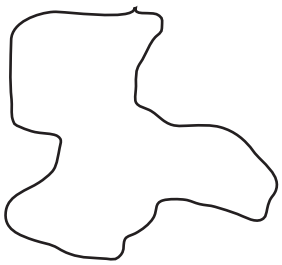
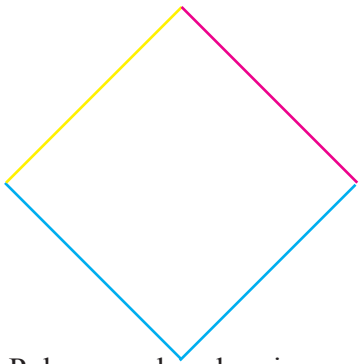
Polygons:
- Line - sensorial version of a line is a string.
- Line segment - take string and cut it at the ends.

Broken Straight Line Segment - a line segment that has distinct curves

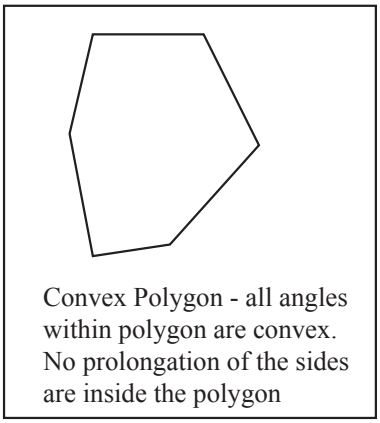


Simple Closed Curved Region -region that used a curved line to close the region

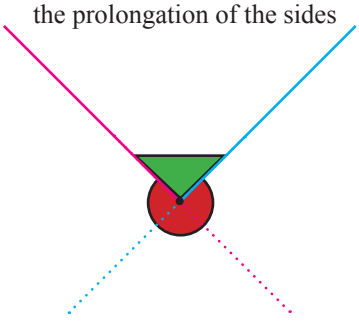
Vertex - point of two lines, segment, rays cross.



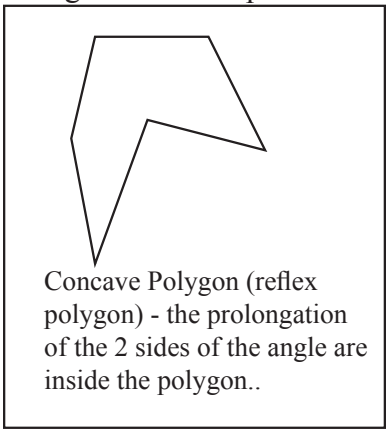
Polygon - closed region using straight lines



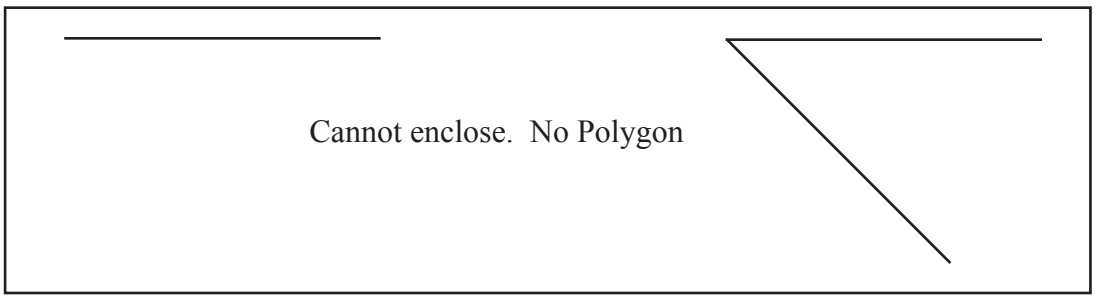
The space inside is the Polygon. Broken straight line is the peremeter.

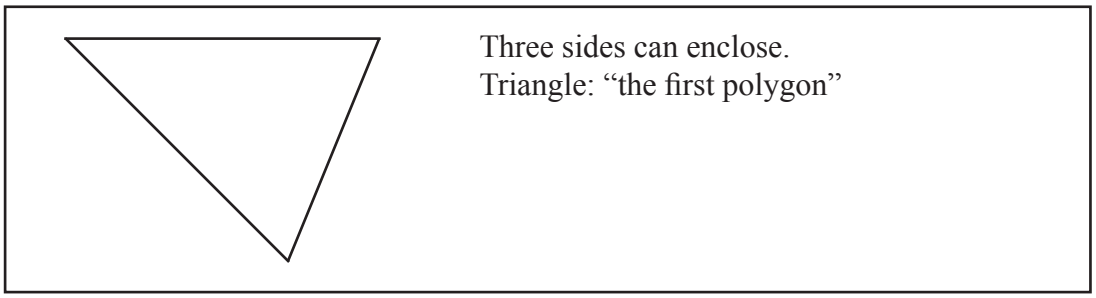


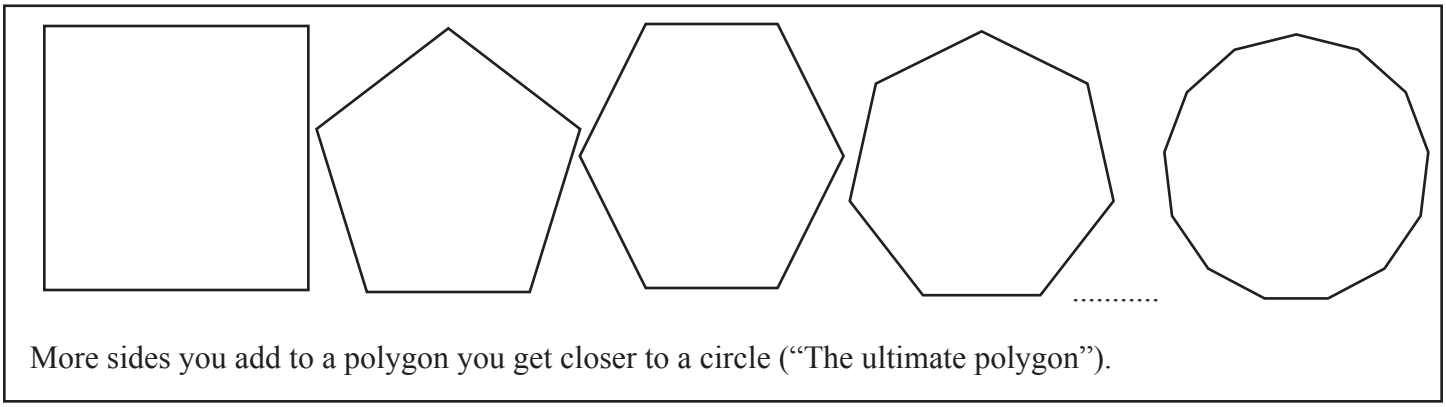
Two angles for every angle created. Green is most common while the red is the secondary angle.



Construction of Polygon.



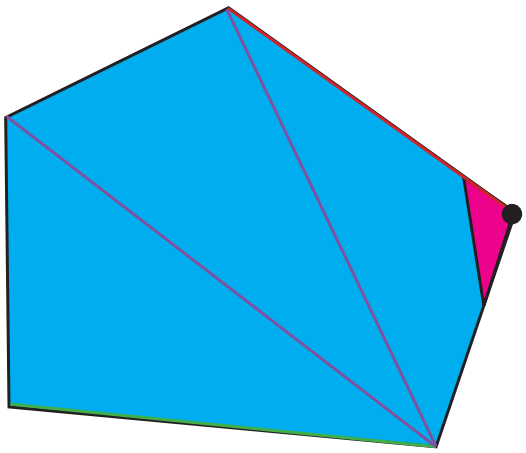




More sides you add to a polygon you get closer to a circle (“The ultimate polygon”).

Polygon: a closed region limited by a broken straight line.

