Geometry – GT/Honors
Chapter 6 Review – Quadrilaterals

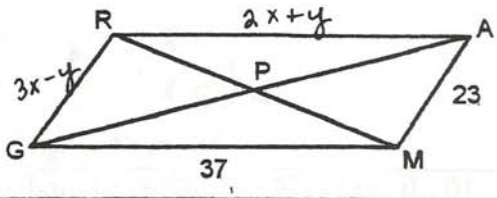
Name_____
Date_____ **Period**_____

Find each of the following values.

Use parallelogram GRAM for problems 1-4.

50 1. GA = 3x – 10 and GP = x + 20. Find x.

$2(x+20) = 3x-10$
$2x+40 = 3x-10$
$50 = x$



58 2. m∠GMR = 37° and m∠AMG = 95°, find m∠GRM.

95
−37
58

105 3. m∠RGM = 75°, find m∠GMA

180
−75
105

x= 12 4. RA = 2x + y, GR = 3x – y, find x and y

y= 13

$2x+y=37$
$3x-y=23$
$5x=60$

$x=12$

$24+y=37$
$y=13$

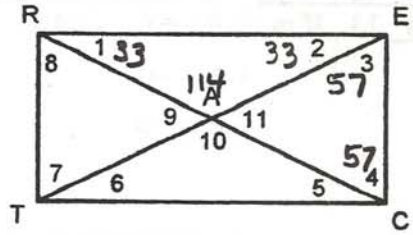
$3x-23=y$
$2x+(3x-23)=37$

$5x=60$
$x=12$

Use rectangle RECT for problems 5-8.

9 5. If TA = 3x - 7 and AC = 2x + 2, find x.

$3x-7=2x+2$
$x=9$



66 6. If m∠2 = 33°, find m∠11.

8 7. If RT = 2x + 5 and EC = 4x – 11, find x.

$2x+5=4x-11$
$16=2x$
$8=x$

-7, 6 8. If m∠1 = x^2 - 4 and m∠8 = x + 52, find x.

32 58

$x^2-4+x+52=90$
$x^2+x+48=90$
$x^2+x-42=0$
$(x+7)(x-6)=0$
$x=-7 \quad x=6$

Use rhombus RHOM for problems 9-11.

x= 3 9. If MO = 24, MR = 4x + 2y +2, and RH = 5x – y + 14,

y= 5 find x and y.

$4x + 2y + 2 = 24$

$5x - y + 14 = 24$

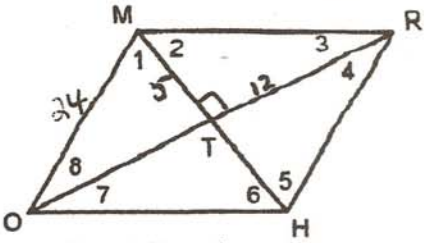
$4x + 2y = 22$

$2(5x - y = 10)$

$10x - 2y = 20$

$14x = 42$

$x = 3$



$5x - 10 = y$

$4x + 2(5x - 10) = 22$

$4x + 10x - 20 = 22$

$14x = 42$

$x = 3$

13 10. If RO = 24 and MH = 10, find MR.

$TR = 12 \quad MT = 5$

$5^2 + 12^2 = x^2$

$x = 13$

51 11. If m∠7 = 39°, find m∠2.

$90 - 39 = 51$

Use square SQUA for problems 12-14.

2, 3 12. If AU = $x^2 + 2$ and SA = 5x – 4, find x

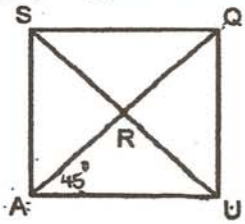
$x^2 + 2 = 5x - 4$

$x^2 - 5x + 6 = 0$

$(x-2)(x-3) = 0$

$x - 2 = 0 \quad x - 3 = 0$

$x = 2 \quad x = 3$



15 13. If m∠ARS = 6x, find x.

