Name: AK Period:_____ Date:_____

7.1-7.4 and 6.5 and 6.6 Review

1. Fill out the Venn Diagram. If a region lies inside another region then all properties and definitions of the larger region apply to the smaller region inside. (ex: all properties for a rectangle, rhombus, parallelogram and quadrilateral apply to a square).

Quadrilateral

Definition: A polygon with 4 sides

Parallelogram

Definition: A quadrilateral with opp sides parallel

Property: opp sides ≅

Property: opp angles ≅

Property: con. angles supp.

Property: Diagonals bisect

Rhombus

Def: All sides ≅

Property: Diagonals perp.

Property: Diagonals bisect angles

Square

Def: Regular (Equal sides & Angles)

Rectangle

Def: All angles ≅

Property: Diagonals ≅

2. Fill in the blanks with always, sometimes and never.

A square is ~~always~~ always a rectangle.

The diagonals of a rhombus always bisect each other.

A sum of the ~~exterior~~ interior angles of a parallelogram is ~~always~~ never ~~360°~~ 540.

A rectangle's diagonals are sometimes perpendicular.

A rhombus is sometimes a square.

A rectangle always has opposite sides parallel.

3. Given one interior angle of a regular polygon 165.6°, find the number of sides.

Ext angle → 14.4°

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

4. Given that the sum of the interior angles is 7740°, find the measure of each exterior angle.

$\frac{7740}{180} = \frac{(n-2)180}{180}$

43 = n − 2

+2 +2

n = 45

$\frac{360}{45}$ = 8°

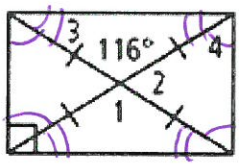
5. Is it possible to have a regular polygon where each interior angle is 150°? What about 130°?

Yes b/c $\frac{360}{30}$ = 12 sides ✓

No ✓ bc you cant have $\frac{360}{50}$ = 7.2 sides

6. Find the measure of each angle.

In the rectangle below, find the measure of the numbered angle measures



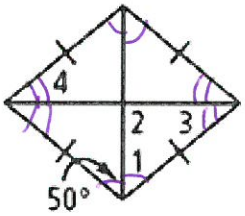
m∠1 = 116°

m∠2 = 64°

m∠3 = 32°

m∠4 = 58°

In the rhombus below, find the measure of the numbered angles



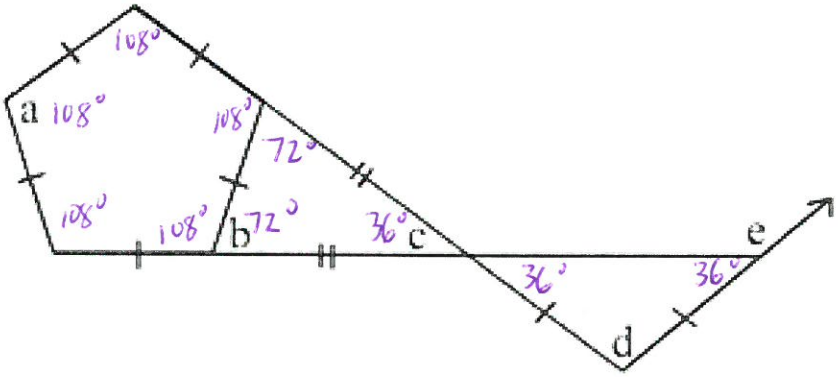
m∠1 = 50°

m∠2 = 90°

m∠3 = 40°

m∠4 = 40°

7. Find the measure of each angle.



a = 108°

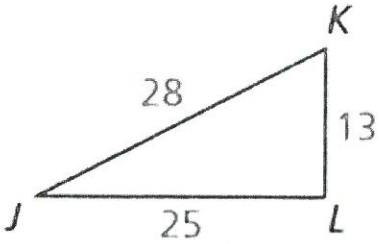
b = 72°

c = 36°

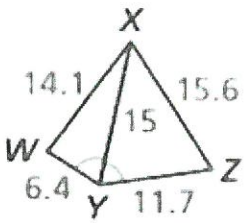
d = 108°

e = 144°

8. Order the angle measures from smallest to largest.

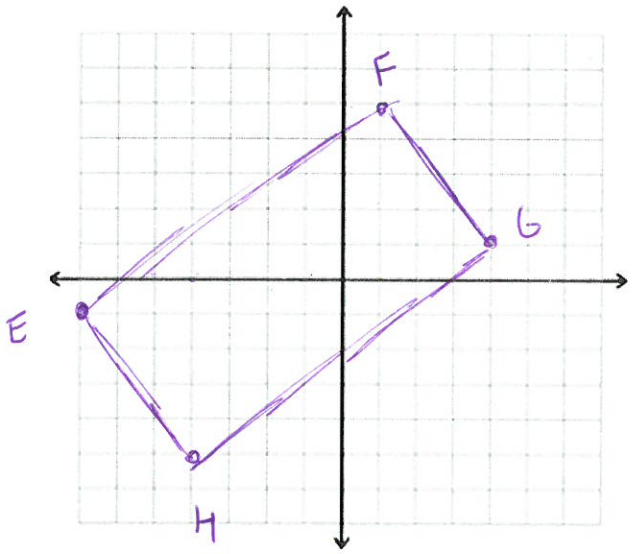


∠J, ∠K, ∠L



∠XYZ

9. Prove that E(-7, -1) F(1, 5) G(4, 1) H(-4, -5) is a parallelogram, then prove it is a rectangle.



Slope of: $EF = \frac{6}{8} = \frac{3}{4}$

$HG = 3/4$ → $EF \parallel HG$

$FG = -4/3$ → $FG \parallel EG$

$EH = -4/3$

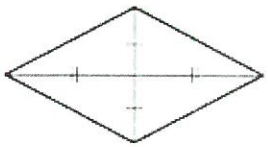
EFGH is a parallelogram.