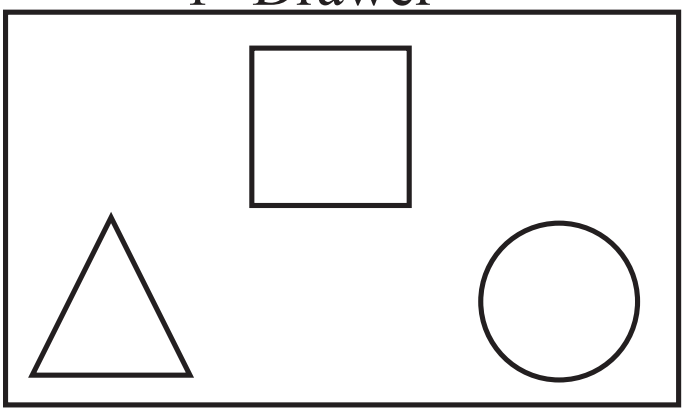
Nomeclature of The Parts of a Polygon:



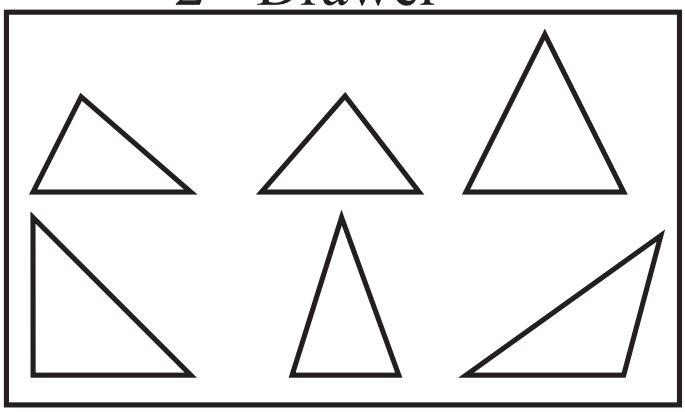
Sides - all the sides put together are the perimeter.
Angle
Surface (region) - area within the polygon.
Base is whatever the bottom is based on your point of view.
number of sides determine number of bases.
Vertex - any time two sides come together
Diagonal - a line segment that goes from one vertex to another non-adjacent vertex

Plane Inset Cabinet:

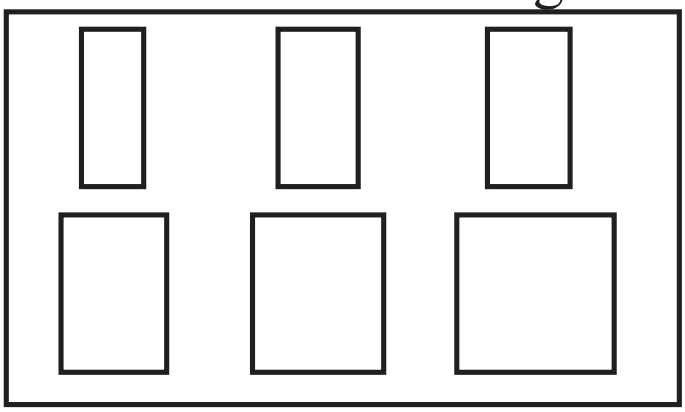
1st Drawer



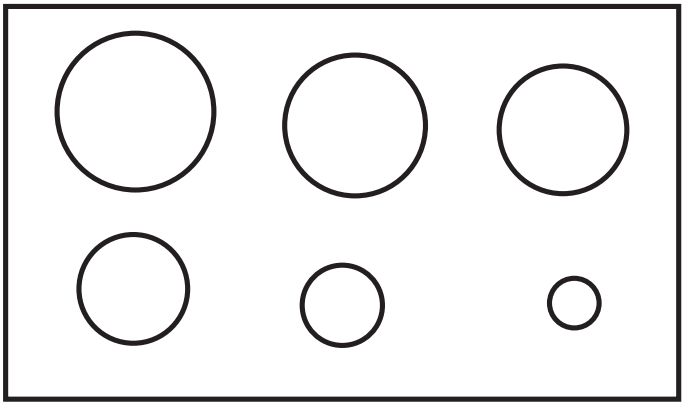
2nd Drawer



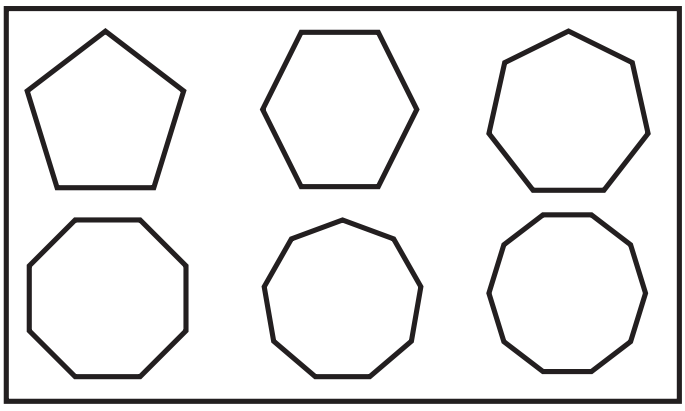
3 Drawer - Rectangle



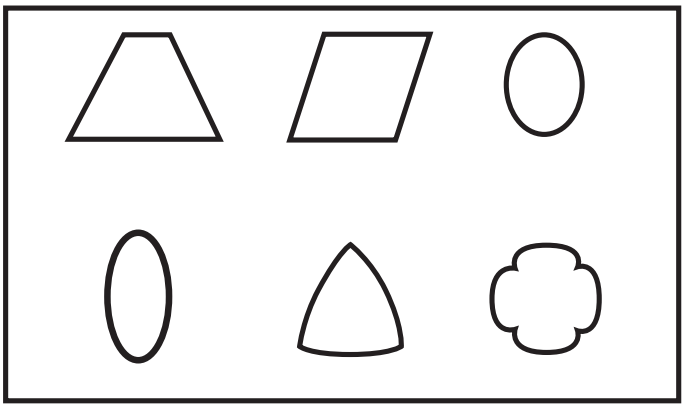
4th Drawer - Circle



5th Drawer

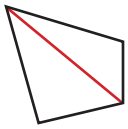
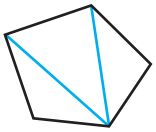
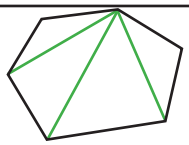
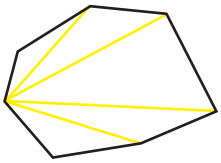
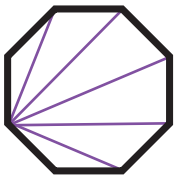
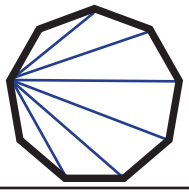
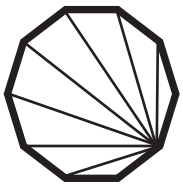


6th Drawer

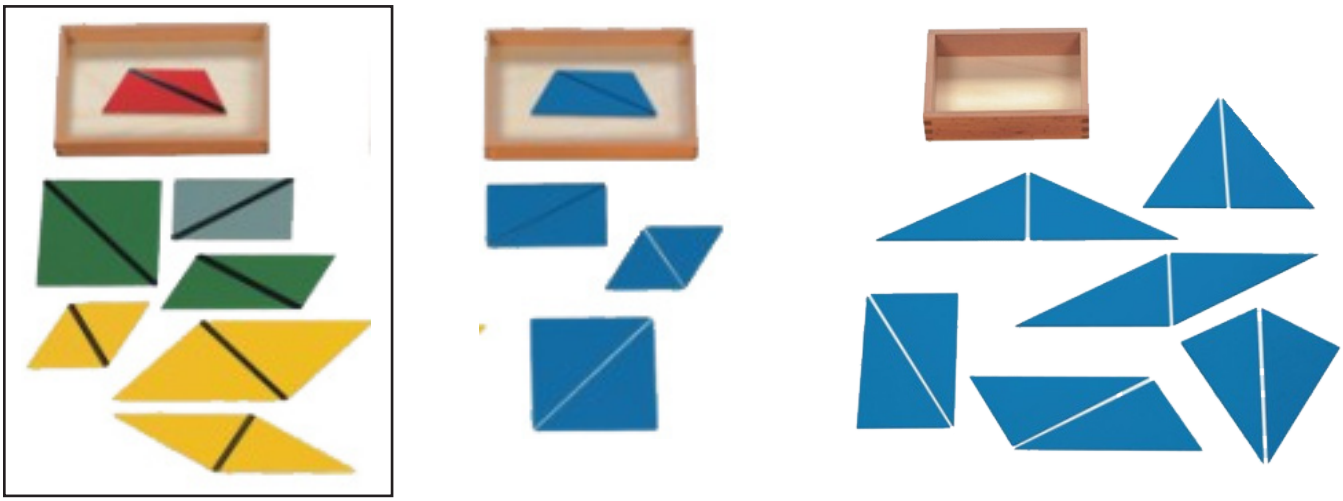


Research of Diagonals of Polygons

(all diagonals drawn from ONE vertex only)

number of sides	name of polygon	picture of polygon	# of diagonals	# of triangles formed
3	Triangle		0	1
4	Quadrilateral		1	2
5	Pentagon		2	3
6	Hexagon		3	4
7	Septigon		4	5
8	Octagon		5	4
9	Nonagon		6	5
10	Decagon		7	6
n			n-3	n-2

Constructed Triangles.



Box 1: (triangles build things.
- Sort by colors. (6 yellow, 4 green, 2 gray, 2 red)
- Match by the black lines. First form you create a parallelogram and rhombus with the yellow.

Parallelogram Parallelogram Rhombus — Equilateral Triangles

- Match black lines on the green now.

