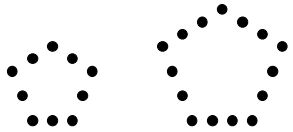
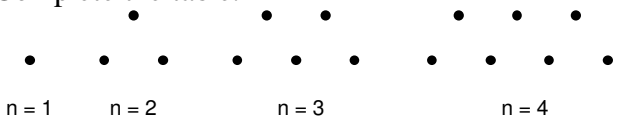
1. Look at the set of dots below. Sketch the next figure, and predict the total number of dots in the 6th figure.



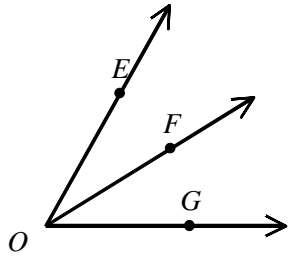
2. Complete the table.



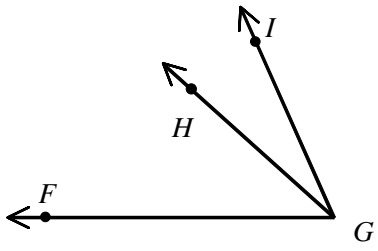
n	1	2	3	4	5	6
nth number	1	3	5	?	?	?

3. Draw four points, *A, B, C,* and *D*, on a line so that $\overrightarrow{AC}$ and $\overrightarrow{AB}$ are opposite rays and $\overrightarrow{AC}$ and $\overrightarrow{AD}$ are the same ray.

4. If $m\angle EOG = 59°$ and $m\angle FOG = 30°$, then what is the measure of $\angle EOF$?

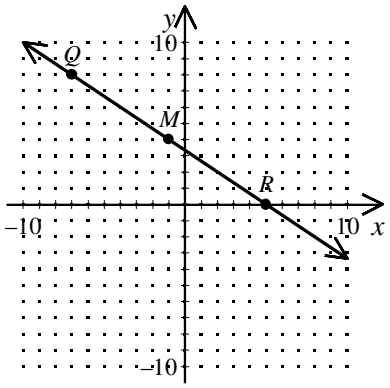


5. $m\angle IGH = (2x+8)°$ and $m\angle FGH = (6x-6)°$ and $m\angle IGF = 66°$.
Find $m\angle IGH$ and $m\angle FGH$.

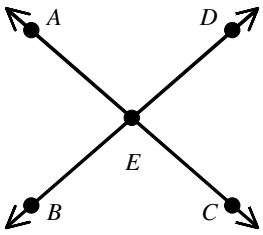


6. *Y* is a point in the interior of $\angle AOB$. Draw a sketch. Name two adjacent angles.

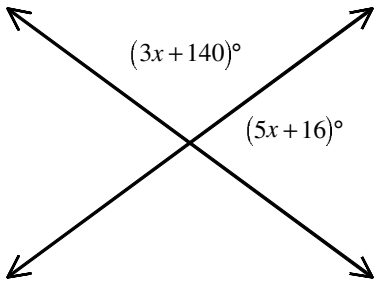
7. The midpoint of $\overline{QR}$ is $M(-1, 4)$. One endpoint is $Q(-7, 8)$. Find the coordinates of the other endpoint.



8. In the figure shown, $m\angle AED = 110°$. True or False: $\angle AEB$ and $\angle AED$ are vertical angles and $m\angle AEB = 70°$.



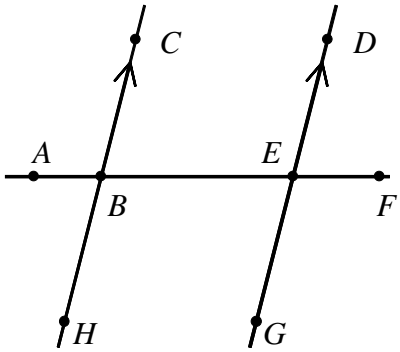
9. Solve for x:



10. $\angle 1$ and $\angle 2$ are supplementary angles. $\angle 1$ and $\angle 3$ are vertical angles. $m\angle 2 = 67°$. Find $m\angle 3$.