$6x = 90$

$x = 15$

19 14. m∠QAU = 3x – 12, find x.

$3x - 12 = 45$

$3x = 57$

$x = 19$

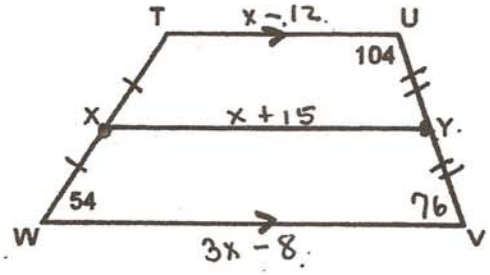
$90 + 6x - 24 = 180$

$6x - 24 = 90$

$6x = 114$

$x = 19$

Use trapezoid TUVW with median XY for problems 15-17.



76 15. m∠V

24 16. TU = 15, WV = 33, find XY. $\frac{15+33}{2} = \frac{48}{2}$

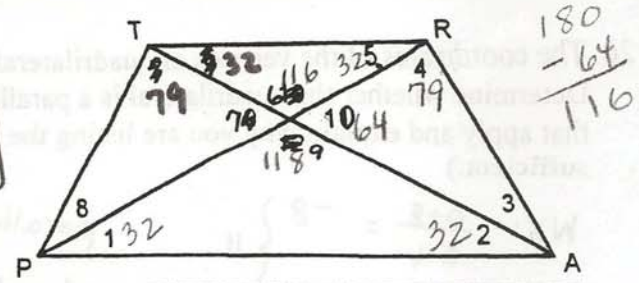
25 17. TU = x – 12, XY = x + 15, WV = 3x – 8, find x.

$$\frac{x - 12 + 3x - 8}{2} = x + 15$$

$4x - 20 = 2x + 30$

$2x = 50$

Use isosceles trapezoid TRAP for problems 18-20.



32 18. m∠1

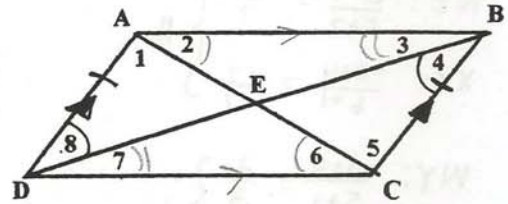
64 19. m∠7

37 20. m∠3

$\begin{array}{r} 79 \\ 64 \\ \hline 143 \end{array}$ $\begin{array}{r} 180 \\ -143 \\ \hline 37 \end{array}$ $\boxed{\begin{array}{l} m\angle 6=32^\circ \\ m\angle 7=79^\circ \end{array}}$

$\begin{array}{r} 180 \\ -64 \\ \hline 116 \end{array}$

In problems 21-23, if there is enough information to state that the quadrilateral is a parallelogram give the reason. Write none if there is not enough information to state that the quadrilateral is a parallelogram.



21. E is the midpoint of $\overline{AC}$ and $\overline{BD}$

diagonals bisect each other → ▱

22. $\angle 2 \cong \angle 6$ and $\angle 3 \cong \angle 7$

none, only one pair of opp sides ∥

23. $\angle 8 \cong \angle 4$ and $\overline{AD} \cong \overline{BC}$

one pair opp sides ≅ and ∥ → ▱

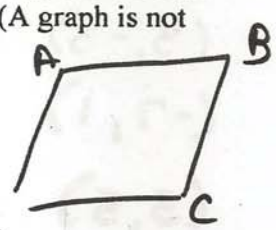
24. The coordinates of the vertices of quadrilateral ABCD are A(-4, -2), B(-1, 3), C(4, 0), and D(1, -5). Determine whether the quadrilateral is a parallelogram, a rectangle, a rhombus, or a square. List all that apply and explain why you are listing the ones that you are. SHOW WORK! (A graph is not sufficient.)

