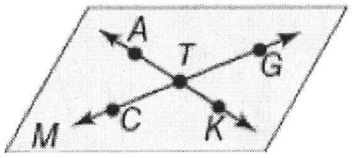
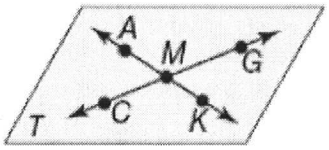
Name: Key Date:

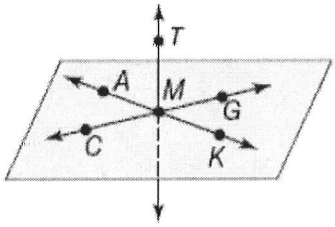
Geometry Midterm Review

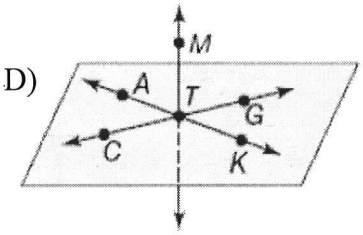
Chapter 1:

1. Which diagram shows $\overleftrightarrow{AK}$ and $\overleftrightarrow{CG}$ intersect at point M in plane T.

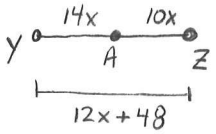
A) 

B) 

C) 

D) 

2. Given A is between Y and Z and $YA = 14x$, $AZ = 10x$, and $YZ = 12x + 48$, find AZ. Draw a diagram.

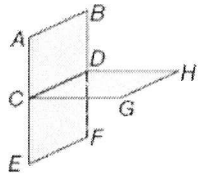


$14x + 10x = 12x + 48$
$24x = 12x + 48$
$12x = 48$
$x = 4$

$AZ = 10(4)$
$AZ = 40$

3. Name the intersection of $\overleftrightarrow{AE}$ and $\overleftrightarrow{CG}$.

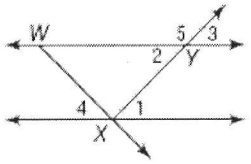
point C



4. Which angles form a linear pair?

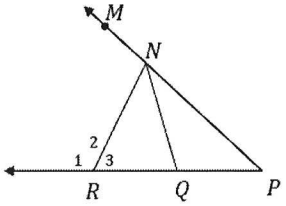
<2 and <5

<5 and <3



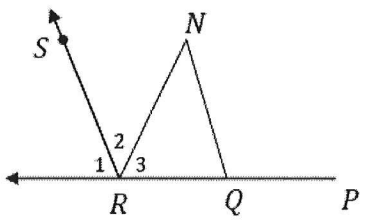
5. If $\overline{NQ}$ bisects $\angle RNP$, then $\angle QNP \cong$ ___?___.

<QNR



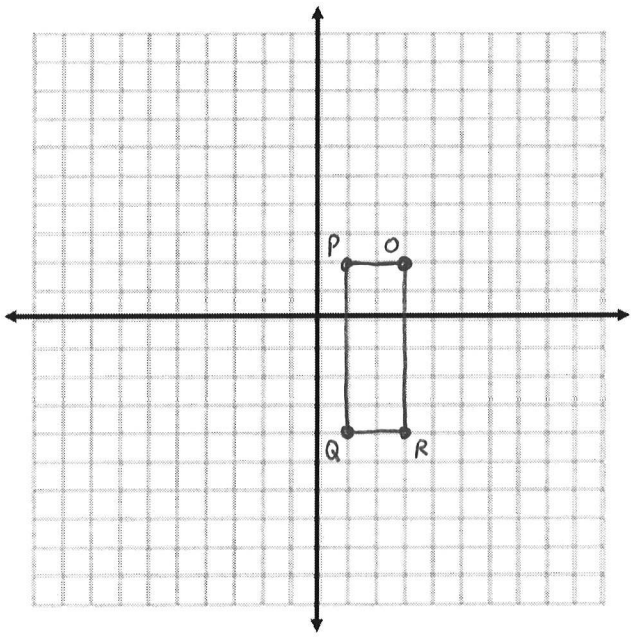
6. If $\overline{RN}$ bisects $\angle SRQ$ and $m\angle 2 = 55°$, then $m\angle 1 =$ ___?___.