Since they have opposite reciprocal slopes, $EF \perp EH$, $EH \perp GH$, $GH \perp FG$ & $EF \perp FG$.

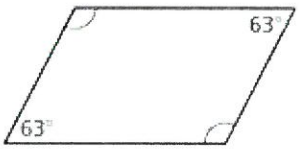
Therefore $m\angle F = m\angle G = m\angle H = m\angle E = 90^\circ$.

EFGH is a rectangle.

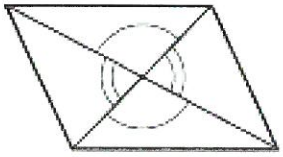
10. Do you have enough information to prove the given quadrilateral is a parallelogram? If yes, provide a brief explanation.



Yes, b/c diagonals bisect.

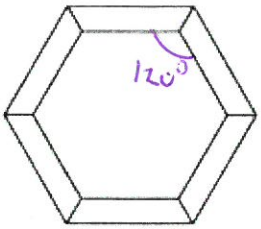


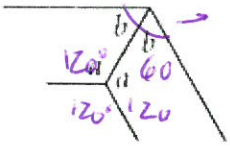
Yes b/c opp. angles are ≅.



No, Not enough info

11. A regular hexagonal frame is cut as shown. What is the measure of angles a and b?





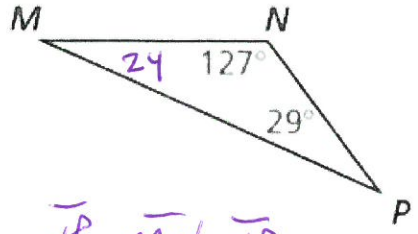
→ $2b = 120$

$b = 60$

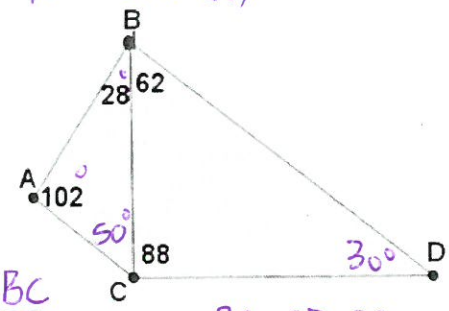
$a = 120^\circ$

12. Order the sides from longest to shortest.

Order the sides from longest to shortest



$\overline{NP}$, $\overline{MN}$, $\overline{NP}$



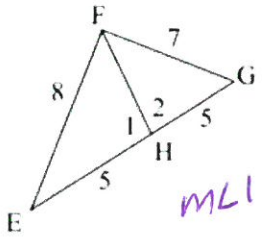
AC, AB, BC

BC, CD, BD

BD, CD, BC, AB, AC

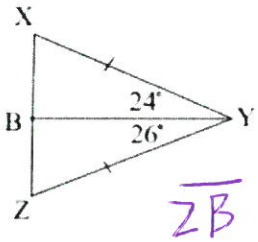
13. Where angle or side is longer?

$m\angle 1, m\angle 2$



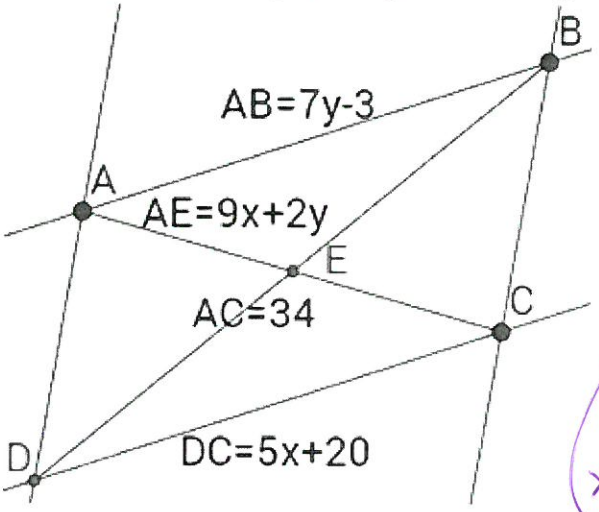
m∠1

$\overline{XB}, \overline{ZB}$



$\overline{ZB}$

14.Given ABCD is a parallelogram and lengths AB, AE, AC and DC as expressions, find x, y, and AB.



$2(9x+2y)=34$

$9x+2y=17$

$7y-3=5x+20$

$-23=5x-7y$

$\times 7$

$63x+14y=119$

$+10x-14y=-46$

$\times 2$

$\frac{73x}{73}=\frac{73}{73}$

$x=1 \rightarrow 9(1)+2y=17$

$-9 \quad -9$

$2y=8$

$y=4$