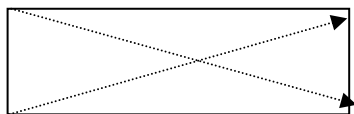


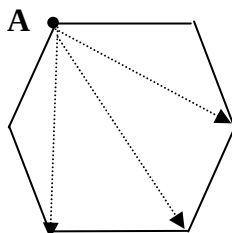
All answers that are measurements must include the unit of measure.

Include the symbol when naming geometric objects. For instance “line AD” should be written $\overleftrightarrow{AD}$.

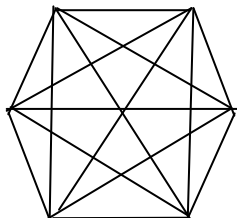
Diagonal of a polygon: A diagonal is a segment connecting two non-adjacent vertices in a polygon.



A rectangle has 2 diagonals.

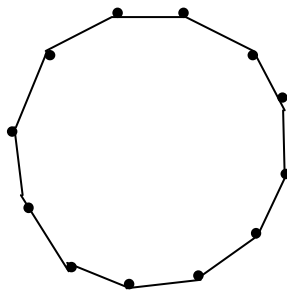
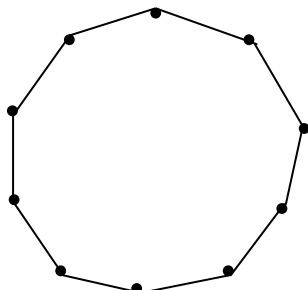
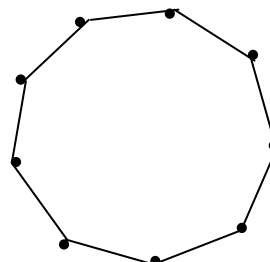
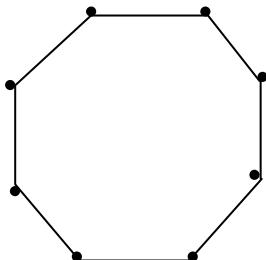
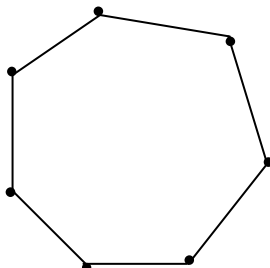
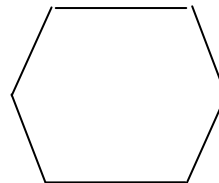
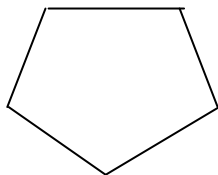


Diagonals from vertex A.
How many diagonals does a hexagon have, total?



Count them.

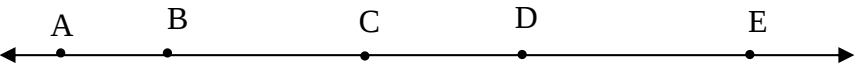
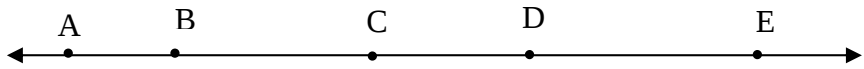
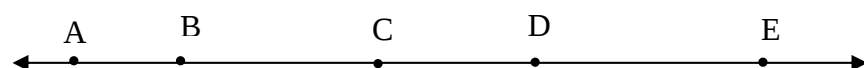
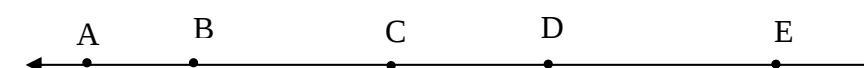
Draw all the diagonals in the following convex polygons. Use that information to fill in the table at the bottom of the page.



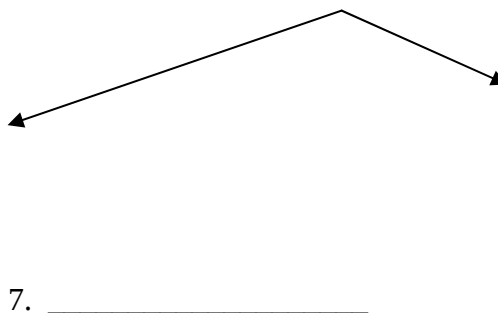
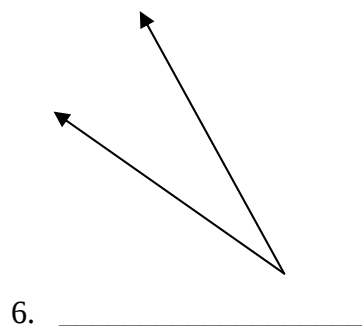
Polygon	Number of vertices	Number of Diagonals
rectangle		
pentagon		
hexagon		
hectagon		
octagon		
nonagon		
decagon		
dodecagon		

Study the table you have just made and then find the formula for the number of diagonals a polygon has, given the number of sides it has is n .

