Geometry - Topic 6 Review Worksheet Name Key

6.1: Polygon Angle – Sum Theorem

1. Find the sum of the interior angles of the following polygons.

a) dodecagon $180(12-2) = 1800^\circ$

b) 20-gon $180(20-2) = 3240^\circ$

2. How many sides does a regular polygon have if the measure of one interior angle is 174°?

$\frac{180(n-2)}{n} = 174$ $174n = 180n - 360$ $-6n = -360$ $n = 60$ 60 sides

3. What is the measure of an interior angle of a regular 24-gon?

$\frac{180(24-2)}{24} = 165^\circ$

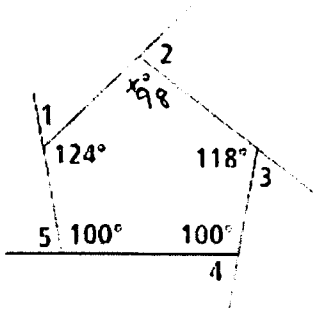
4. How many sides does a regular polygon have given the measure of an exterior angle is 14.4°?

$\frac{360}{14.4} = 25$ 25 sides

5. What is the sum of the measures of the exterior angles of 18-gon?

360°

6. What is the measure of each angle?



$m\angle 1 = 56^\circ$

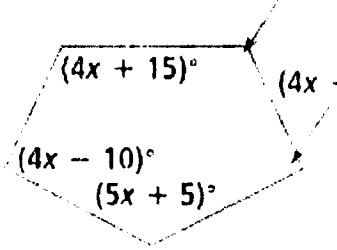
$m\angle 2 = 82^\circ$

$m\angle 3 = 62^\circ$

$m\angle 4 = 80^\circ$

$m\angle 5 = 80^\circ$

7. What is the value of x?



$2(4x+15)+2(4x-10)+5x+5=540$

$8x+30+8x-20+5x+5=540$

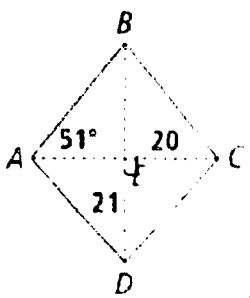
$21x+15=540$

$21x=525$

$x=25$

6.2: Kites and Trapezoids

8. *ABCD* is a kite. Find the missing lengths and angle measures.



$AC = 40$

$CD = 29$

$m\angle ABE = 39^\circ$

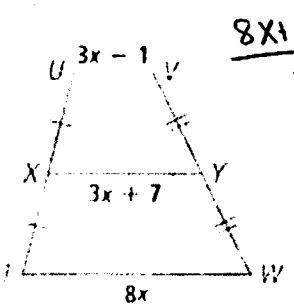
$m\angle BCE = 51^\circ$

$20^2 + 21^2 = c^2$

$841 = c^2$

$29 = c$

★ 9. What is the length of *XY*?



$\frac{8x+3x-1}{2} = 3x+7$

$\frac{11x-1}{2} = 3x+7$

$11x-1 = 6x+14$

$5x = 15$

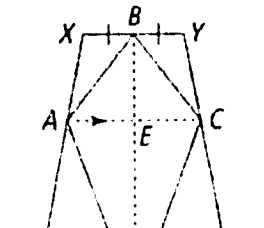
$x = 3$

$XY = 3(3)+7 = 16$

Geometry - Topic 6 Review Worksheet Name _____

10. **Given:** $ABCD$ is a kite and $WXYZ$ is an isosceles trapezoid

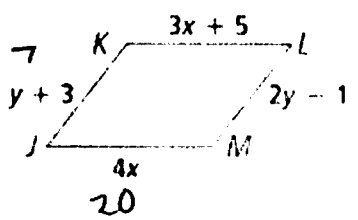
Prove: $\Delta ADW \cong \Delta CDZ$



Statement	Reason
$\overline{WD} \cong \overline{ZD}$ and $\overline{AC} \parallel \overline{WZ}$	Given
$\overline{AD} \cong \overline{CD}$	Def. of a kite
$m\angle AED = 90°$ and $m\angle CED = 90°$	Diagonals of a kite are ⊥
$\overline{ED} \cong \overline{ED}$	Reflexive Prop of Eq.
$\Delta ADE \cong \Delta CDE$	HL Theorem
$\angle DAE \cong \angle DCE$	CPCTC
$\angle ADW \cong \angle DAE$, $\angle CDZ \cong \angle DCE$	Alternate Interior Angles Thm
$\angle ADW \cong \angle CDZ$	Transitive Property of Equality
$\Delta ADW \cong \Delta CDZ$	SAS

6.3: Properties of Parallelograms

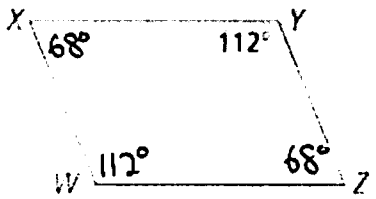
11. Find the perimeter of the parallelogram.