Parallelogram Square

- Match black lines on the red miss match triangles now

Trapezoid

- Match black lines on the Gray now.

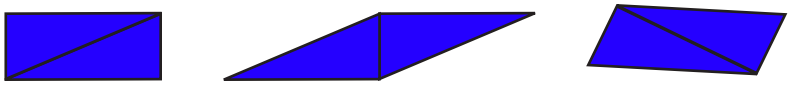
Rectangle

- The yellow trangles and green trangles that created the Parallelogram and the Gray that created a rectangle are all the same triangles. (Scalene)

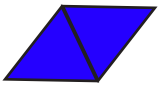
- The green that form the Square and teh yellow that form the parallelogram are teh same. (isosceles)

Box 2:

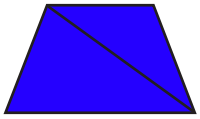
- Scalene triangles (3 diff. length sides) With these 2 triangles we can make a rectangle and quadrilateral.



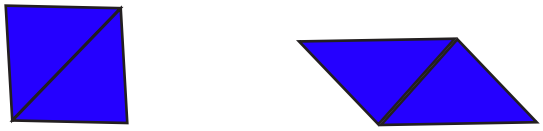
- Equilateral Triangles (3 of the same sizes) With these 2 triangles you can create a Rhombus.



- Miss Match traingles can only form a trapezoid.



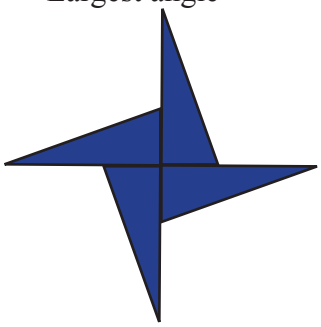
- Isosceles triangles (2 sides the same length) With these 2 triangels you can create a parallelogram and a square.

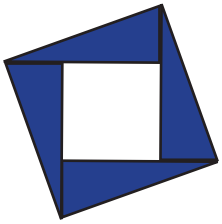


Box 3:

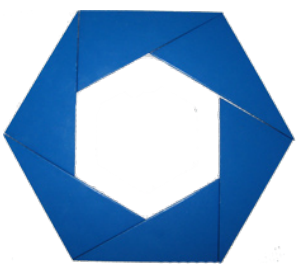
- Right Angles Scalene Triangles (3 diff. length sides) With these 12 blue triangles you can create a pin wheel.
- Use this material by putting the larges angle together, the medium angle together and the smallest angle together.

Largest angle

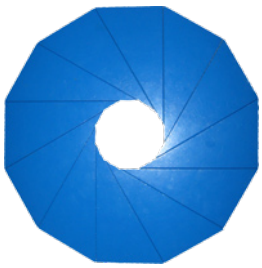




Medium angle

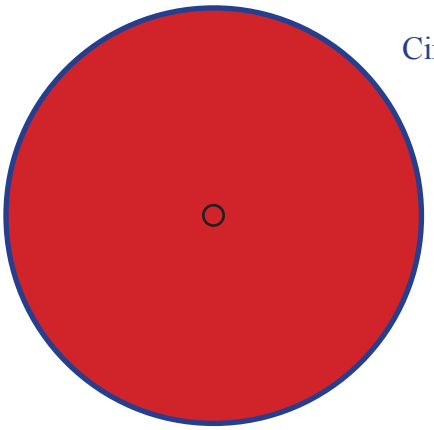


Smallest angle



The Circle:

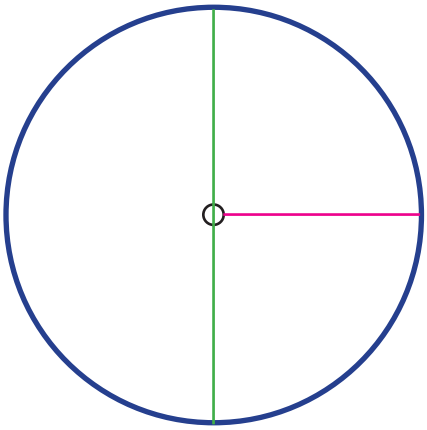
Explain each key word so the child understands what each word means.



Circumference - curved line that bounds the circle.

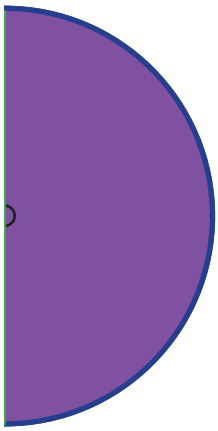
Surface: area within the circumference (contains the center)

Center - exact middle of the circle.



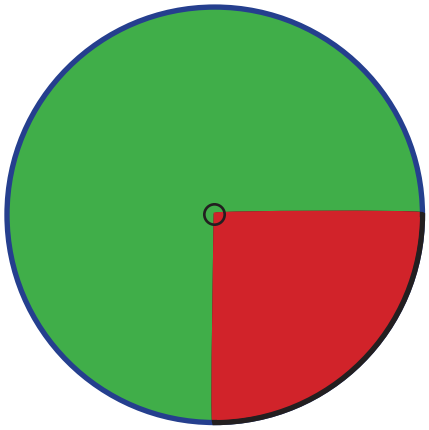
Radius, Radii - the line that connects the center to any point on the circumference

Diameter - When you have 2 radii back to back with one another. Goes from 1 point of the circumference thru the center to another.



Semi Circumference - the part of the circumference the diameter cuts in 1/2.

Semi Circle - 1/2 of the interior space.

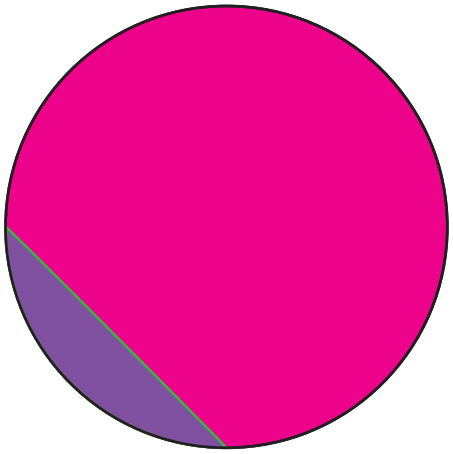


Major Sector - The outer part of the surface area excluding the Minor sector.

Minor Sector - The small section that is inside the arc and 2 radii.

Major Arc - The remainder of the circumference.

Minor Arc. - a closed segment of a differentiable curve in the two-dimensional plane.

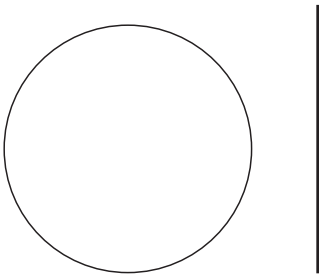


Major Segment - The large surface area that does not include the Minor Segment.

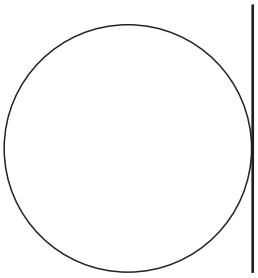
Minor Segment - The small area inbetween the chord and the circumference.

Chord - a line segment joining two points on a curve.

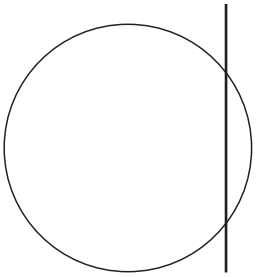
Positions of a Straight Line Related to a Circumference:



External - Does not touch the actual circumference of the circle.

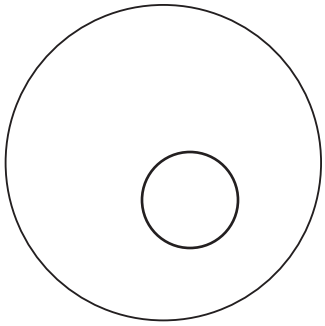


Tangent - the line and the circumference touch at exactly 1 point.

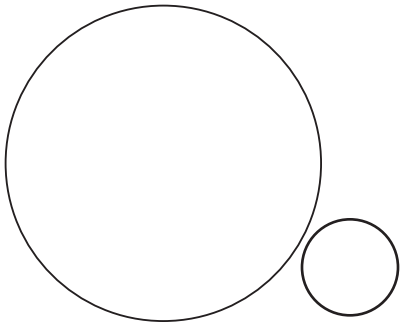


Secant - The lines and circumference are touching at 2 points.
Comes from the word meaning cut in Latin.

