Angles of Polygons

1. Which sum does *not* belong with the other three? Explain your reasoning.

the sum of the measures of the interior angles of a quadrilateral	the sum of the measures of the exterior angles of a quadrilateral
the sum of the measures of the interior angles of a pentagon	the sum of the measures of the exterior angles of a pentagon

Reasoning:

For #2 – 5, find the sum of the measures of the interior angles of the indicated convex polygon. Show all work, including the equation.

2. Nonagon Sum = _____

3. Pentagon Sum = _____

4. Decagon Sum = _____

5. Heptagon Sum = _____

For #6 – 9, the sum of the measures of the interior angles of a convex polygon is given. Classify the polygon by the number of sides. Show all work, including the equation.

6. 720° Polygon: _____

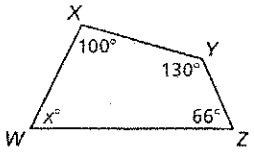
7. 1080° Polygon: _____

8. 2520° Polygon: _____

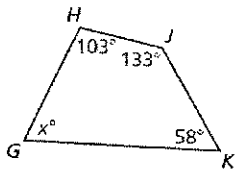
9. 3240° Polygon: _____

For #10 – 17, find the value of x. Show all work.

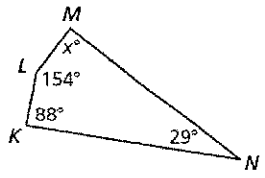
10. x = _____



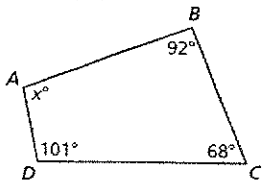
11. x = _____



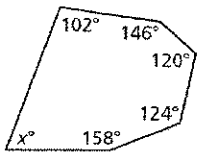
12. x = _____



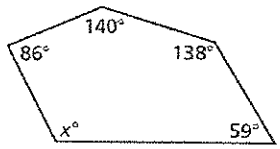
13. x = _____



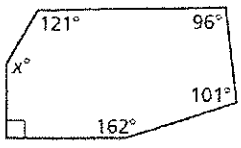
14. x = _____



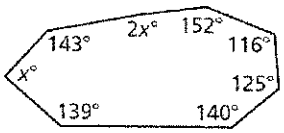
15. x = _____



16. x = _____

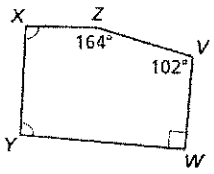


17. x = _____

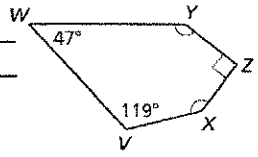


For #18 – 21, find the measures of ∠X and ∠Y. Show all work.

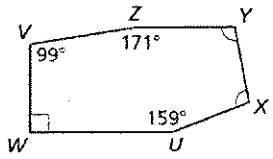
18. ∠X = _____
    ∠Y = _____



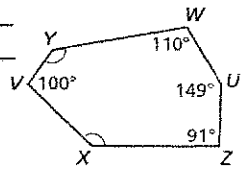
19. ∠X = _____
    ∠Y = _____



20. ∠X = _____
    ∠Y = _____

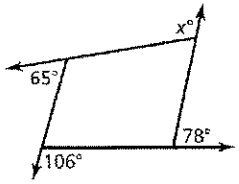


21. ∠X = _____
    ∠Y = _____

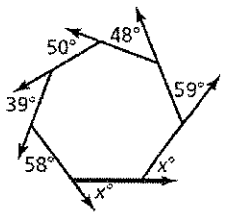


For #22 – 25, find the value of x

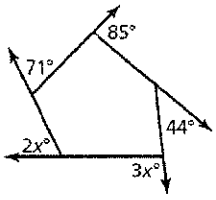
22. x = _____



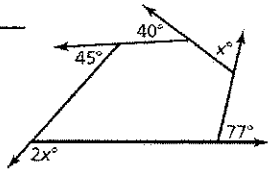
23. x = _____



24. x = _____



25. x = _____



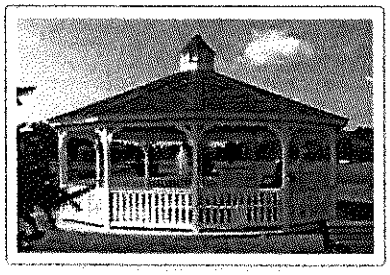
26. The base of a jewelry box is shaped like a regular hexagon. What is the measure of each interior angle of the jewelry box base? Show all work, including the equation used.

Each Interior Angle = _____

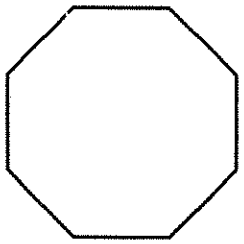
27. The floor of the gazebo shown is shaped like a regular decagon. Find the measure of each interior angle of the regular decagon. Then find the measure of each exterior angle. Show all work, including the equation used.

Each Interior Angle = _____

Each Exterior Angle = _____



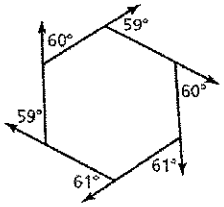
28. Polygon ABCDEFGH is a regular octagon. Suppose sides $\overline{AB}$ and $\overline{CD}$ are extended to meet at a point P. Find $m\angle BPC$. Include a diagram with your answer. Show all work.



29. Is the hexagon shown a regular hexagon? Explain your reasoning.

Yes/No

Reasoning:



30. You are given a convex polygon. You are asked to draw a new polygon by increasing the sum of the interior angle measures by 540°. How many more sides does your new polygon have? Explain your reasoning.

# of sides added: _____