$m\overline{AB} = \frac{5}{3}$, $m\overline{DC} = \frac{5}{3}$ ∥

$m\overline{AD} = -\frac{3}{5}$, $m\overline{BC} = -\frac{3}{5}$ ∥

∥ ⊥

$m\overline{AC} = \frac{1}{4}$, $m\overline{BD} = -4$ ⊥



parallelogram (opp sides ∥)

rectangle (parallelogram with adj sides ⊥)

rhombus (▱ with ⊥ diagonals

square (both rectangle & rhombus)

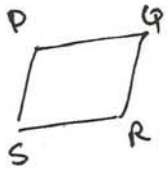
25. The coordinates of the vertices of quadrilateral PQRS are P(4, 4), Q(1, 2), R(2, -2), and S(5, 0). Determine whether the quadrilateral is a parallelogram, a rectangle, a rhombus, or a square. List all that apply and explain why you are listing the ones that you are. SHOW WORK! (A graph is not sufficient.)

$m\overline{PQ} = \frac{2}{3}$, $m\overline{SR} = \frac{2}{3}$ ∥

$m\overline{PS} = -4$, $m\overline{QR} = -4$ ∥

not ⊥

$m\overline{PR} = 3$, $m\overline{QS} = -\frac{1}{2}$ not ⊥



$PR = \sqrt{2^2+6^2} = \sqrt{40}$

$QS = \sqrt{4^2+2^2} = \sqrt{20}$

$PQ = \sqrt{3^2+2^2} = \sqrt{13}$

$QR = \sqrt{1^2+4^2} = \sqrt{17}$

parallelogram (opp sides ∥)

rectangle - no adj. sides not ⊥

rhombus - no diag not ⊥

square - no not rect & rhomb

26. The coordinates of the vertices of quadrilateral WXYZ are W(5, 0), X(6, -8), Y(-1, -4), and Z(-2, 4). Determine whether the quadrilateral is a parallelogram, a rectangle, a rhombus, or a square. List all that apply and explain why you are listing the ones that you are. SHOW WORK! (A graph is not sufficient.)

WX: $\frac{0+8}{5-6} = -8$

ZY: $\frac{-4-4}{-1+2} = -8$ } ∥

not ⊥

WZ: $\frac{0-4}{5+2} = \frac{-4}{7}$

XY: $\frac{-8+4}{6+1} = \frac{-4}{7}$ } ∥

WY: $\frac{0+4}{5+1} = \frac{2}{3}$

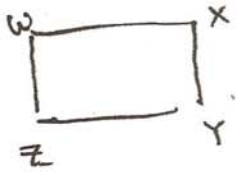
XZ: $\frac{-8-4}{6+2} = \frac{-3}{2}$ } ⊥

parallelogram (opp sides ∥)

rhombus (diagonals ⊥)

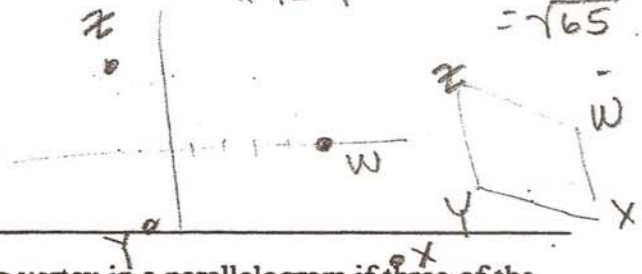
rectangle (no-adj. sides not ⊥)

square - no - not rect.