70°



7. Graph the figure with the given vertices and identify the figure.
Then find the perimeter and area of the figure.

***O* (3, 2), *P* (1, 2), *Q* (1, -4), *R* (3, -4)**



Name of figure: Rectangle

Perimeter of figure: 16 units

$P = 2\ell + 2w$
$= 2(6) + 2(2)$
$= 12 + 4$
$= 16$

Area of figure: 12 units^2

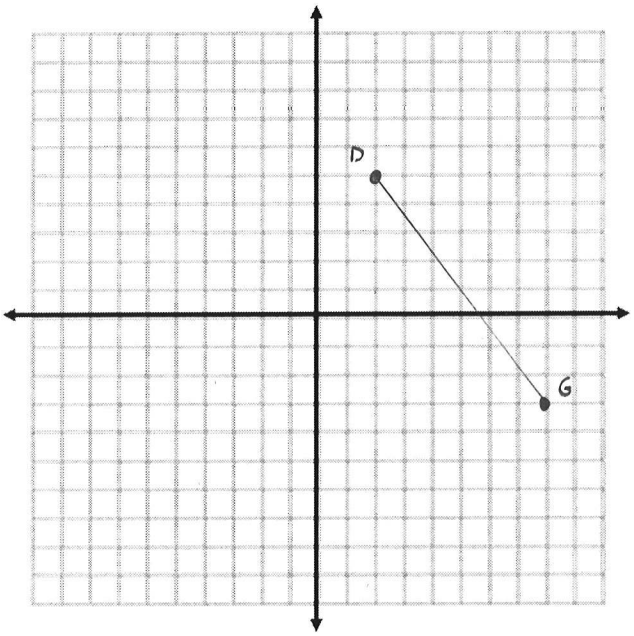
$A = \ell \cdot w$
$= 6 \cdot 2$
$= 12$

8. Graph the points ***D* (2, 5)** and ***G* (8, -3)** and draw $\overline{DG}$

a) Find the distance between points *D* and *G*. 10 units

b) Find the coordinates of the midpoint of $\overline{DG}$. (5, 1)

c) If *D* were the midpoint of $\overline{HG}$, what would the coordinates of H be? (-4, 13)



$d = \sqrt{(-3-5)^2 + (8-2)^2}$
$= \sqrt{(-8)^2 + (6)^2}$
$= \sqrt{64 + 36}$
$= \sqrt{100}$
$d = 10$

$\left(\frac{2+8}{2}, \frac{5+(-3)}{2}\right)$

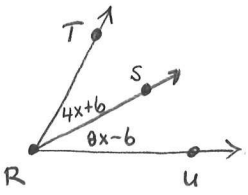
$(5, 1)$

$\frac{x+8}{2} = 2$
$x + 8 = 4$
$x = -4$

$\frac{y+(-3)}{2} = 5$
$y - 3 = 10$
$y = 13$

9. $\overrightarrow{RS}$ is in the interior of $\angle TRU$, $m\angle TRS = 4x+6$, and $m\angle SRU = 8x-6$.

a) Draw and label $\angle TRU$ and $\overrightarrow{RS}$.



$4x+6 = 8x-6$

$12 = 4x$

$3 = x$

b) Determine the value of x that will make $\overrightarrow{RS}$ an angle bisector. Explain your steps.

$4x+6 = 8x-6$

$12 = 4x$

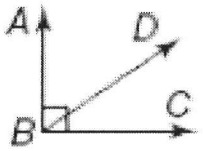
$3 = x$

Chapter 2:

10. If $m\angle ABD = 56$, find $m\angle DBC$. (Use the figure to the right)

$90 - 56 = 34$

34°



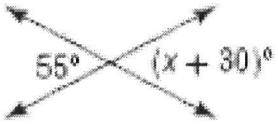
11. What property justifies the statement. If $m\angle A = 10$ and $m\angle B = 10$, then $m\angle A = m\angle B$.

Substitution

12. Find the value of x. (Use the figure to the right)

$55 = x+30$

$25 = x$



13. Write the contrapositive of the following statement. If $x = 5$, then $x + 8 = 13$.

If $x+8 \neq 13$, then $x \neq 5$.

