PreAP Geometry Worksheet   Name __Answer__

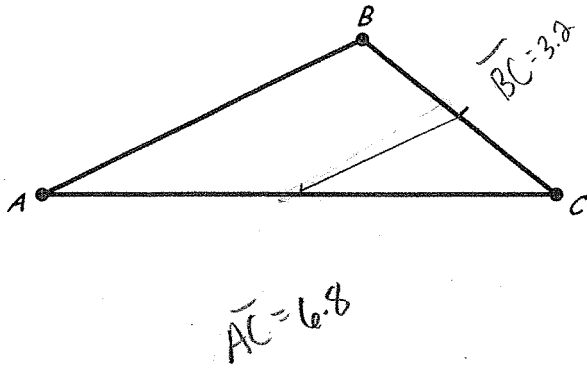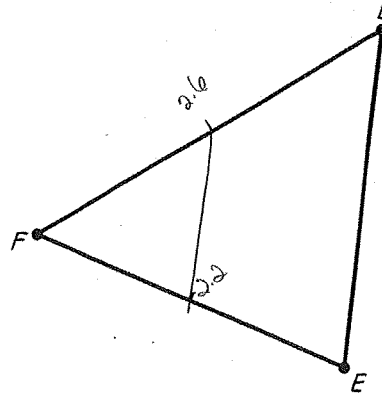Unit 5:   The Triangle Midsegment Theorem   Date _____

I.   Constructions.

1. Construct the midsegment of $\triangle ABC$ which is parallel to $\overline{AB}$. Measure!	2. Construct the midsegment of $\triangle DEF$ which is equal to half the measure of $\overline{DE}$.
$\overline{BC} = 3.2$ $\overline{AC} = 6.8$	2.6 2.2

II.   Find the value of the variables in each triangle. SHOW YOUR WORK.

| 3. even sided	4. corresponding	5. consec interior
$4z = 48$ $z = 12$ $110°$ $y°$ $70°$ consec interior 54 $3x$ 48 $4z$ $2(54) = 3x$ $X = 36$ $\frac{108}{3x} = \frac{3x}{3}$	$40°$ $5x$ $y°$ $40°$ $8x+10$ $2(5x) = 8x + 10$ $10x = 8x + 10$ $2x = 10$ $X = 5$	$x^2 + 5x$ $56°$ $y°$ $5x - 3$ $32°$ $92°$ $y = 124°$ $\angle = 180$ $180 - 32 - 92$ $2(5x-3) = x^2 + 5x$ $10x - 6 = x^2 + 5x$ $0 = x^2 - 5x + 6$ $x-3$ $x-2$ $X=3$ $X=2$ $\frac{6}{-5}$ $\frac{-3}{-2}$

III. $\overline{CG}$, $\overline{EH}$, and $\overline{FJ}$ are midsegments of $\triangle ABD$, $\triangle GCD$, and $\triangle GHE$, respectively. Find each measure.
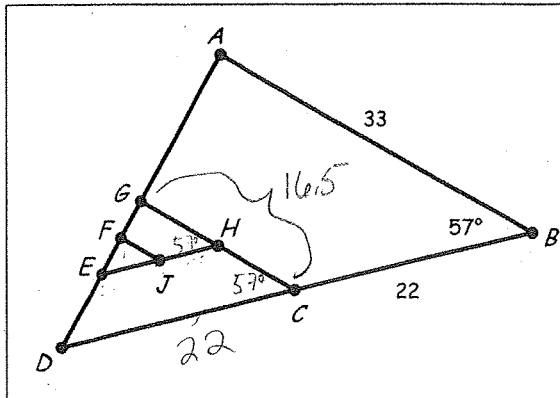
A 33 G 16.5 F H 57° B E J 57° 57° C 22 D 22	6. CG 16.5	7. EH 11
	8. FJ $\overline{GH} = 8.25$ 4.13	9. $m\angle DCG$ 57° corresponding angles
	10. $m\angle GHE$ 57°	11. $m\angle FJH$ 180 - 57 123°

IV. $\triangle KLM$ is the midsegment triangle of $\triangle GHJ$.
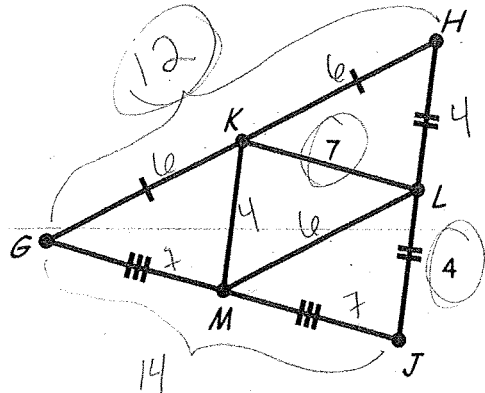
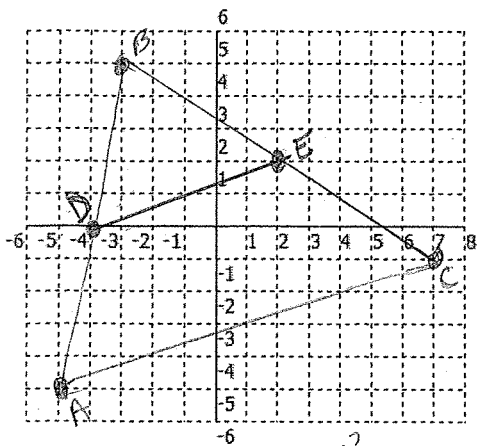| $GH = 12$	**12.** What is the perimeter of $\triangle GHJ$? 34
	13. What is the perimeter of $\triangle KLM$? 17
	14. What is the relationship between the perimeter of $\triangle GHJ$ and the perimeter of $\triangle KLM$? The perimeter of $\triangle KLM$ is one half the perimeter of $\triangle GHJ$

V. Coordinate Geometry.

15. Graph $\triangle ABC$, given $A(-5,-5)$, $B(-3,5)$, and $C(7,-1)$.

midpoint or measure?

16. Find and graph point D, the midpoint of $\overline{AB}$. Find and graph point E, the midpoint of $\overline{BC}$. Then draw in $\overline{DE}$.

$$\frac{-5-3}{2}, \frac{-5+5}{2} \qquad \frac{-3+7}{2}, \frac{5-1}{2}$$

$D(\underline{-4}, \underline{0})$ and $E(\underline{2}, \underline{2})$

17.
$\overline{DE}$ is also known as a ___midsegment___ of $\triangle ABC$.

18. What properties are true of a triangle's midsegment?

19. Find m_{DE}.

$$\sqrt{(-4-2)^2 + (0-2)^2} = \sqrt{-6^2 + -2^2} = \sqrt{36+4} = \sqrt{40}$$

$m_{DE} = \approx 6.3$

20. Without actually finding it, what would be m_{AC}? How do you know this?

$m_{AC} = \underline{12.6}$ because... its twice of the midsegment

21. Find the equation of the line containing $\overline{DE}$ in standard form.

$2 = (1/3)(2)+0$

$(-4,0) \ (2,2) \quad \frac{2-0}{2--4} = \frac{2}{6} = 1/3 \quad$ slope intercept

$y = 1/3 x + 1.3$

$\underline{} x + \underline{} y =$

22. Find $\overline{DE}$. (simplified radical form)

$\sqrt{40} = 2\sqrt{10}$

$DE = 2\sqrt{10}$

23. Without actually finding it, what would be AC? How do you know this?

$AC = \underline{4\sqrt{10}}$ because... its twice of DE