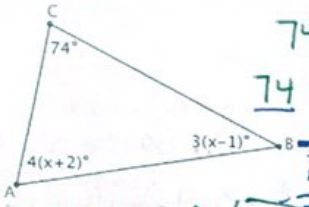
Name Key _____ Period _____

Secondary 2 Honors **Proving Theorems about Triangles** **Assignment 1.2**

Determine the measure of each identified angles.

1. Find $m\angle A$ and $m\angle B$



$74 + 4(x+2) + 3(x-1) = 180°$

$74 + 4x + 8 + 3x - 3 = 180°$

$79 + 7x = 180°$

$-79 \quad -79$

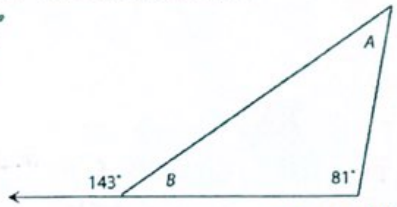
$\frac{7x}{7} = \frac{101}{7}$

$x = 14.4$

$m\angle A = 4(14.4+2) = 65.6°$

$m\angle B = 3(14.4-1) = 40.2$

2. Find $m\angle A$ and $m\angle B$



$m\angle A + 81° = 143$

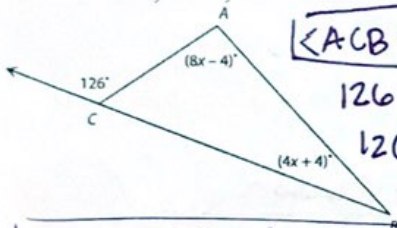
$m\angle A = 62°$

$m\angle B + 143 = 180°$

$-143 \quad -143$

$m\angle B = 37$

3. Find $m\angle A$, $m\angle B$, and $m\angle ACB$



$m\angle ACB = 54°$

$126 = 8x - 4 + 4x + 4$

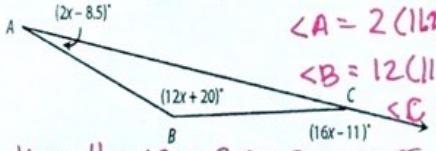
$126 = 12x$

$10.5 = x$

$m\angle A = 8(10.5) - 4 = 80°$

$m\angle B = 4(10.5) + 4 = 46°$

4. Find $m\angle A$, $m\angle B$, and $m\angle ACB$



$m\angle A = 2(11.25) - 8.5 = 14° = \angle A$

$m\angle B = 12(11.25) + 20 = 155 = \angle B$

$m\angle C = 180 - 14 - 155 = 11° = \angle C$

$16x - 11 = 12x + 20 + 2x - 8.5$

$16x - 11 = 14x + 11.5$

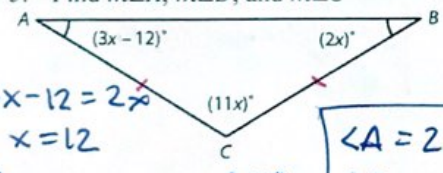
$-14x + 11 \quad -14x + 11$

$2x = 22.5$

$x = 11.25$

Use what you know about isosceles triangles to find each angle measure.

5. Find $m\angle A$, $m\angle B$, and $m\angle C$



$3x - 12 = 2x$

$x = 12$

$m\angle A = 3(12) - 12 = 24°$

$m\angle B = 2(12) = 24°$

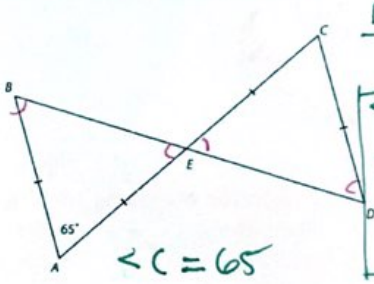
$m\angle C = 11(12) = 132$

$m\angle A = 24$

$m\angle B = 24$

$m\angle C = 132$

6. Find $m\angle B$, $m\angle C$, and $m\angle D$



$\frac{180 - 65}{2} = 57.5°$

$m\angle B = 57.5$

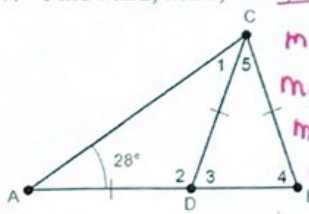
$m\angle C = 65°$

$m\angle D = 57.5$

$m\angle C = 65$

Find the missing angle measures.