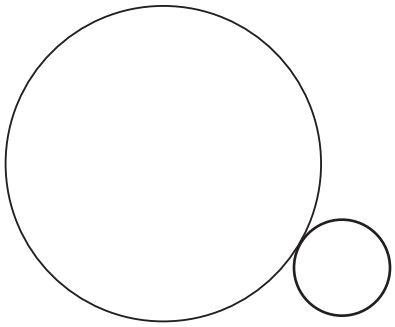
Position of One Circumference Related to Another:



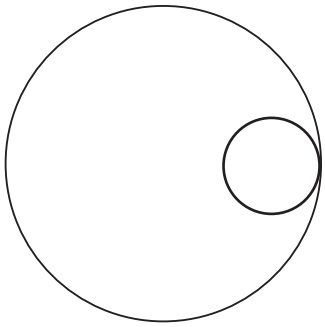
Internal - 2 circumferences do not touch at any point. One is inside the other.



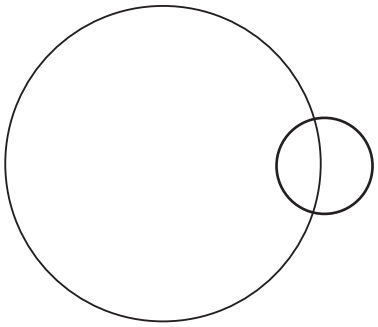
External - 2 circumferences do not touch at any point. One is outside the other.



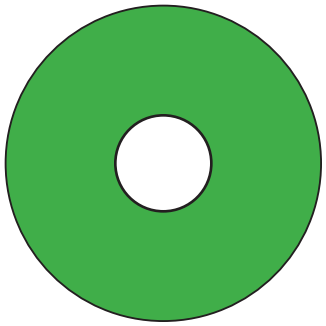
Externally Tangent. - 2 circumferences are touching at one point. One is outside the other the other.



Internally Tangent. - 2 circumferences are touching at one point. One is inside the other the other.



Secant - the two circumferences are touching at exactly 2 points.

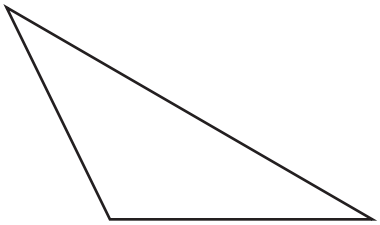


Concentric - two circles are internal and have the extact same center.

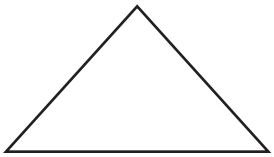
Annulus - the ring of space that is inbetween the two circles. Inside one but not the other.

Triangles (Analysis of the Triangle)

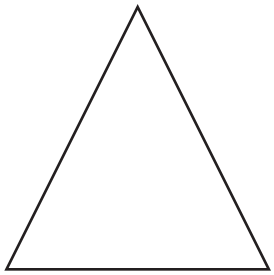
Classification According to Sides.



Scalene Triangle - No sides are the same.

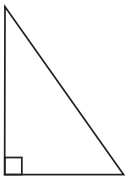


Isosceles Triangle - Two sides are the same and one different

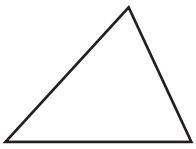


Equilateral Triangle - All sides are the same shape and size.

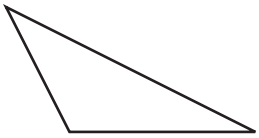
Classification According to Angles.



Right Angled - One angle is same size as our right angle measurer.



Acute Angled - when all angles are smaller thanmy right angle measurer

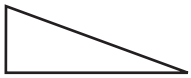
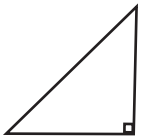
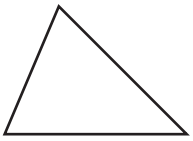
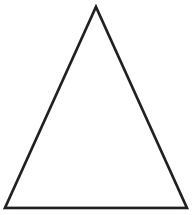
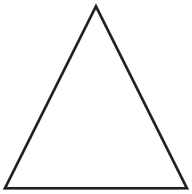
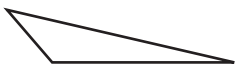


Obtuse Angled - when one angle larger than my right angle measurer

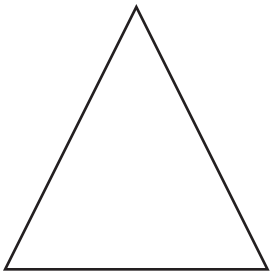
Triangles: Connection of the Two Classifications.

Seven triangles of Reality

Classified by sides:

Classified by angles:	Scalene	Isosceles	Equilateral
Right Angled			Can't create one.
Acute Angled			
Obtuse Angled			Can't create one.

Triangles: The Equilateral Triangle.



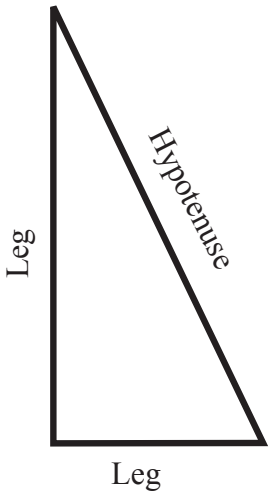
Equilateral and Equiangular triangle.
Triangles with 3 equal sides must have 3 equal angles.

Equilateral triangle = Equiangular triangle

Acute angled equilateral triangle.
Acute angled equilateral triangle.
equilateral triangle.

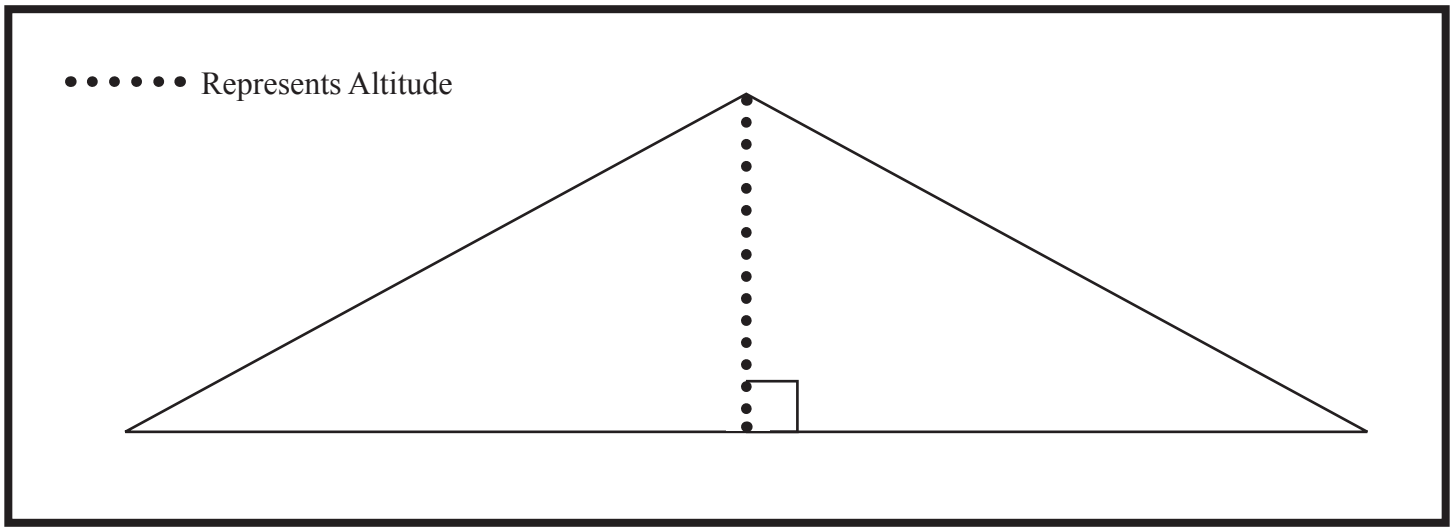
1. Equilateral triangle are always acute
2. Acute Angled triangles are not always equilateral.
3. Equilateral triangles are always Equiangular.
4.

Nomenclature of the Right Angle Triangle.

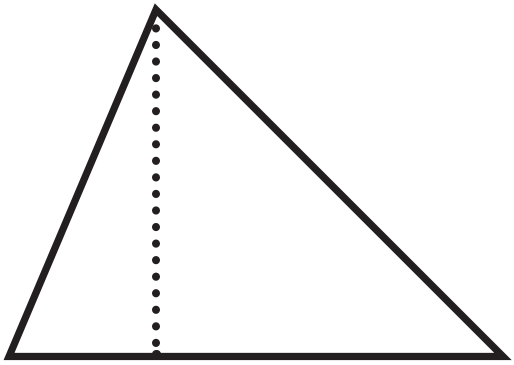


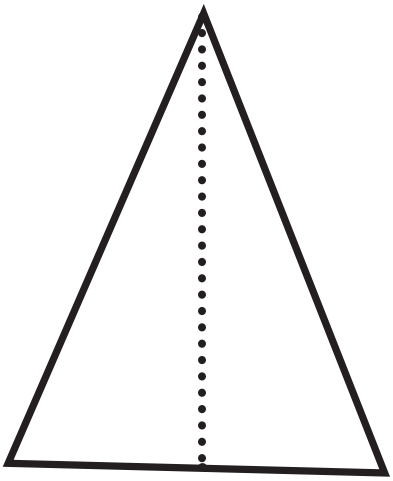
Right Angle often symbolized by a ☐ located at the right angle.