Show how to find the solutions to the following set operations using color/shading to show the results of the set operations.

1. $\overline{AB} \cup \overline{BD} =$ _____ 
2. $\overrightarrow{AD} \cap \overline{BC} =$ _____ 
3. $\overline{DE} \cup \overrightarrow{EB} =$ _____ 
4. $\overleftrightarrow{BC} \cap \overline{DE} =$ _____ 
5. $\overline{AE} \cup \overrightarrow{DC} =$ _____ 

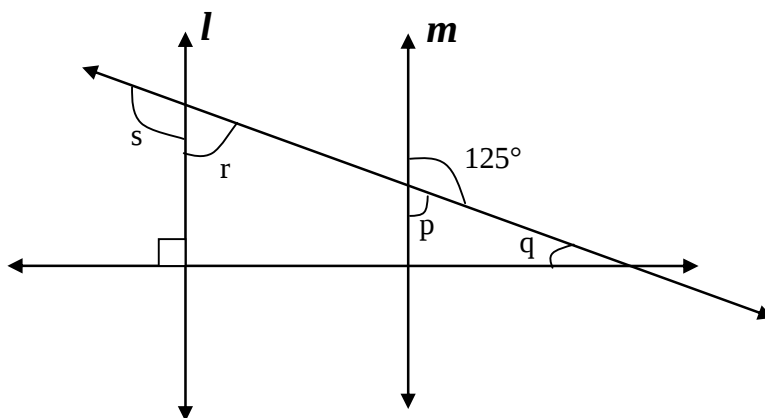
Measure the following angles using your protractor. Put your answer in the answer blank.



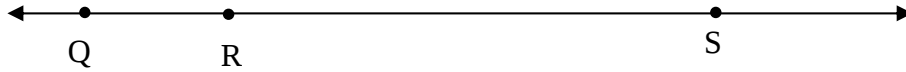
8. Can a triangle have both a right angle and an obtuse angle? Explain your reasoning.

9. In the diagram below, lines ***l*** and ***m*** are parallel. Find the following angle measures:

- (a) measure $\angle p =$ _____
- (b) measure $\angle q =$ _____
- (c) measure $\angle r =$ _____
- (d) measure $\angle s =$ _____



10. Given $\overline{QR} = 18$ cm and $\overline{QS}$ is five times the length of $\overline{QR}$, find the length of RS.