7. Find $m\angle 1$, $m\angle 2$, $m\angle 3$, $m\angle 4$ and $m\angle 5$



$m\angle 1 = 28°$

$m\angle 2 = 124°$

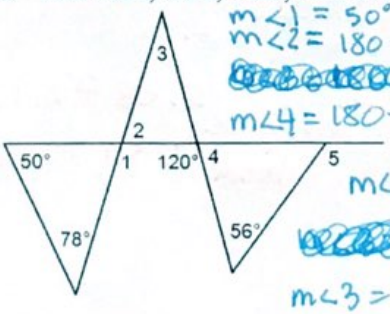
$m\angle 3 = 56°$

$m\angle 4 = 56°$

$m\angle 5 = 68°$

$m\angle 3 = 180 - 124$

8. Find $m\angle 1$, $m\angle 2$, $m\angle 3$, $m\angle 4$ and $m\angle 5$



$m\angle 1 = 50° + 78° = 128°$

$m\angle 2 = 180 - 128 = 52°$

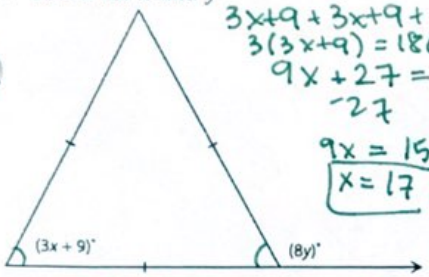
$m\angle 4 = 180 - 120 = 60°$

$m\angle 5 = 56 + 60 = 116°$

$m\angle 3 = 180 - (52 + 60) = 68°$

Find each value using the given information.

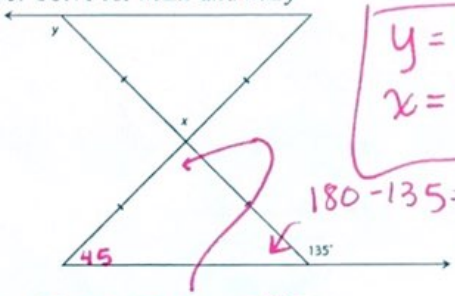
9. Solve for x and y



$3x+9+3x+9+3x+9=180°$
$3(3x+9)=180°$
$9x+27=180$
$-27 \quad -27$
$9x=153$
$\boxed{x=17}$

$3(17)+9+8y=180$
$51+9+8y=180$
$60+8y=180$
$8y=120$
$\boxed{y=15}$

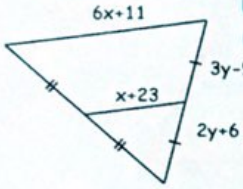
10. Solve for $m\angle x$ and $m\angle y$



$\boxed{y=135}$
$\boxed{x=90}$
$180-135=45$
$180-45(2)=90$

Use your knowledge of midsegments to solve each problem.

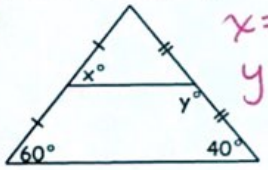
11. Solve for x and y.



$6x+11=2(x+23)$
$6x+11=2x+46$
$-2x \quad -11 \quad -2x \quad -11$
$4x=35$
$\boxed{x=8.75}$

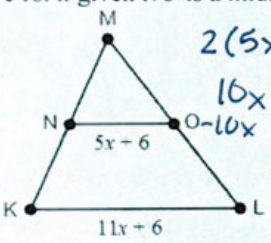
$3y-9=2y+6$
$-2y+9 \quad -2y+9$
$\boxed{y=15}$

12. Solve for x and y.



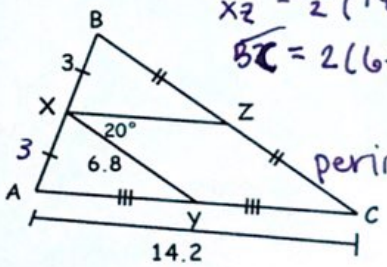
$x=60°$
$y=180-40=140°$

13. Solve for x given $\overline{NO}$ is a midsegment of the triangle.



$2(5x+6)=11x+6$
$10x+12=11x+6$
$-10x \quad -6 \quad -10x \quad -6$
$\boxed{6=x}$

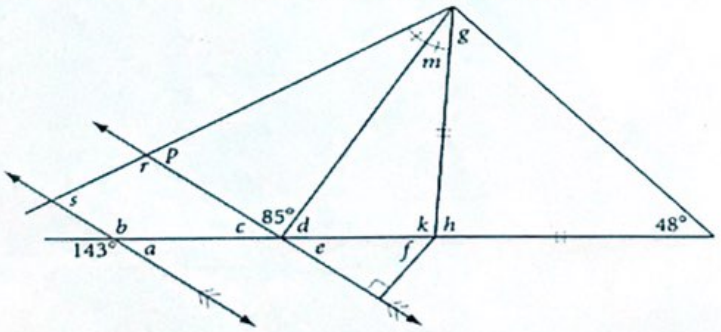
14. Find the lengths of $\overline{BC}$ and $\overline{XZ}$. Find the perimeter of the ΔABC



$\overline{XZ}=\frac{1}{2}(14.2)=\boxed{7.1=XZ}$
$\overline{BC}=2(6.8)=\boxed{13.6=BC}$

perimeter $=14.2+3+3+13.6=\boxed{33.8}$

<u>Extended Understanding</u>: Find the degree measures of all of the missing angles.



15. a = 37°
16. b = 143°
17. c = 37°
18. d = 58°
19. e = 37
20. f = 53°
21. g = 48°
22. h = 84°
23. k = 96°
24. m = 26°
25. p = 69°
26. r = 111°
27. s = 69°