11. Draw an example of the Alternate Interior Angles Theorem.

12. In the figure, $m\angle ABC = 103°$. Which statement is false?



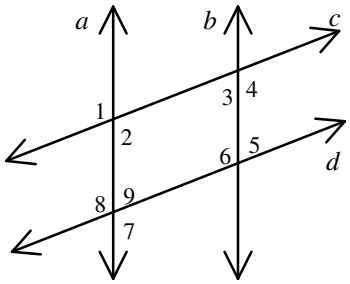
$m\angle GEF = 103°$

$m\angle DEF = 103°$

$\angle HBF$ and $\angle AED$ are alternate interior angles.

$\angle ABH$ and $\angle AEG$ are corresponding angles.

13. Which lines, if any, must be parallel based on the given diagram and information?
Give the justification for each conclusion.
Given: $\angle 8 \cong \angle 5$



14. Find the slope of the line passing through the points $A(7, -4)$ and $B(8, 3)$.

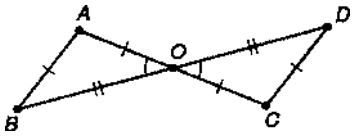
15. Decide whether **Line 1** and **Line 2** are parallel, perpendicular, or neither.
Line 1 passes through (–6, 9) and (–2, 14)
Line 2 passes through (9, –8) and (13, –3)

16. Given: $\Delta LMN \cong \Delta UVW$. Complete the statements.

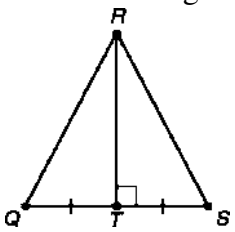
A. $\overline{UW} \cong$ _____

B. $\angle LMN \cong$ ____

17. State two postulates or theorems that can be used to conclude that $\Delta AOB \cong \Delta COD$.



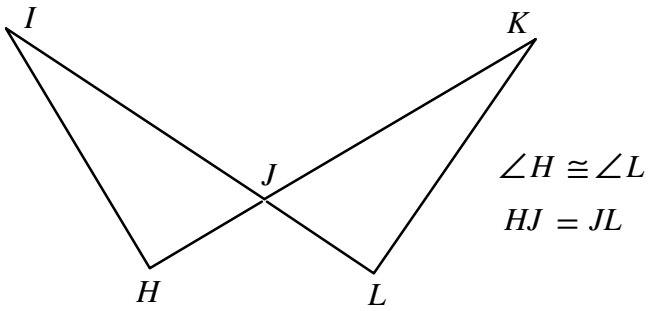
18. Refer to the figure below.



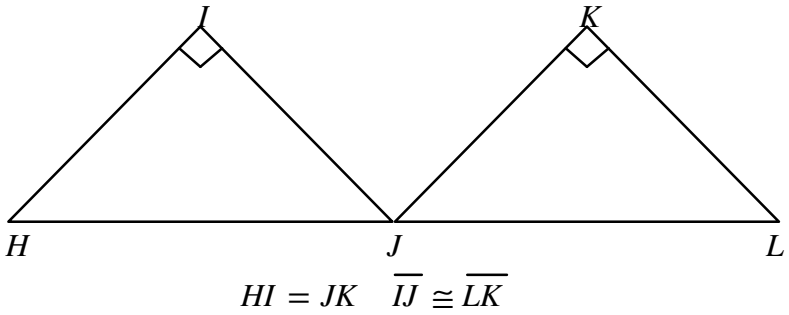
A. Is $\overline{QR} \cong \overline{SR}$? If so, why?

B. What type of triangle is ΔQRS?

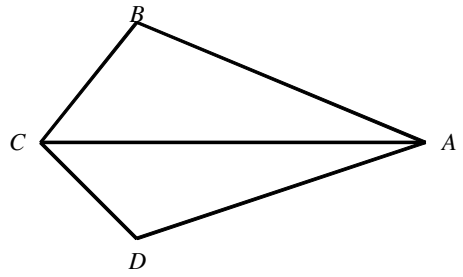
19. Refer to the figure shown. Give a congruence statement for the two triangles and name the theorem or postulate that proves the congruence.



