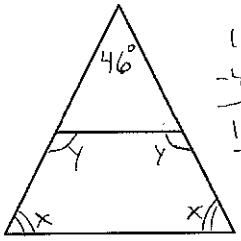
Name: Key Class: _____ Date: _____ ID: R

Integrated Math 2 Chapter 5 Review

1. The isosceles trapezoid is part of an isosceles triangle with a 46° vertex angle. What is the measure of an acute base angle of the trapezoid? Of an obtuse base angle? The diagram is not to scale.



base $\angle$s $\cong$

$180 = 46 + x + x$

$-46 \quad -46$

$\frac{134}{2} = \frac{2x}{2}$

$67 = x$

Consecutive base $\angle$s supp

$y = 180 - 67 = 113$

Acute = 67°
Obtuse = 113°

2. What is the sum of the angle measures of a 37-gon? $(n-2)180$

$(37-2)180 = 6300°$

3. *DEFG* is a rectangle. $DF = 6x - 1$ and $EG = x + 39$. Find the value of x and the length of each diagonal. $x = 8$, $DF = EG = 47$

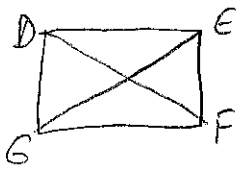
4. How many sides does a regular (equiangular) polygon have if each exterior angle measures 72?

Sum = 360°

$360 \div n = 72$

$360 \div 72 = n$

$5 = n$

3. 

rectangle
↳ diagonals $\cong$

$6x - 1 = x + 39$

$+1 \quad +1$

$6x = x + 40$

$-x \quad -x$

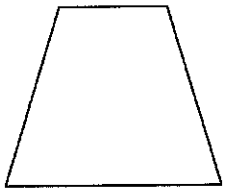
$\frac{5x}{5} = \frac{40}{5}$

$x = 8$

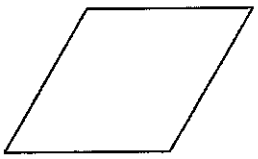
$DF = EG = 8 + 39 = 47$

5. Judging by appearances, which figure is a trapezoid?

A. 1 pair opp sides ||



B.



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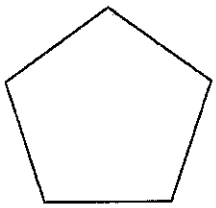
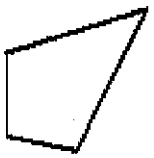


D.



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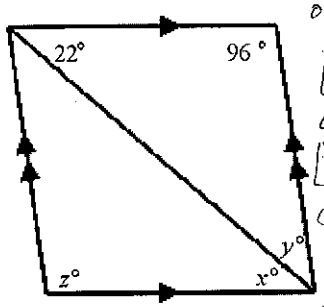
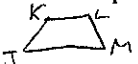
6. Find the values of the variables in the parallelogram. The diagram is not to scale.



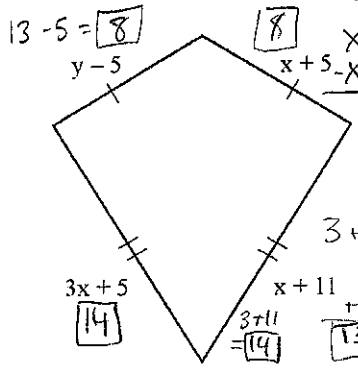
opp $\angle$s $\cong$
$z = 96°$
alt int $\angle$s $\cong$
$x = 22°$
consecutive $\angle$s supp
$96 + 22 + y = 180$
$118 + y = 180$
$-118 \quad -118$
$y = 62°$

7. $\angle J$ and $\angle M$ are base angles of isosceles trapezoid $JKLM$. If $m\angle J = 22x + 6$, and $m\angle M = 14x + 14$, find $m\angle K$.



base $\angle$s $\cong$
$22x+6 = 14x+14$
$-14x \quad -6 \quad -14x \quad -6$
$\frac{8x}{8} = \frac{8}{8}$
$x = 1$
$m\angle J = 22(1)+6 = 28$
$m\angle K = 180 - 28$
$m\angle K = 152°$

8. Find the values of the variables and the lengths of the sides of this kite.



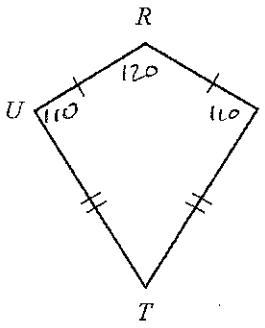
$13 - 5 = 8$
8
8
$3x + 5 = 14$
$3 + 11 = 14$
$x + 5 = y - 5$
$x + 11 = 3x + 5$
$-x \quad -5 \quad -x \quad -5$
$\frac{6}{2} = \frac{2x}{2}$
$3 = x$
$3 + 5 = y - 5$
$8 = y - 5$
$+5 \quad +5$
$13 = y$

9. What is the measure of one angle in a regular 16-gon?

$\frac{(16-2)180}{16} = 157.5°$

10. $m\angle R = 120$ and $m\angle S = 110$. Find $m\angle T$. The diagram is not to scale.