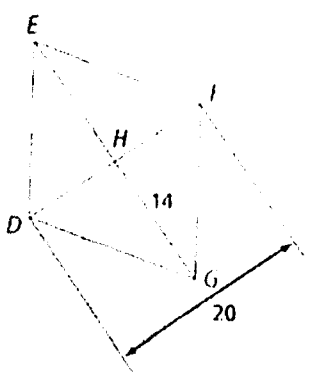
$4x = 3x + 5$
$x = 5$
$2y - 1 = y + 3$
$y = 4$
20

$P = 2(20) + 2(7) = 54$

12. Find the missing angle measures.



13. Find the stated side lengths.



$EG = 28$

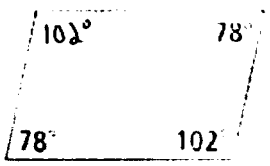
$DH = 10$

Geometry - Topic 6 Review Worksheet Name _____

6.4: Proving a Quadrilateral is a Parallelogram

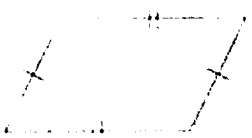
14. Is there enough information to prove each quadrilateral is a parallelogram? Explain.

a)



Yes, consecutive angles are supplementary.

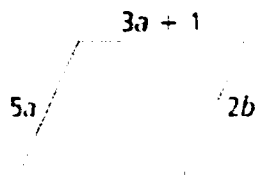
b)



Yes, opposite sides are congruent

15. For what values of a and b is each quadrilateral a parallelogram?

a)



$b = 3a + 1$

$5a = 2b - 5$

$5a = 2(3a+1) - 5$

$5a = 6a + 2 - 5$

$-a = -3$

$a = 3$

$b = 10$

$b = 3(3) + 1$

b)

$12b + 8 + 5b + 2 = 180$

$17b + 10 = 180$

$17b = 170$

$b = 10$

$a = 64$

$b = 10$

$2a = 12b + 8$

$2a = 12(10) + 8$

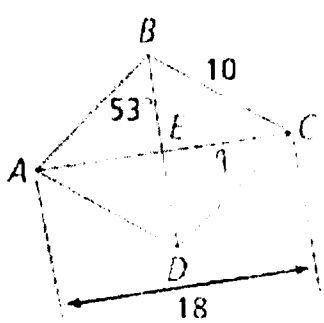
$2a = 120 + 8$

$2a = 128$

$a = 64$

6.5: Properties of Special Parallelograms

16. Find the stated lengths and angle measures for rhombus $ABCD$.



$AB = 10$

$DE = \sqrt{19} \approx 4.36$

$m\angle CED = 90°$

$m\angle BCD = 74°$

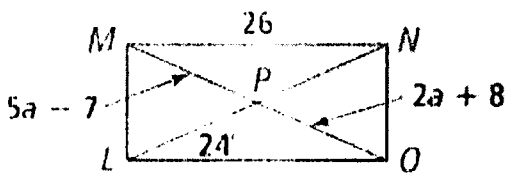
$9^2 + b^2 = 10^2$

$81 + b^2 = 100$

$b^2 = 19$

$b = \sqrt{19} \approx$

17. Find the stated lengths and angle measures for rectangle $LMNO$.



$MO = 36$

$LM = \sqrt{620} \approx 24.9$

$LP = 18$

$m\angle NMO = 24°$

$5a - 7 = 2a + 8$

$3a = 15$

$a = 5$

$MO = 5(5) - 7 + 2(5) + 8$

$MO = 25 - 7 + 10 + 8$

$MO = 36$

$36^2 = a^2 = 26^2$

$620 = a^2$

$24.9 = a$

Geometry - Topic 6 Review Worksheet Name _____

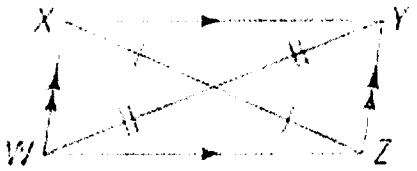
6.6: Conditions of Special Parallelograms

18. Which word best describes the parallelogram: parallelogram, rectangle, rhombus or square?

a)

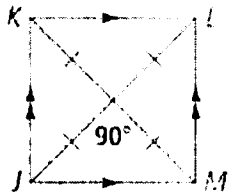
Rhombus

b)



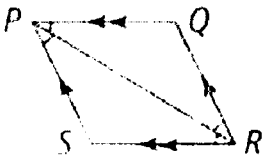
Parallelogram

c)



Square

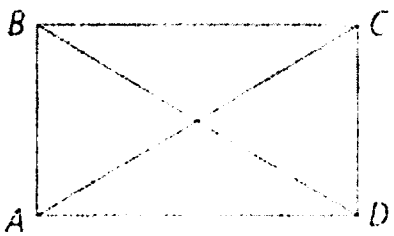
d)



Rhombus

19. What values of x makes the description of each parallelogram true?

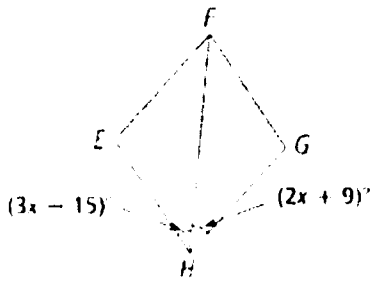
a) $ABCD$ is a rectangle, $AC = 4x - 5$ and $BD = 3x - 1$



$4x - 5 = 3x - 1$

$x = 4$

b) $ABCD$ is a rhombus



$3x - 15 = 2x + 9$

$x = 24$