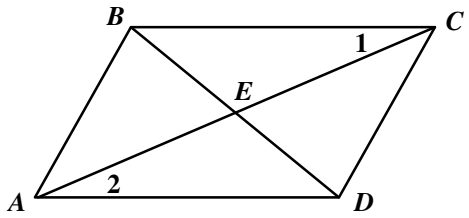
20. Refer to the figure shown. Give a congruence statement for the two triangles and name the theorem or postulate that proves the congruence.



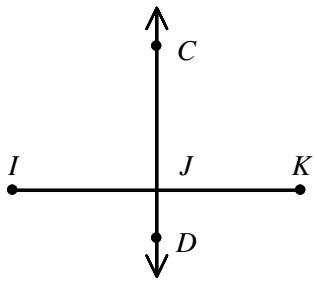
21. Given: $\angle BAC \cong \angle DAC$, $\angle B \cong \angle D$
Prove: $\Delta ABC \cong \Delta ADC$



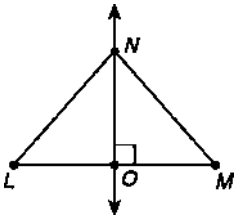
22. Given: $\overline{BC} \cong \overline{DA}$, $\angle 1 \cong \angle 2$
Prove: $\Delta BEA \cong \Delta DEC$



23. Given: $\overleftrightarrow{CD}$ is the perpendicular bisector of $\overline{IK}$.
Name three things that you can conclude.

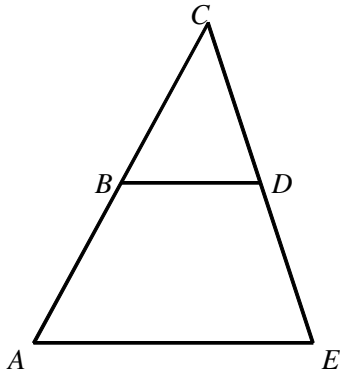


24. $\overleftrightarrow{NO}$ is the perpendicular bisector of $\overline{LM}$. If $OM = 4$ and $LN = 6$, then $LO =$_____ and $MN =$_____. Explain your solutions.

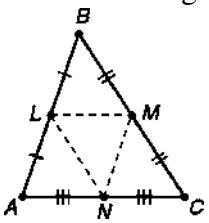


25. True or False: A segment drawn from a vertex of a triangle perpendicular to the opposite side is called the median of the triangle to that side.

26. Solve for x given $BD = 5x + 3$ and $AE = 6x + 9$. Assume B is the midpoint of $\overline{AC}$ and D is the midpoint of $\overline{CE}$.

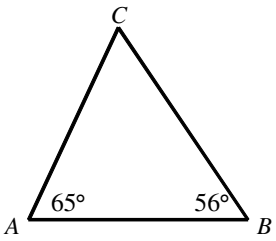


27. Refer to the figure below.



A. If $BC = 15$, then $LN =$ _____.
B. If $AB = 3x + 5$ and $NM = 2x + 1$, then $NM =$ _____.

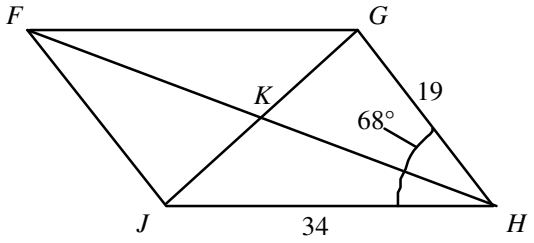
28. Identify the shortest side of ΔABC.



29. Is it possible for a triangle to have sides with the given lengths?
10 cm, 8 cm, 9 cm

30. What properties of a polygon make it regular? Sketch an example.

31. Use the figure below.



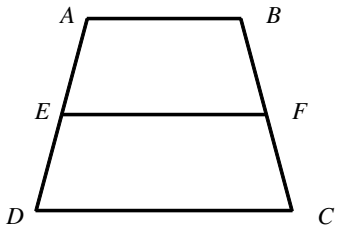
Given: $FGHJ$ is a parallelogram, $m\angle JHG = 68°$, $JH = 34$, $GH = 19$

A. Find $m\angle FJH$.
B. Find JF.
C. Find $m\angle GFJ$.
D. Find FG.

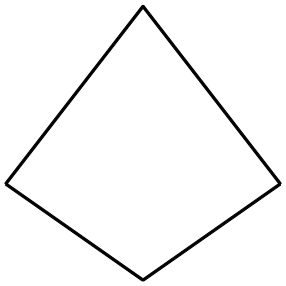
32. Sketch, if possible, a quadrilateral that has two consecutive supplementary angles and that is not a parallelogram.