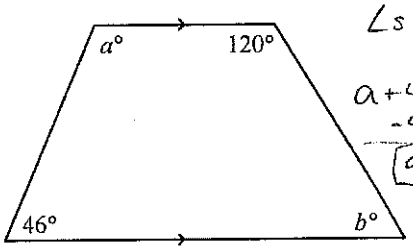
$\angle S \cong \angle U$



$m\angle T + 110 + 120 + 110 = 360$
$m\angle T + 340 = 360$
$-340 \quad -340$
$m\angle T = 20°$

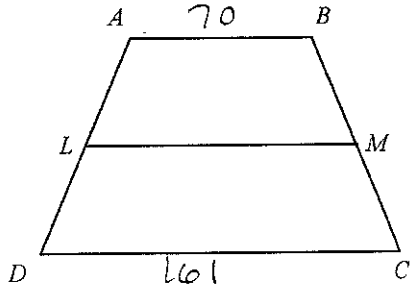
11. Find the values of a and b. The diagram is not to scale.

Same Side Interior $\angle$s supp



$a + 46 = 180$
$-46 \quad -46$
$a = 134°$
$120 + b = 180$
$-120 \quad -120$
$b = 60$

12. $\overline{LM}$ is the midsegment of $\square ABCD$. $AB = 70$ and $DC = 161$. What is LM?



$LM = \frac{70 + 161}{2} = \frac{231}{2} = 115.5$

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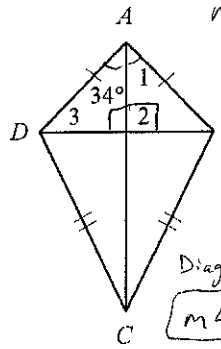
13. Find $m\angle 1$ and $m\angle 3$ in the kite. The diagram is not to scale.

Diagonals $\perp$



$m\angle 2 = 90$

$90 + 34 + m\angle 3 = 180$

$124 + m\angle 3 = 180$

$-124 \quad -124$

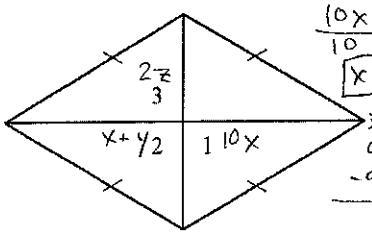
$m\angle 3 = 56$

Diagonal bisects $\angle$

$m\angle 1 = 34°$

14. In the rhombus, $m\angle 1 = 10x$, $m\angle 2 = x + y$, and $m\angle 3 = 2z$. Find the value of each variable. The diagram is not to scale.

Diagonals $\perp$



$\frac{10x}{10} = \frac{90}{10}$

$x = 9$

$x + y = 90$

$9 + y = 90$

$-9 \quad -9$

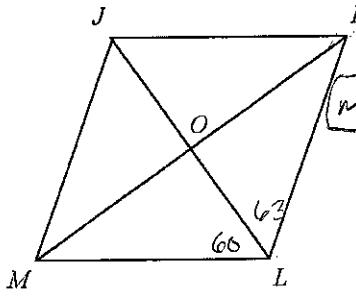
$y = 81$

$\frac{2z}{2} = \frac{90}{2}$

$z = 45$

15. In the parallelogram, $m\angle KLO = 63$ and $m\angle MLO = 60$. Find $m\angle KJM$. The diagram is not to scale.

opp $\angle$s $\cong$

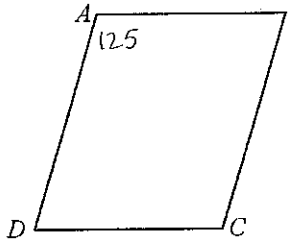


$m\angle KJM = 60 + 63$

$m\angle KJM = 123°$

16. $ABCD$ is a parallelogram. If $m\angle DAB = 125$, then $m\angle BCD =$ ___?___. The diagram is not to scale.

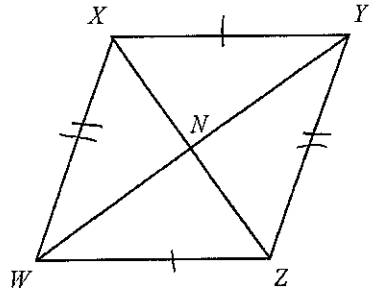
opp $\angle$s $\cong$



$m\angle BCD = 125°$

17. Based on the information given, can you determine that the quadrilateral must be a parallelogram? Explain.

Given: $\overline{XY} \cong \overline{WZ}$ and $\overline{XW} \cong \overline{YZ}$



Yes, if both pairs of opp sides $\cong$, then the quadrilateral is a ll-gram.