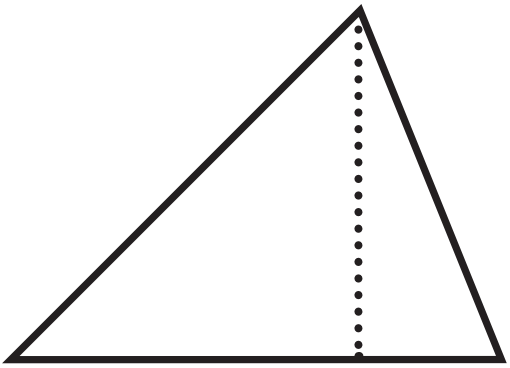
Altitude: A line that come from one vertex and forms a right angle on the opposite side.



There are three altitudes per triangle.



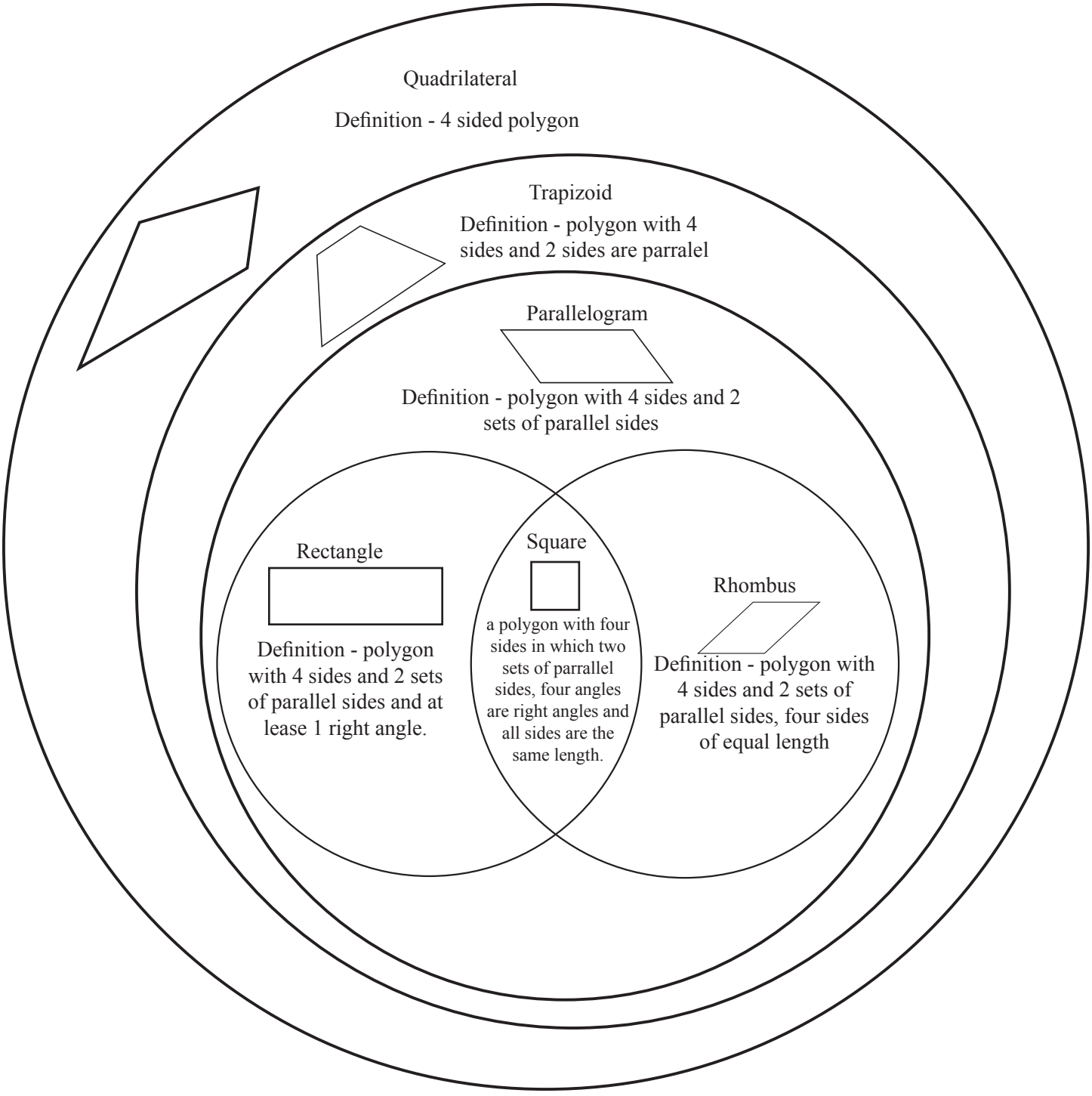




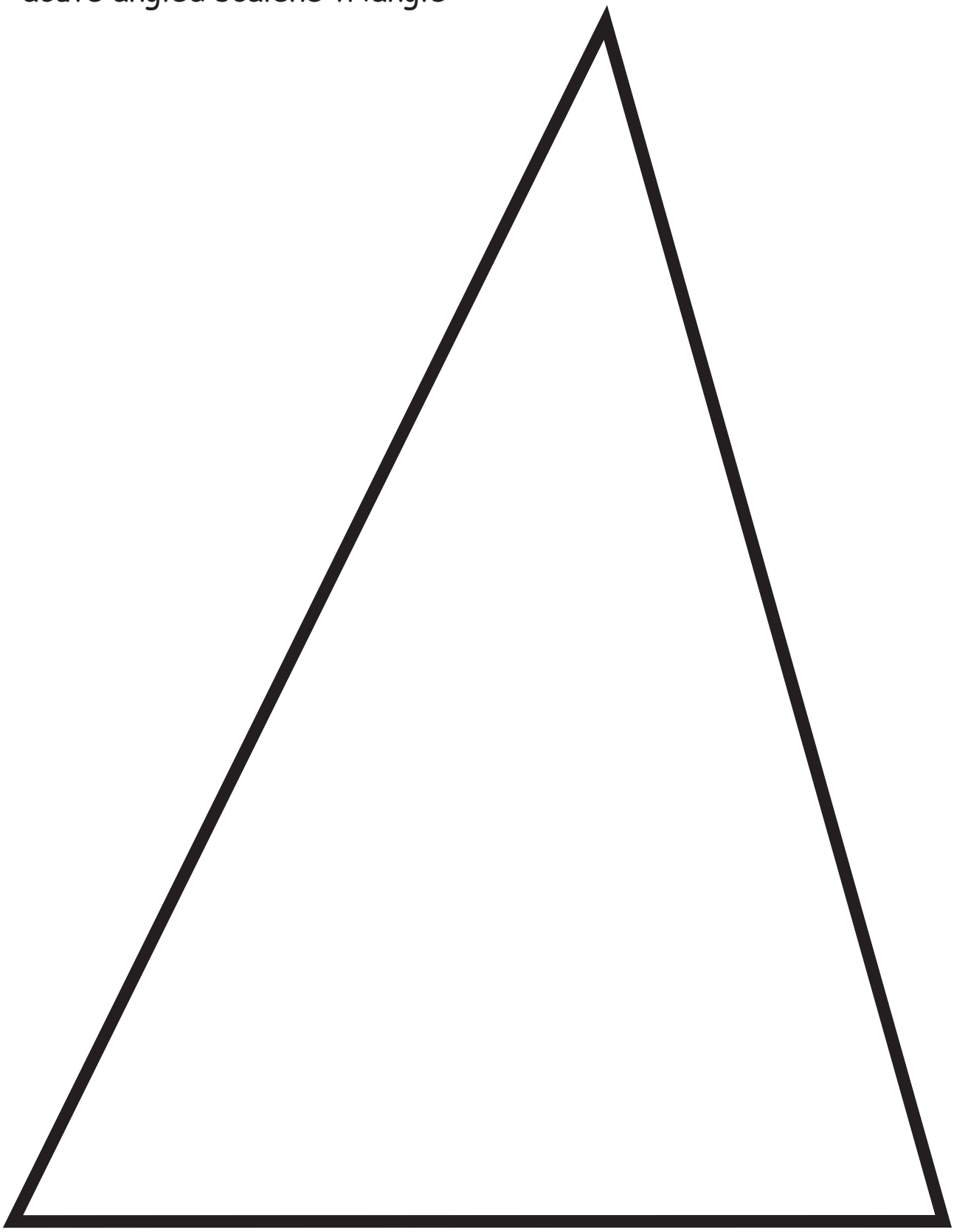
Research of Altitudes and Orthocenters of Triangles

type of triangle	number of altitudes inside triangle	number of altitudes on perimeter of triangle	number of altitudes outside triangle	location of orthocenter
acute angled scalene triangle	3	0	0	Internal
acute angled isosceles triangle				
acute angled equilateral triangle				
right angled scalene triangle				
right angled isosceles triangle				
obtuse angled scalene triangle				
obtuse angled isosceles triangle				