14. Write the inverse of the statement: *If a triangle has 3 equal sides, then it is equilateral.*

If a △ does not have 3 = sides, then it is not equilateral

15. Find the value of x. Then find the measure of $\angle ABD$.

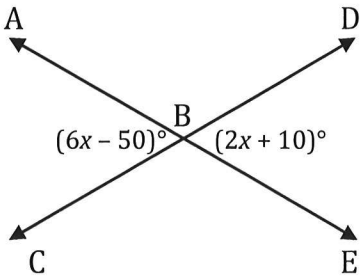
$x =$ 15

$\angle ABD =$ 140°

$6x-50 = 2x+10$

$4x = 60$

$x = 15$



16. Look for a pattern and make a conjecture. Then predict the next two numbers in each sequence.

a) 4, 8, 12, 16, ... 20, 24

Add 4

b) −2, 4, −8, 16, −32, ... 64, −128

Mult by −2

Chapter 3:

17. List all pairs same-side interior angles.

4 & 9 8 & 13 10 & 13 3 & 8

3 & 10 7 & 14 11 & 16 2 & 5

18. List all pairs of alternate interior angles.

4 & 10 8 & 14 11 & 13 3 & 5

3 & 9 7 & 13 10 & 16 2 & 8

19. List all pairs of alternate exterior angles.

1 & 11 5 & 15 12 & 14 1 & 7

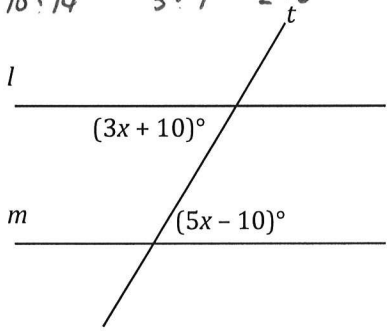
2 & 12 6 & 16 9 & 15 4 & 6

20. List all pairs of corresponding angles.

1 & 9 2 & 10 5 & 13 6 & 14 12 & 16 9 & 13 4 & 8 1 & 5

4 & 12 3 & 11 8 & 16 7 & 15 11 & 15 10 & 14 3 & 7 2 & 6

21. If $l \parallel m$, find the value of x. (Use the diagram at right)

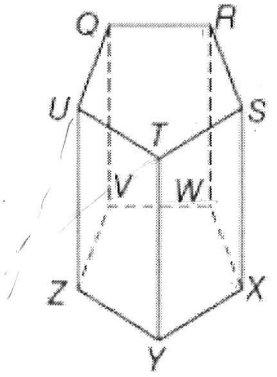


$3x + 10 = 5x - 10$

$20 = 2x$

$10 = x$

For 22 – 24 use the diagram to the below.



22. Name all segments that are parallel to $\overline{XY}$.

ST

23. Name all planes that intersect plane *STX*.

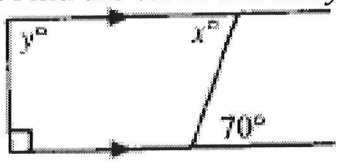
UTY, SRX, XYZ, STU, QVZ, RWV

24. Name all segements that are skew to $\overline{VW}$.

$\overline{UZ}$, $\overline{TY}$, $\overline{SX}$

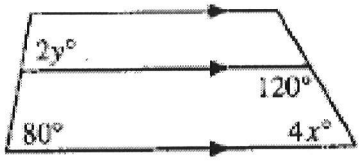
$\overline{TS}$, $\overline{UT}$, $\overline{UQ}$, $\overline{RS}$

25. Find the value of x and y.



$x = 70$ $y = 90$

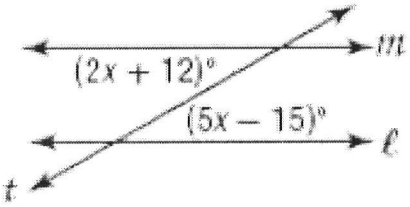
26. Find the value of x and y.



$2y = 80$
$y = 40$

$4x + 120 = 180$
$4x = 60$
$x = 15$

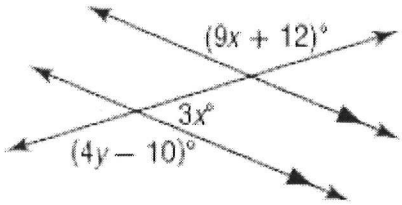
27. Find x so that $l \parallel m$. Identify the postulate or theorem you used.