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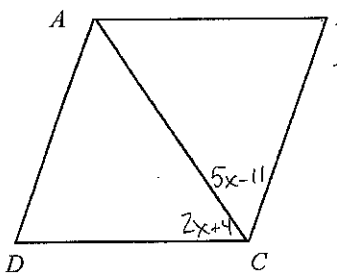
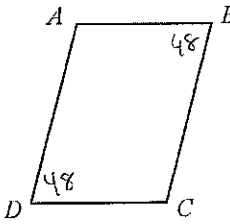
18. In quadrilateral $ABCD$, $m\angle ACD = 2x+4$ and $m\angle ACB = 5x-11$. For what value of x is $ABCD$ a rhombus? Diagonal bisects $\angle$



$5x-11=2x+4$
$-2x+11 \quad -2x+11$
$\frac{3x}{3} = \frac{15}{3}$
$x=5$

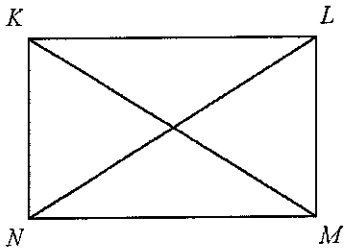
19. The sum of the measures of two exterior angles of a triangle is 252. What is the measure of the third exterior angle? Sum = 360
$252+x=360 \quad x=108°$

20. If $m\angle B = m\angle D = 48$, find $m\angle C$ so that quadrilateral $ABCD$ is a parallelogram. The diagram is not to scale. consecutive $\angle$s supp



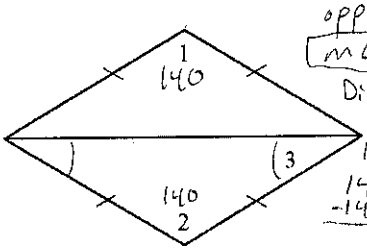
$48+m\angle C=180$
$-48 \quad -48$
$m\angle C=132°$

21. In rectangle $KLMN$, $KM = 10x+29$ and $LN = 64$. Find the value of x.



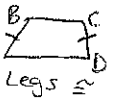
Diagonals $\cong$
$10x+29=64$
$-29 \quad -29$
$\frac{10x}{10} = \frac{35}{10}$
$x=3.5$

22. In the rhombus, $m\angle 1 = 140$. What are $m\angle 2$ and $m\angle 3$? The diagram is not to scale.



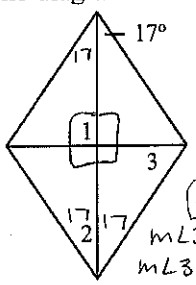
opp $\angle$s $\cong$
$m\angle 2 = 140$
Diagonals bisect $\angle$
$140+m\angle 3+m\angle 3=180$
$140+2(m\angle 3)=180$
$-140 \quad -140$
$\frac{2(m\angle 3)}{2} = \frac{40}{2}$
$m\angle 3=20$

23. Isosceles trapezoid $ABCD$ has legs $\overline{AB}$ and $\overline{CD}$, and base $\overline{BC}$. If $AB = 4y-6$, $BC = 2y-3$, and $CD = 5y-16$, find the value of y.



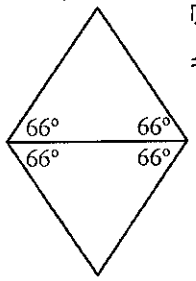
Legs $\cong$
$4y-6=5y-16$
$-4y+16 \quad -4y+16$
$10=y$

24. Find the measure of the numbered angles in the rhombus. The diagram is not to scale.



Diagonals $\perp$
$m\angle 1 = 90°$
Diagonals bisect $\angle$s
Opp $\angle$s $\cong$
$m\angle 2 = 17°$
$m\angle 3+17+90=180$
$m\angle 3+107=180$
$-107 \quad -107$
$m\angle 3=73°$

25. Parallelogram $ABCD$ has the angle measures shown. Can you conclude that it is a rhombus, a rectangle, or a square? Explain.



Diagonals bisect $\angle$s
$\Rightarrow$ rhombus

26. The sum of the angle measures of a polygon with s sides is 3240. Find s. $(s-2)180=3240$
$180s-360=3240$
$+360 \quad +360$
$\frac{180s}{180} = \frac{3600}{180}$
$s=20$

27. A road sign is in the shape of a regular decagon. What is the measure of each angle on the sign? Round to the nearest tenth.