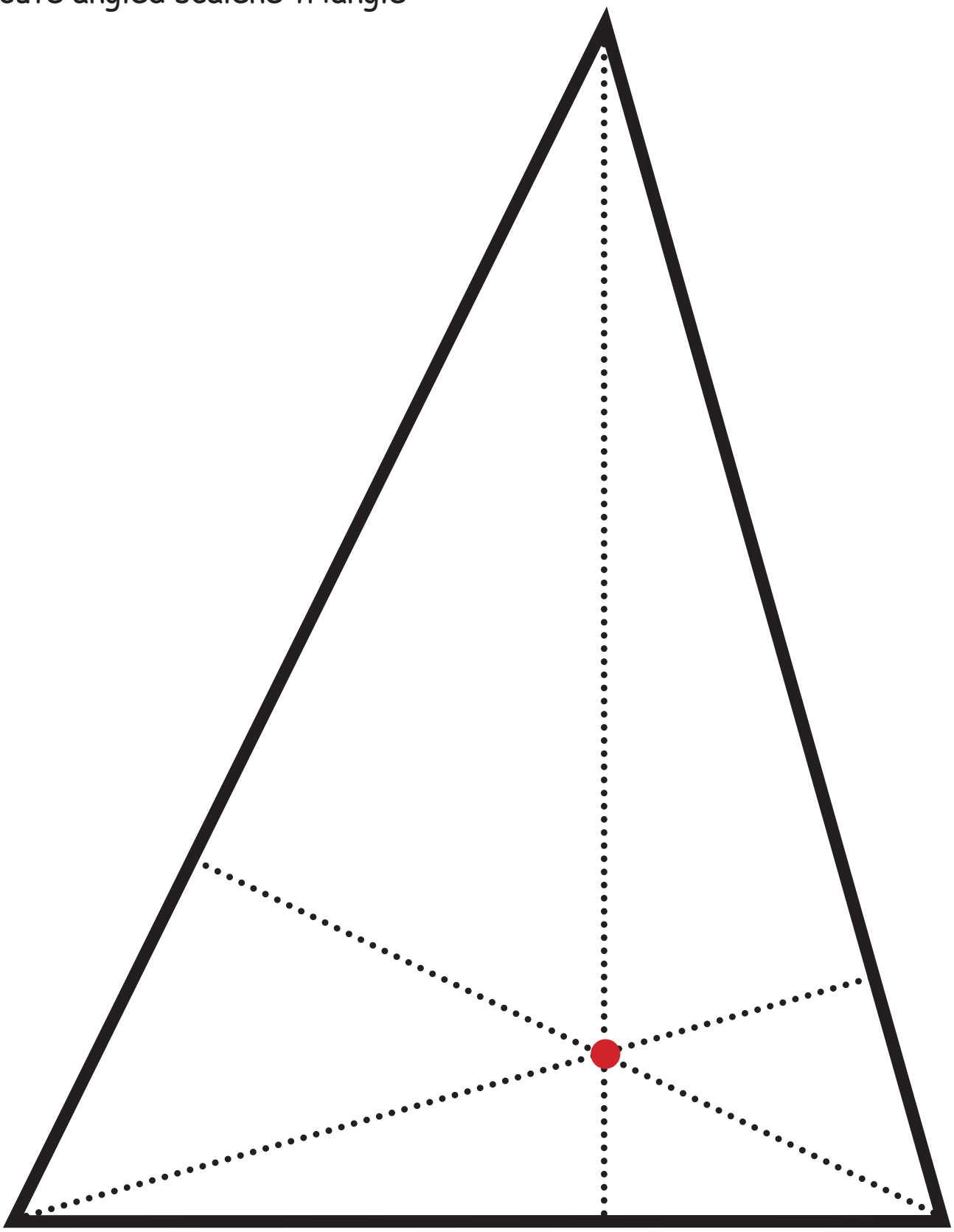
Alternative Presentation of Types of Quadrilaterals:



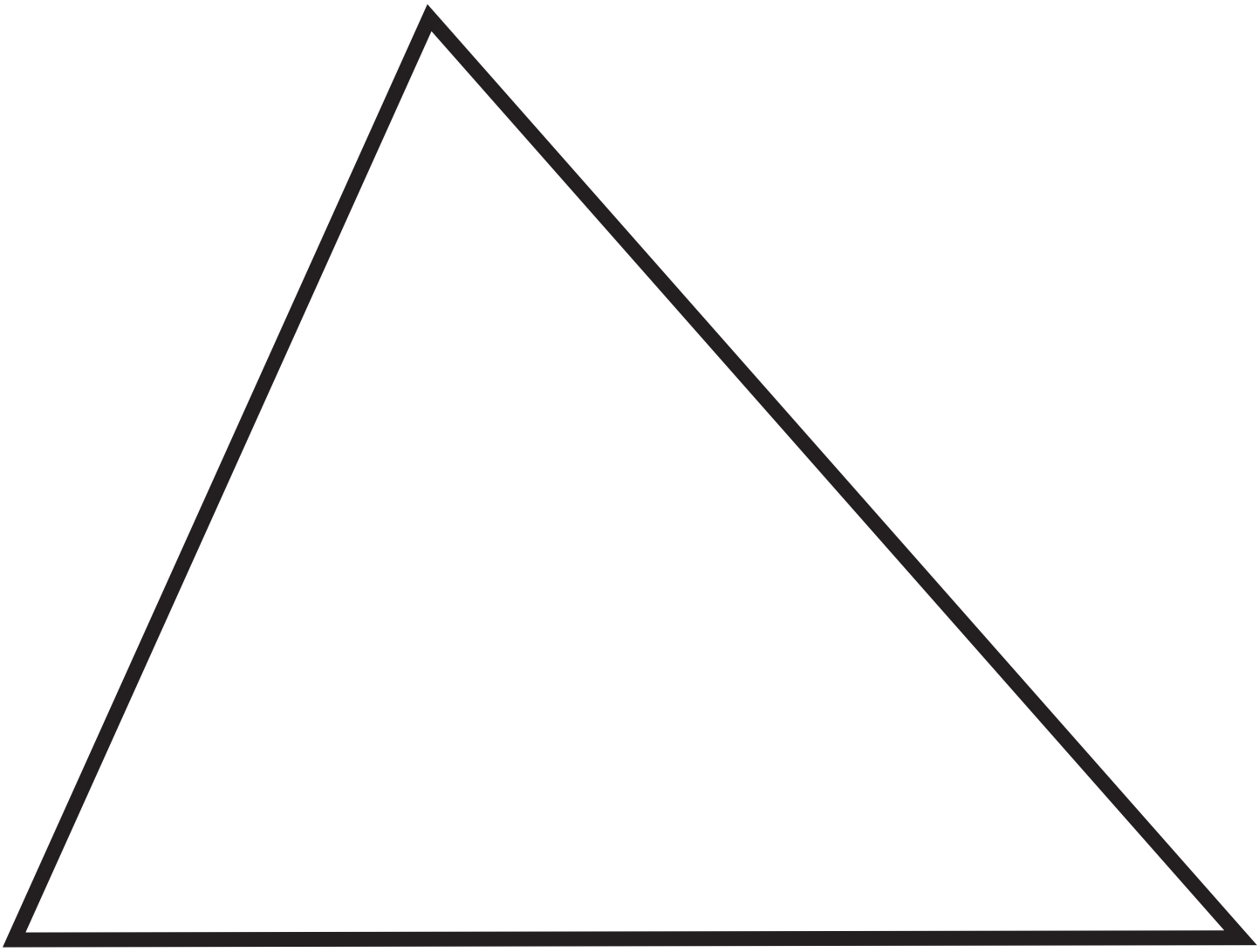
acute angled scalene triangle



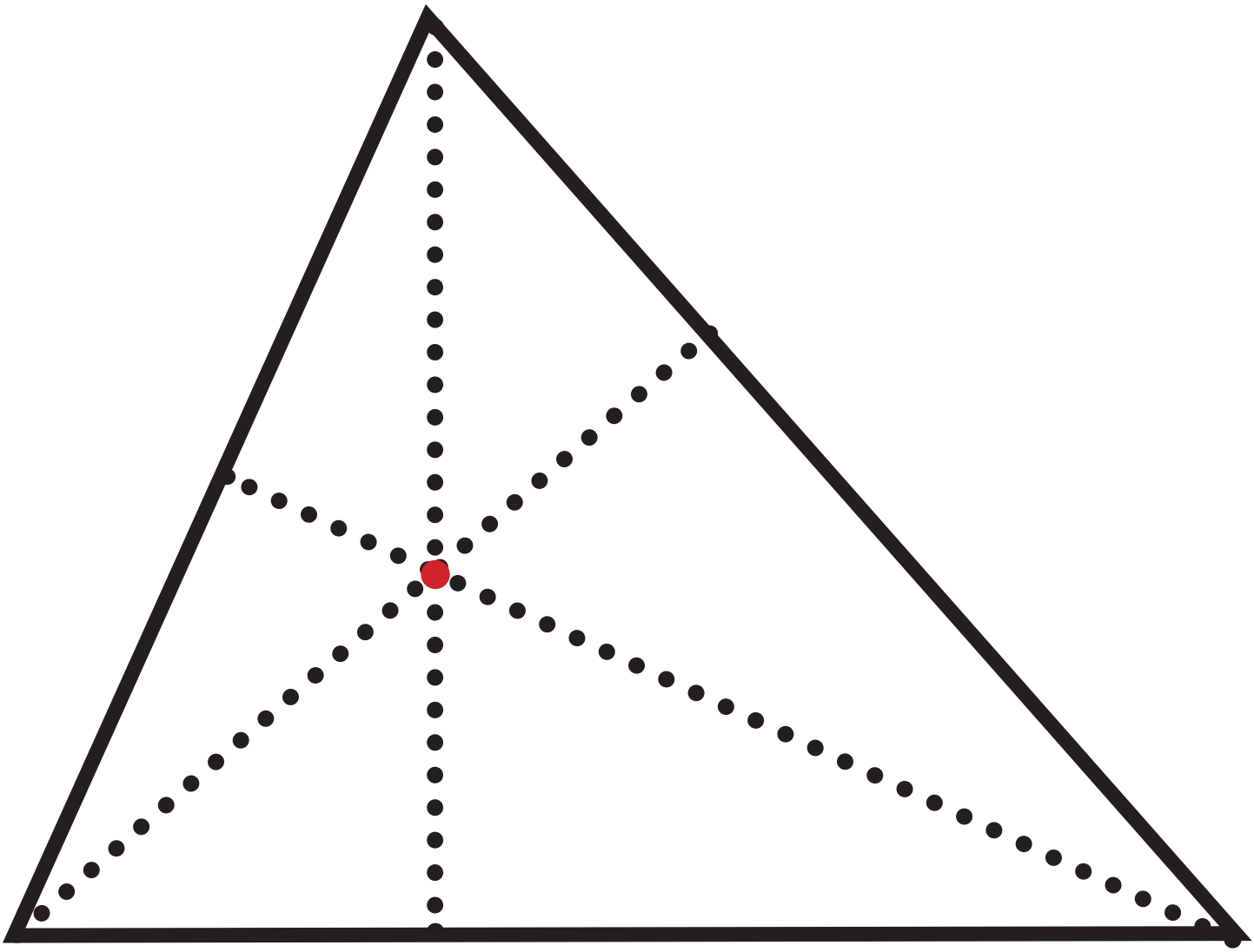
acute angled scalene triangle



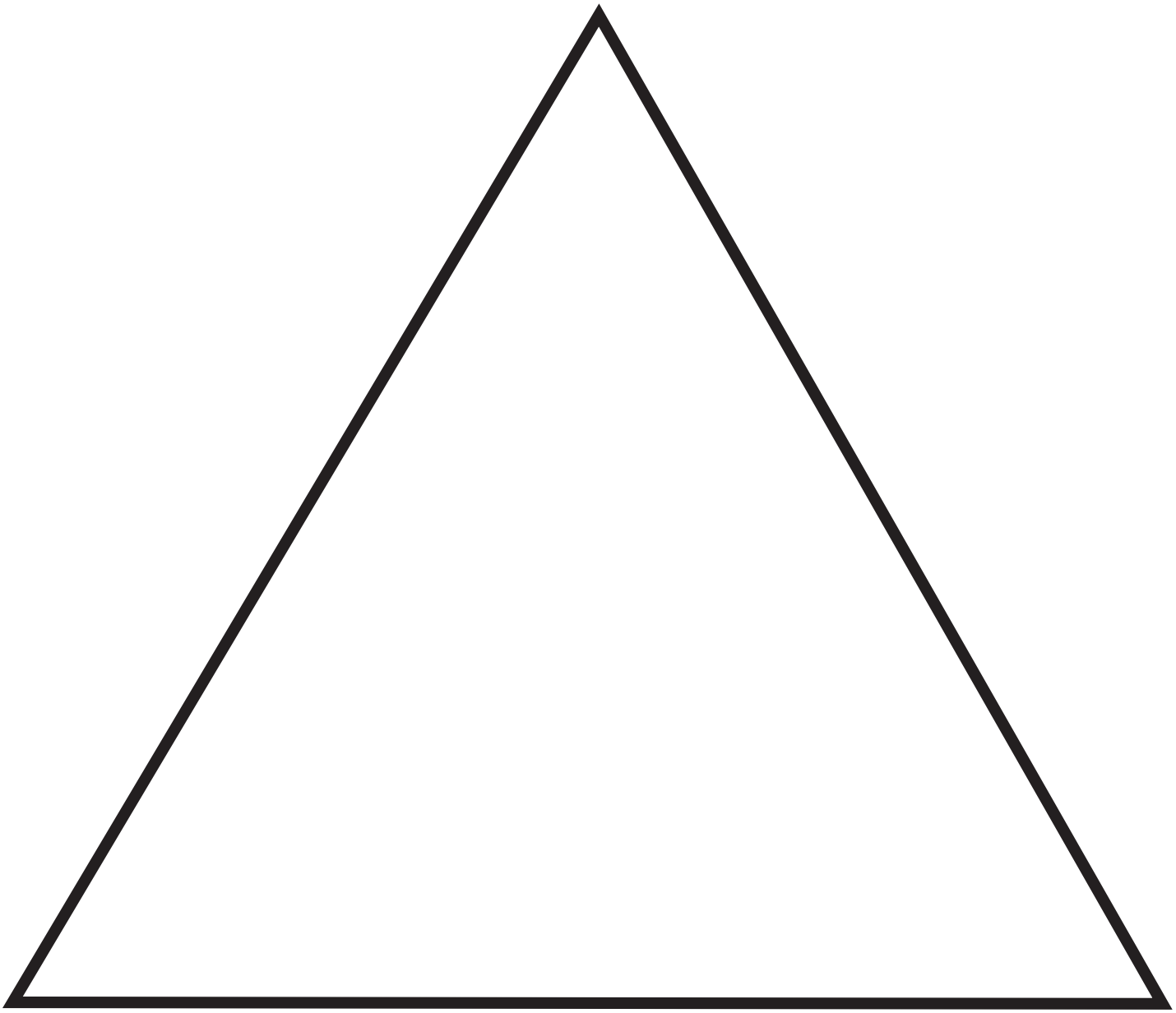
acute angled isosceles triangle