$2x + 12 = 5x - 15$
$27 = 3x$
$9 = x$

alt int $\angle$s

28. Find the value of the variable(s) in the figure. Explain your reasoning.



$3x + 9x + 12 = 180$
$12x = 168$
$x = 14$

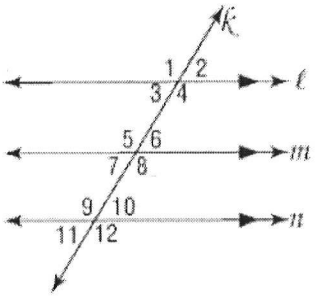
$9(14) + 12$
$126 + 12$

$138 = 4y - 10$
$148 = 4y$
$37 = y$

29. Write a two-column proof for the following.

Given: $l \parallel m$, $m \parallel n$

Prove: $\angle 1 \cong \angle 12$

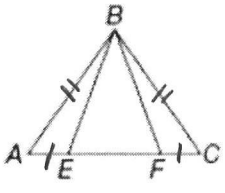


Statements	*Reasons*
① $l \parallel m$; $m \parallel n$	① Given
② $\angle 1 \cong \angle 8$	② Alt Ext $\angle$s $\cong$
③ $\angle 8 \cong \angle 12$	③ Corr $\angle$s $\cong$
④ $\angle 1 \cong \angle 12$	④ Subst

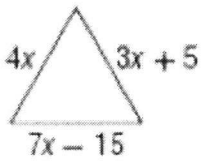
Chapter 4:

30. If ΔABC is isosceles with vertex angle $\angle B$, and $\overline{AE} = \overline{FC}$, which theorem or postulate can be used to prove $\Delta AEB \cong \Delta CFB$?

SAS



31. What are the lengths of the sides of this equilateral triangle?

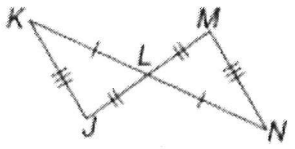


$4x = 3x + 5$

$x = 5$

Side length = 20

32. Which triangles are congruent in the figure?



$\Delta KLJ \cong \Delta NLM$

33. If $\Delta DJL \cong \Delta EGS$, then list all the corresponding sides and angles.

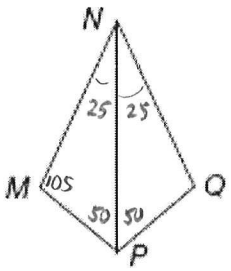
$\angle D \cong \angle E$ $\quad DJ = EG$

$\angle J \cong \angle G$ $\quad JL = GS$

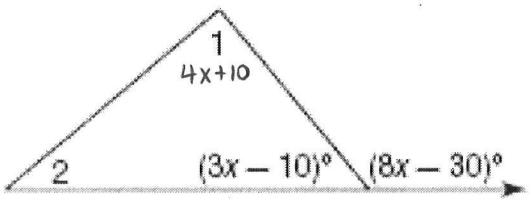
$\angle L \cong \angle S$ $\quad DL = ES$

34. Quadrilateral $MNQP$ is made of two congruent triangles. $\overline{NP}$ bisects $\angle N$ and $\angle P$. In the quadrilateral, $m\angle N = 50$ and $m\angle P = 100$. What is the measure of $\angle M$?

$m\angle M = 105°$



35. Find the value of x, and find the value of $m\angle 1$, if $m\angle 1 = 4x + 10$.



$3x - 10 + 8x - 30 = 180$

$11x - 40 = 180$

$11x = 220$

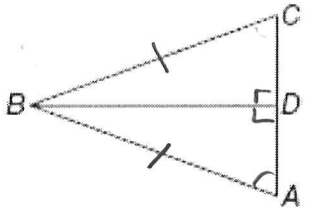
$x = 20$

$m\angle 1 = 4(20) + 10$

$= 80 + 10$

$= 90$

36. Write a two-column proof. Mark your diagram.
Given: ΔABC is an isosceles triangle.
$\overline{BD} \perp \overline{AC}$
Prove: $\angle A \cong \angle C$

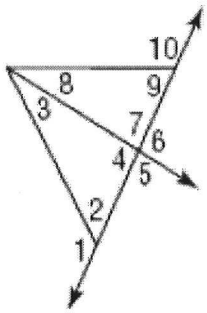


Statements	Reasons
① ΔABC is isosc Δ $BD \perp AC$	① Given
② $AB \cong CB$	② def of isosceles
③ $\angle BDC = 90 = \angle BDA$	③ def of $\perp$
④ $BD \cong BD$	④ Reflexive
⑤ $\Delta BDC \cong \Delta BDA$	⑤ HL
⑥ $\angle A \cong \angle C$	⑥ CPCTC

Chapter 5:

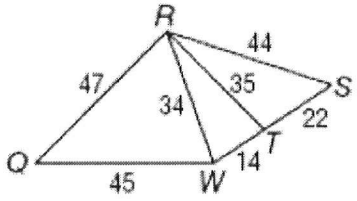
37. In the diagram given, which angle has the greatest measure of $\angle 1, \angle 3, \angle 4$.