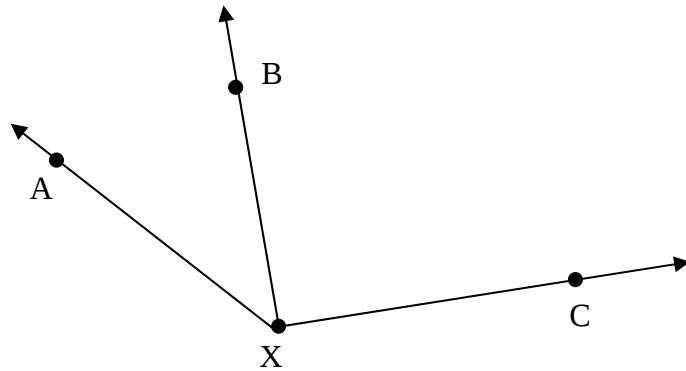


(a) $\overline{QS} =$ _____

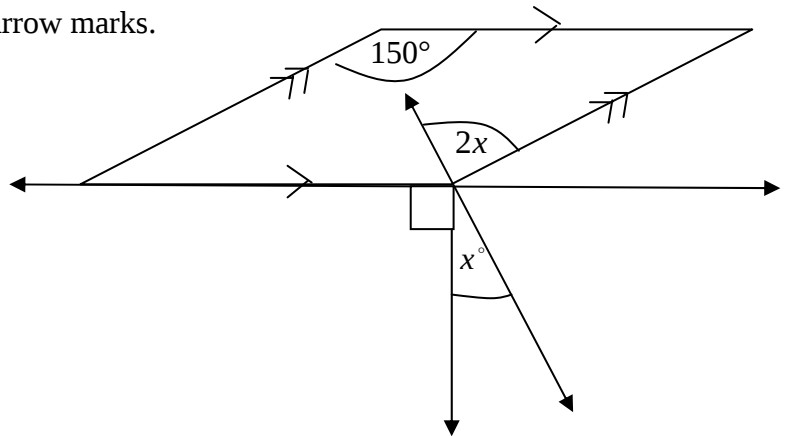
(b) $\overline{RS} =$ _____

11. Given $\angle CXB = 87^\circ$ and $\angle AXC = 140^\circ$, find the measure of $\angle BXA$.

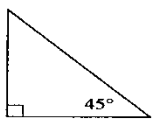
m $\angle BXA =$ _____



12. Show how to find the value of x . Picture not drawn to scale.
Parallel lines are shown with on-line-arrow marks.

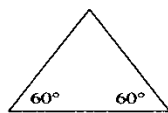


13. Below each triangle (a) identify it as acute, obtuse, or right and (b) tell the measure of the 3rd angle.



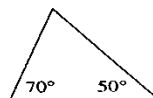
(a) _____

(b) _____



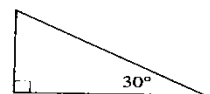
(a) _____

(b) _____



(a) _____

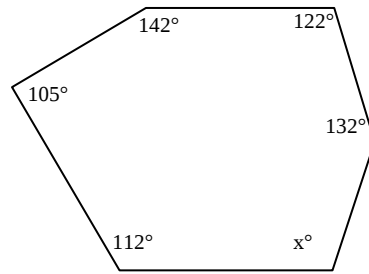
(b) _____



(a) _____

(b) _____

14. Find the measurement of angle x in the following figure:



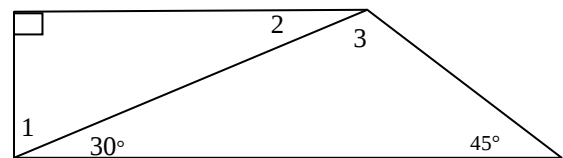
15. For the polygon in problem #14, what is the sum of the measures of the exterior angles?

16. Find the measures of the angles 1, 2, and 3 given that TRAP is a trapezoid with TR parallel to PA.

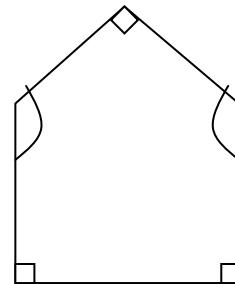
$m\angle 1 =$ _____

$m\angle 2 =$ _____

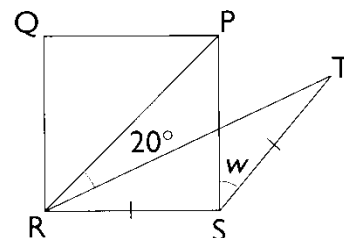
$m\angle 3 =$ _____



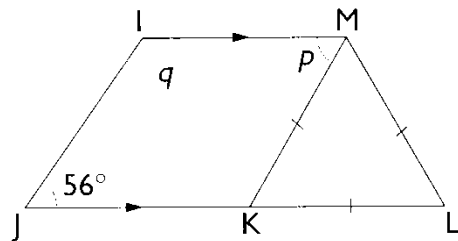
17. Home plate on a baseball field has three right angles and two other congruent angles. (See diagram below). Find the measures of the each of these other two angles.



18. PQRS is a square.
RST is an isosceles triangle.
 $RS = ST$
Find $\angle w$.



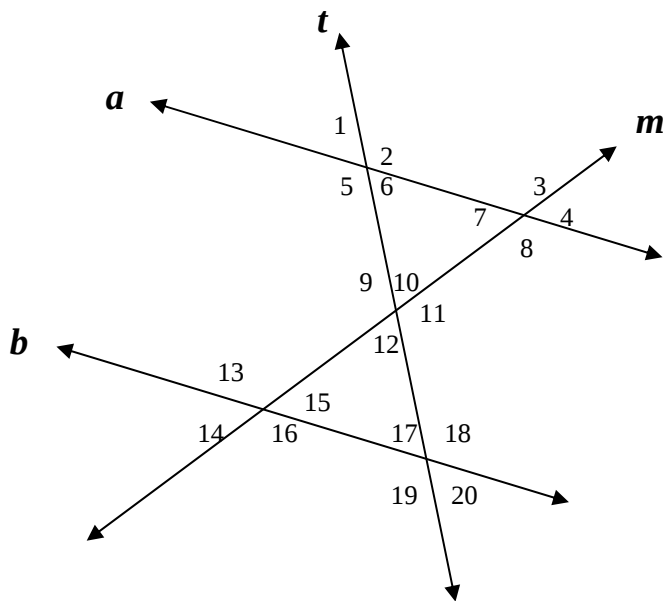
19. MKL is an equilateral triangle.
 $IM \parallel JL$
 Find $\angle p$ and $\angle q$.