$\frac{(10-2)180}{10} = \frac{1440}{10} = 144°$

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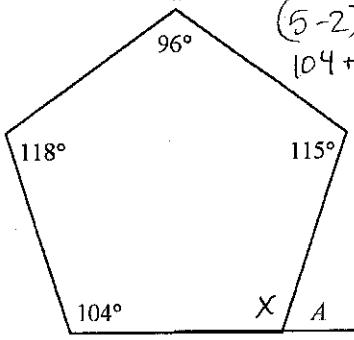
28. Find $m\angle A$. The diagram is not to scale.



$(5-2)\cdot 180 = 540$

$104+118+96+115+x=540$

$433+x=540$

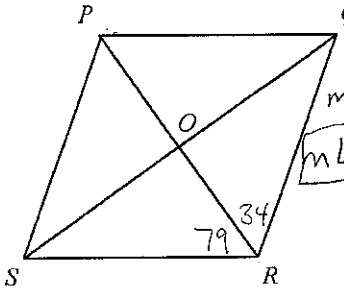
$-433 \quad -433$

$x=107$

$m\angle A = 180-107$

$m\angle A = 73$

29. In the parallelogram, $m\angle QRP = 34$ and $m\angle PRS = 79$. Find $m\angle PQR$. The diagram is not to scale.

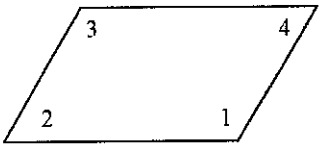


Consecutive $\angle$s supp

$m\angle PQR = 180-(79+34)$

$m\angle PQR = 67°$

30. For the parallelogram, if $m\angle 2 = 4x-28$ and $m\angle 4 = 3x-12$, find $m\angle 3$. The diagram is not to scale.



opp $\angle$s $\cong$

consecutive $\angle$s supp

$4x-28 = 3x-12$

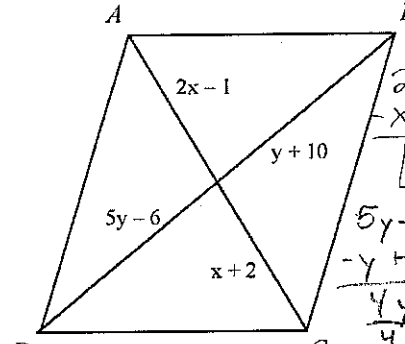
$-3x \quad +28 \quad -3x \quad +28$

$x = 16$

$m\angle 2 = 4(16)-28 = 36°$

$m\angle 3 = 180-36 = 144°$

31. Find values of x and y for which $ABCD$ must be a parallelogram. The diagram is not to scale.



Diagonals bisect each other

$2x-1 = x+2$

$-x \quad +1 \quad -x \quad +1$

$x = 3$

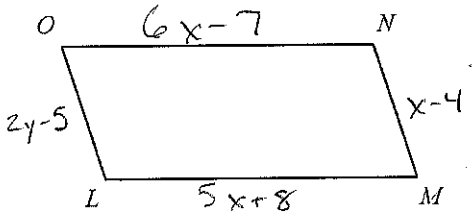
$5y-6 = y+10$

$-y \quad +6 \quad -y \quad +6$

$\frac{4y}{4} = \frac{16}{4}$

$y = 4$

32. If $ON = 6x-7$, $LM = 5x+8$, $NM = x-4$, and $OL = 2y-5$, find the values of x and y for which $LMNO$ must be a parallelogram. The diagram is not to scale.



opp sides $\cong$

$6x-7 = 5x+8$

$-5x \quad +7 \quad -5x \quad +7$

$x = 15$

$2y-5 = x-4$

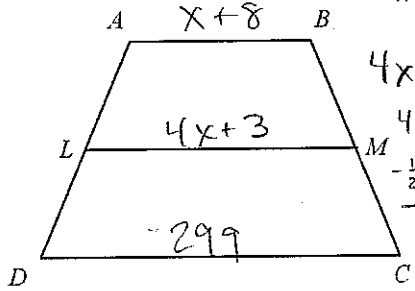
$2y-5 = 15-4$

$2y-5 = 11$

$+5 \quad +5$

$\frac{2y}{2} = \frac{16}{2} \rightarrow y = 8$

33. $\overline{LM}$ is the midsegment of $\square ABCD$. $AB = x+8$, $LM = 4x+3$, and $DC = 299$. What is the value of x?



$4x+3 = \frac{x+8+299}{2}$

$4x+3 = \frac{x+307}{2}$

$4x+3 = \frac{1}{2}x + 153.5$

$-\frac{1}{2}x \quad -3 \quad -\frac{1}{2}x \quad -3$

$\frac{3.5x}{3.5} = \frac{150.3}{3.5}$

$x = 43$

34. What type of quadrilateral has all sides and angles congruent?

rhombus + rectangle

square