< 1



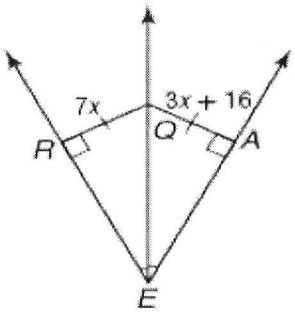
38. Determine the relationship between $m\angle RST, m\angle TRS$

$m<TRS > m<RST$



39. Find the value of x and QA.

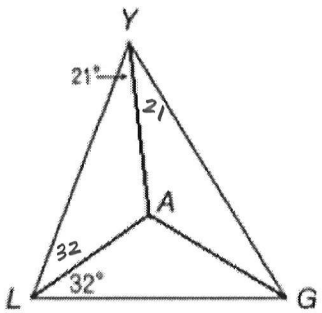
$7x = 3x + 16$
$4x = 16$
$x = 4$



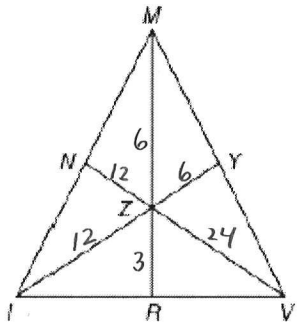
$QA = 28$

40. Point A is the incenter of ΔPQR. Find $m\angle YGA$. (Use diagram at right)

$m<YGA = 37°$



41. In ΔMIV, Z is the centroid, $MZ = 6$, $YI = 18$, and $NZ = 12$.



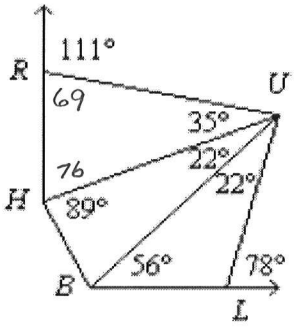
a) Find MR 9

b) Find ZV 24

c) Find YZ 6

42. List the sides of ΔRUH in least to greatest order.

RH, HU, UR



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43. Point P in the incenter of ΔXYZ. If $PY = 40$ and $JY = 32$, find LP.

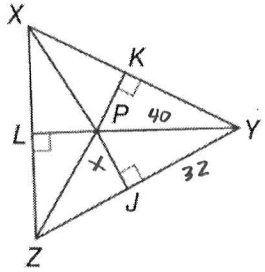
$x^2 + 32^2 = 40^2$

$x^2 + 1024 = 1600$

$\sqrt{x^2} = \sqrt{576}$

$x = 24$

$LP = 24$



44. Find the range for the third side of a triangle given two sides with measures of 7 km and 29 km.

$22 < x < 36$

45. Lines s, t, and u are perpendicular bisectors of the sides of ΔFGH and meet at J. If $JG = 2x + 2$, $JH = 2y - 2$, $JF = 8$, and $HI = 2z - 3$, find x, y, and z.

$2x + 2 = 8$

$2x = 6$

$x = 3$

$2y - 2 = 8$

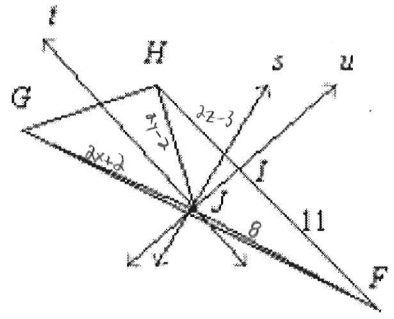
$2y = 10$

$y = 5$

$2z - 3 = 11$

$2z = 14$

$z = 7$



46. Is it possible to form a triangle with the given sides lengths of 4 ft, 8 ft, and 18 ft. If not explain why not.

NO

$4 + 8 \stackrel{?}{>} 18$

$12 \not> 18$