$WX = \sqrt{1^2+8^2} = \sqrt{65}$

$XY = \sqrt{7^2+4^2} = \sqrt{49+16} = \sqrt{65}$

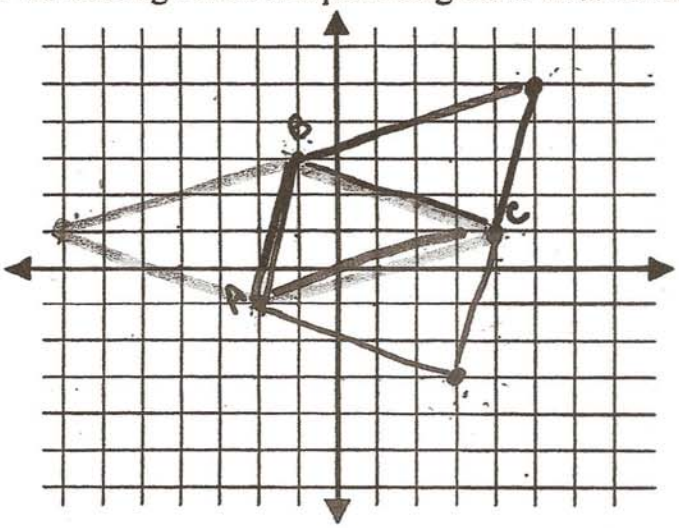


27. Find the coordinates of the 3 possible points for the missing vertex in a parallelogram if three of the vertices are A(-2, -1), B(-1, 3), and C(4, 1).

(3, -3) ABCD

(-7, 1) ADBC

(5, 5) ABDC

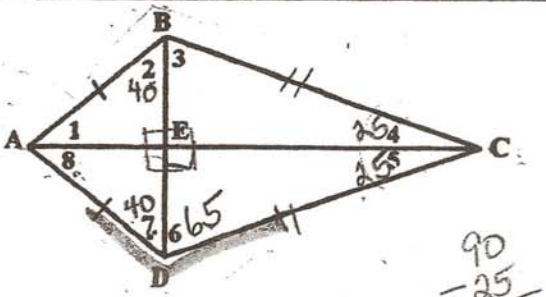


28. Given ABCD is a kite and m∠BCD = 50°
m∠2 = 40°
ED = 6

find m∠8 = 50

m∠ADC = 105

BD = 12

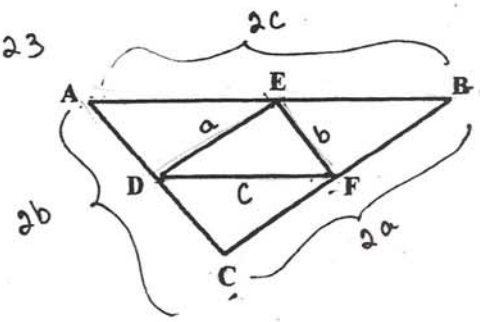


90
-25

$a+b+c=23$

29. ΔABC has midpoints D, E, and F. If the perimeter of ΔDEF is 23, then find the perimeter of ΔABC.

46



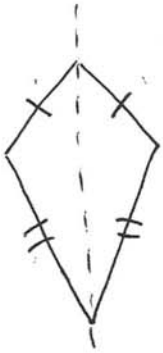
30. KITE is a kite. M, N, O, and P are midpoints.
$m\angle KMN = 30$
$m\angle KIT = 100$

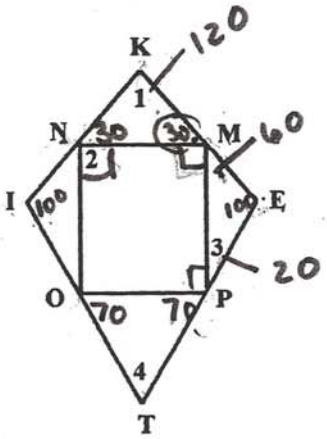
Find: $m\angle 1 =$ 120

$m\angle 2 =$ 90

$m\angle 3 =$ 20

$m\angle 4 =$ 40





120
100
100
320

31. OE is an isosceles trapezoid. T, R, A, and P are midpoints
IO = 12
$m\angle RIT = 75°$ and $m\angle SRA = 40°$

Find: $m\angle 1 =$ 35

$m\angle 2 =$ 70

$m\angle 3 =$ 35

RA = 6

AP = 6