20. t , m , a , and b are lines.
 Line a is parallel to line b .

Fill in the blanks below to make each statement true.

- $\angle 9$ is vertical to $\angle$ _____
- $\angle 14$ is corresponding to $\angle$ _____
- $\angle 7$ is alternate interior to $\angle$ _____
- $\angle 2$ is alternate exterior to $\angle$ _____
- $\angle 9$ is supplementary to $\angle$ _____ and $\angle$ _____
- $\angle 8$ is corresponding to $\angle$ _____
- $\angle 17$ is vertical to $\angle$ _____



21. What is the measure of each angle of a regular (and convex) dodecagon (12 sides)?

22. A 20-gon will have how many diagonals?

For each figure listed below, match EVERY quality from the second list which the figure will ALWAYS have. Keep the letters in alphabetic order.

- _____ 23. Rectangle
- _____ 24. Parallelogram
- _____ 25. Isosceles Triangle
- _____ 26. Isosceles Trapezoid
- _____ 27 Rhombus
- _____ 28. Trapezoid
- _____ 29. Regular Polygon
- _____ 30. Kite
- _____ 31. Square
- _____ 32. Equilateral Triangle

- A. all sides the same length
- B. one or more pairs of parallel sides
- C. at least two sides the same length
- D. 4 right angles
- E. two pair of parallel sides
- F. 1 or more pairs of adjacent sides the same length
- G. all the interior angles the same measure
- H. is a quadrilateral

33. What are the 3 qualities every polygon MUST have?

- a.
- b.
- c.

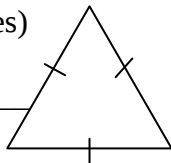
34. List 4 things you should teach your students to help them use their protractors correctly.

- a.
- b.
- c.
- d.

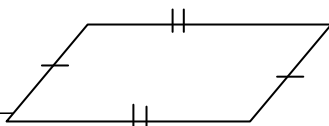
For each of these figures, list ALL of the terms from the box at the right that apply.

(Some figures may have several matches)

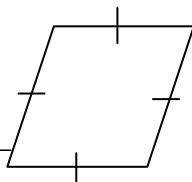
35. _____



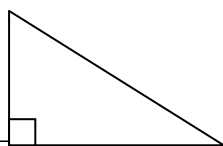
36. _____



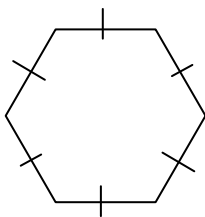
37. _____



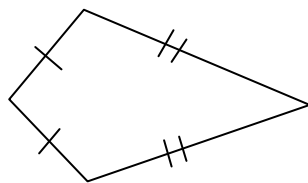
38. _____



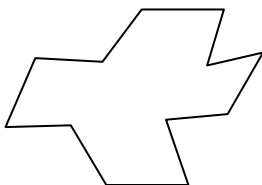
39. _____



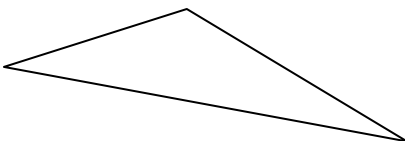
40. _____



41. _____



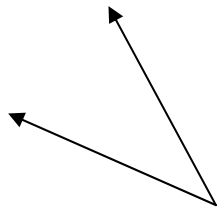
42. _____



- A. Scalene Triangle
- B. Isosceles Triangle
- C. Equilateral Triangle
- D. Right Triangle
- E. Right Scalene Triangle
- F. Square
- G. Rhombus
- H. Rectangle
- I. Parallelogram
- J. Trapezoid
- K. Quadrilateral
- L. Kite
- M. Pentagon
- N. Hexagon
- O. Dodecagon
- P. Regular Polygon
- R. Triangle
- S. Concave Polygon

Do the following using only compass and straight edge. You know the rules. I have to see correct arcs.

41. Copy this angle.



42. Copy and then bisect this segment.



43. Draw a perpendicular to this line at the point C.



43. Draw a perpendicular to this line through the point F



44. Bisect this angle.