33. Draw a Venn diagram showing the relationship between squares, rectangles, rhombuses, parallelograms, and quadrilaterals.

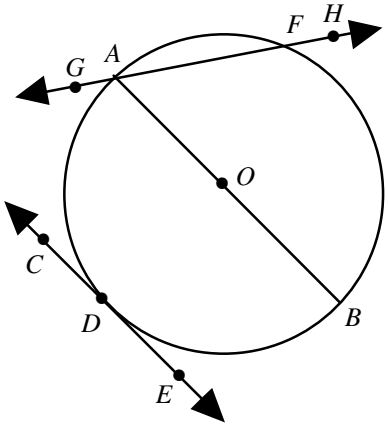
34. Given: Trapezoid $ABCD$ with midsegment $\overline{EF}$. If $AB = 12$ and $EF = 16$, find the length of $\overline{DC}$.



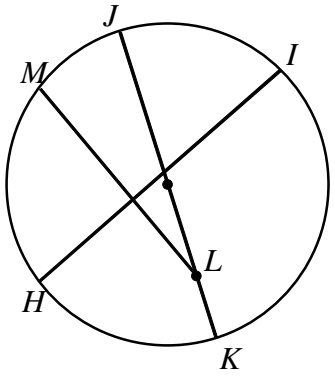
35. Describe the figure using as many of these words as possible: rectangle, trapezoid, square, quadrilateral, parallelogram, rhombus.



36. Identify all secants for circle O.



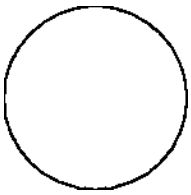
37. Identify two chords.



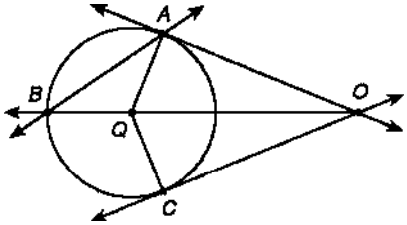
[A] $\overline{HI}$ and $\overline{JK}$ [B] $\overline{HJ}$ and $\overline{IK}$

[C] $\overline{HI}$ and $\overline{LM}$ [D] $\overline{JK}$ and $\overline{LM}$

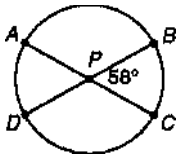
38. Define a secant of a circle and illustrate the definition on the circle below.



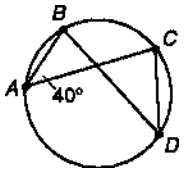
39. Given: $\overleftrightarrow{OA}$ and $\overleftrightarrow{OC}$ are tangent to $\odot Q$ at A and C, respectively. List any right angles.



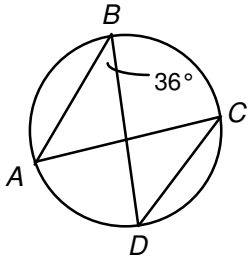
40. Find the measure of $\overset{\frown}{DBC}$ in $\odot P$.



41. Find $m\overset{\frown}{BC}$ and $m\angle D$.



42. Find $m\overset{\frown}{ABD}$ and $m\angle C$.



43. An octagon has eight sides of varying lengths. What is the sum of the measures of its interior angles?

44. Find the measure of an interior angle and an exterior angle of a regular polygon with 5 sides.

45. Find the circumference of a circle with radius 3 mm. Use $\pi \approx 3.14$.

46. The circumference of a circle is 96π cm. Find the diameter, the radius, and the length of an arc of $120°$.

47. The tires of an automobile have a diameter of 22 inches. If the wheels revolve ten times, how far does the automobile move? (Round the result to the nearest tenth of a foot.)