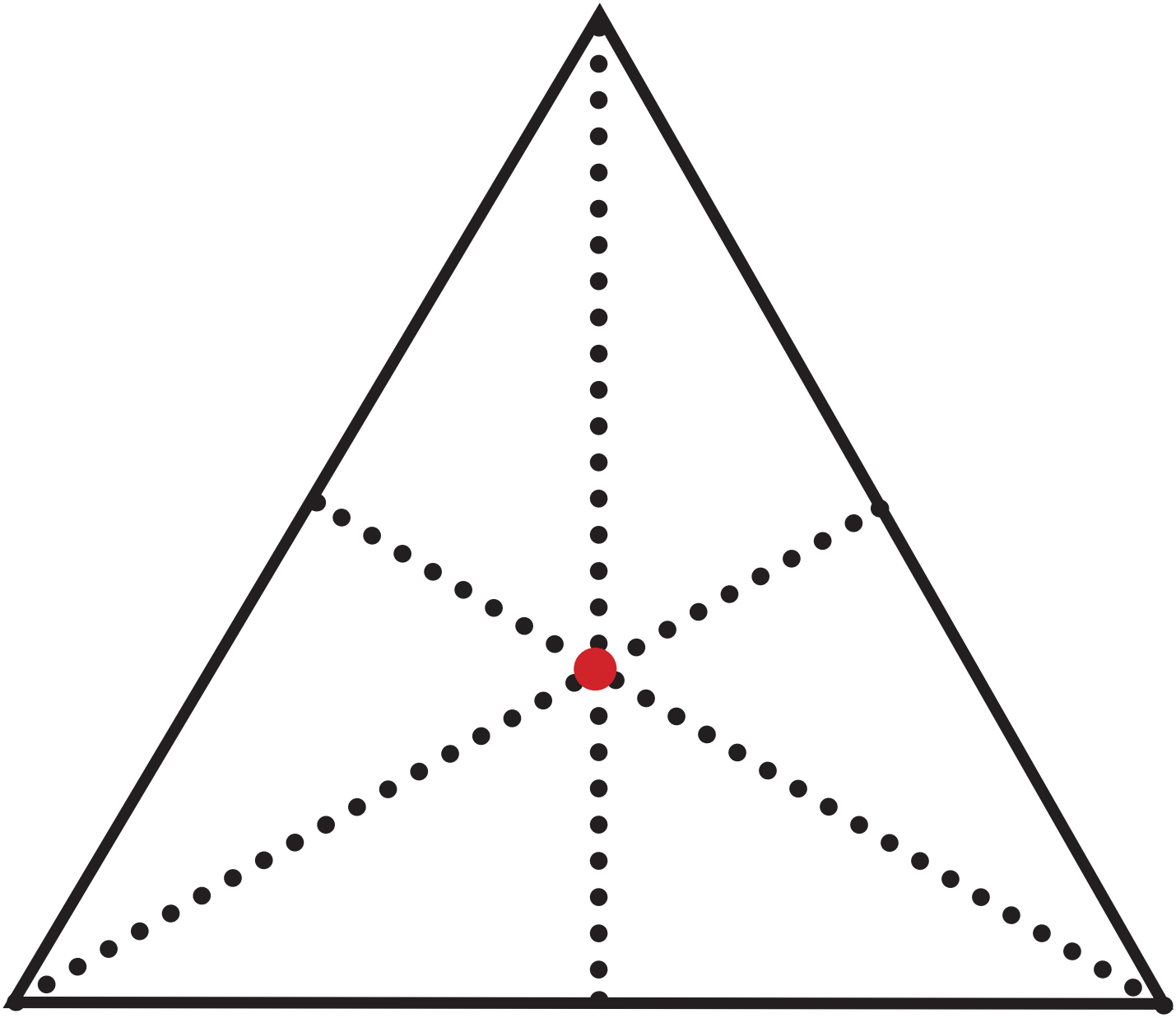
acute angled isosceles triangle



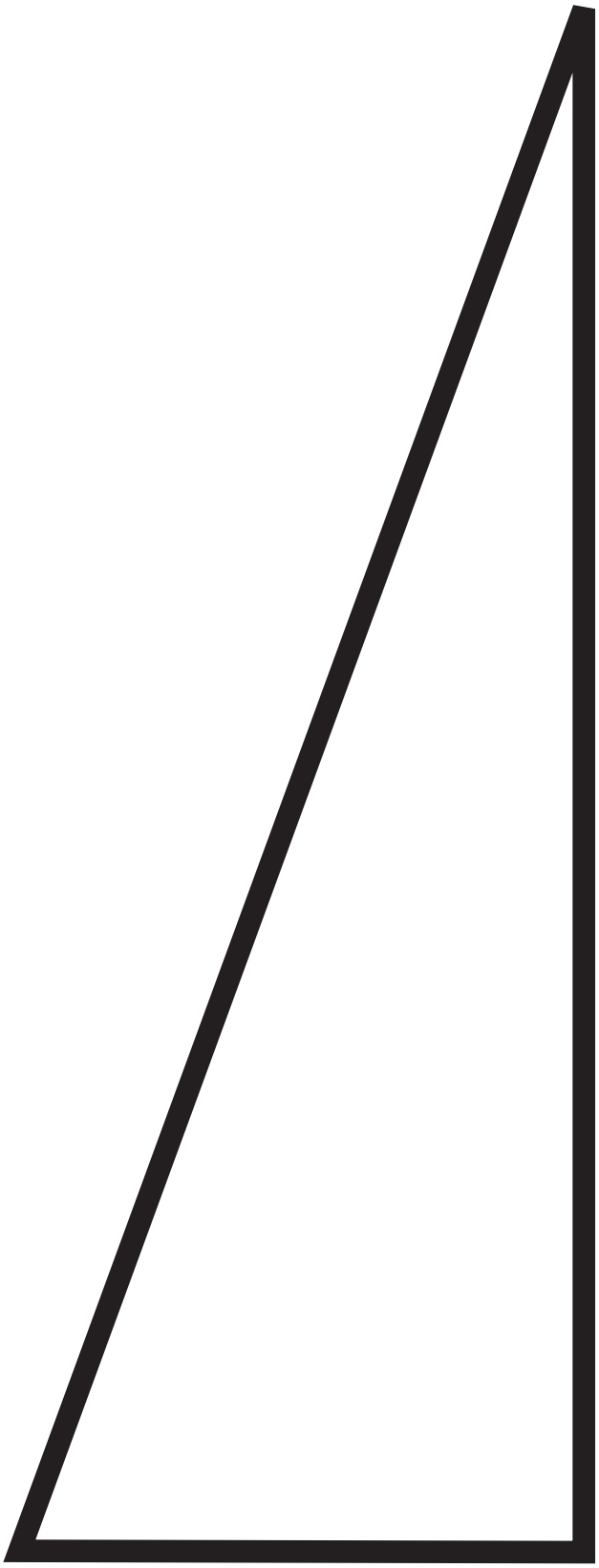
acute angled equilateral triangle



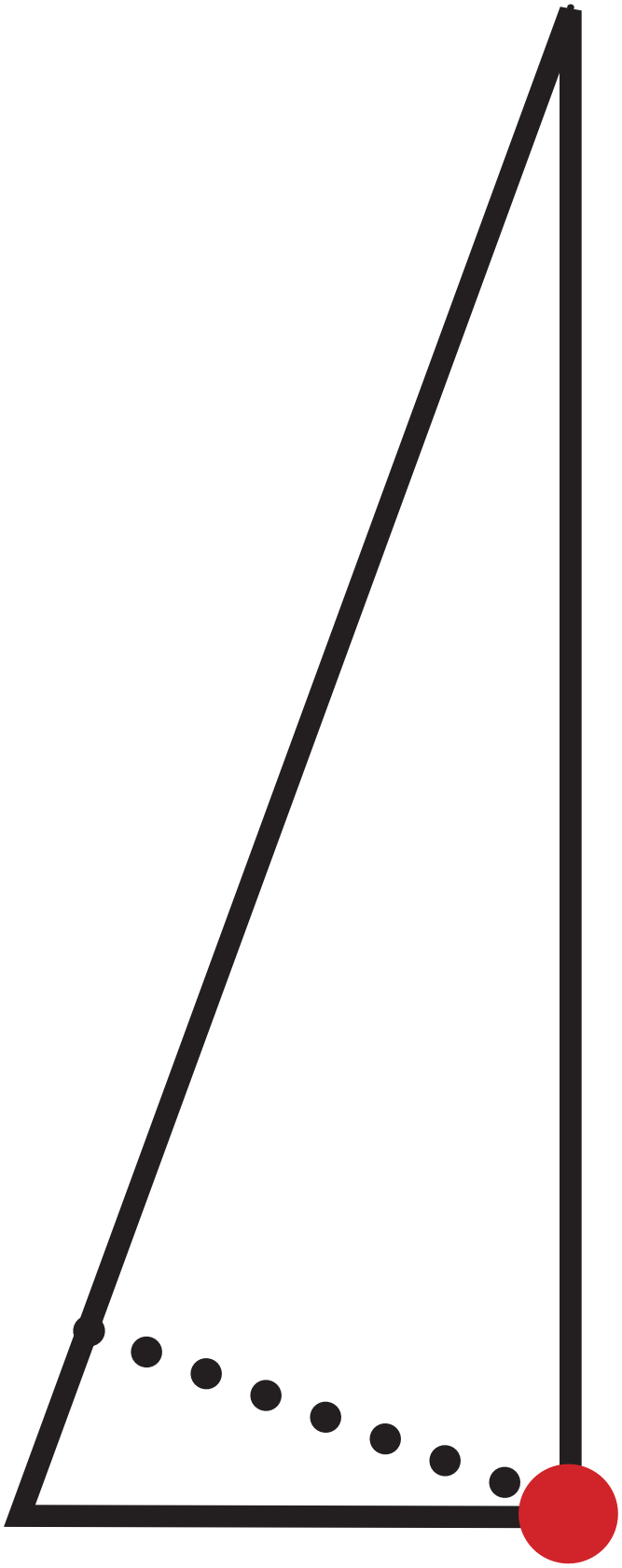
acute angled equilateral triangle



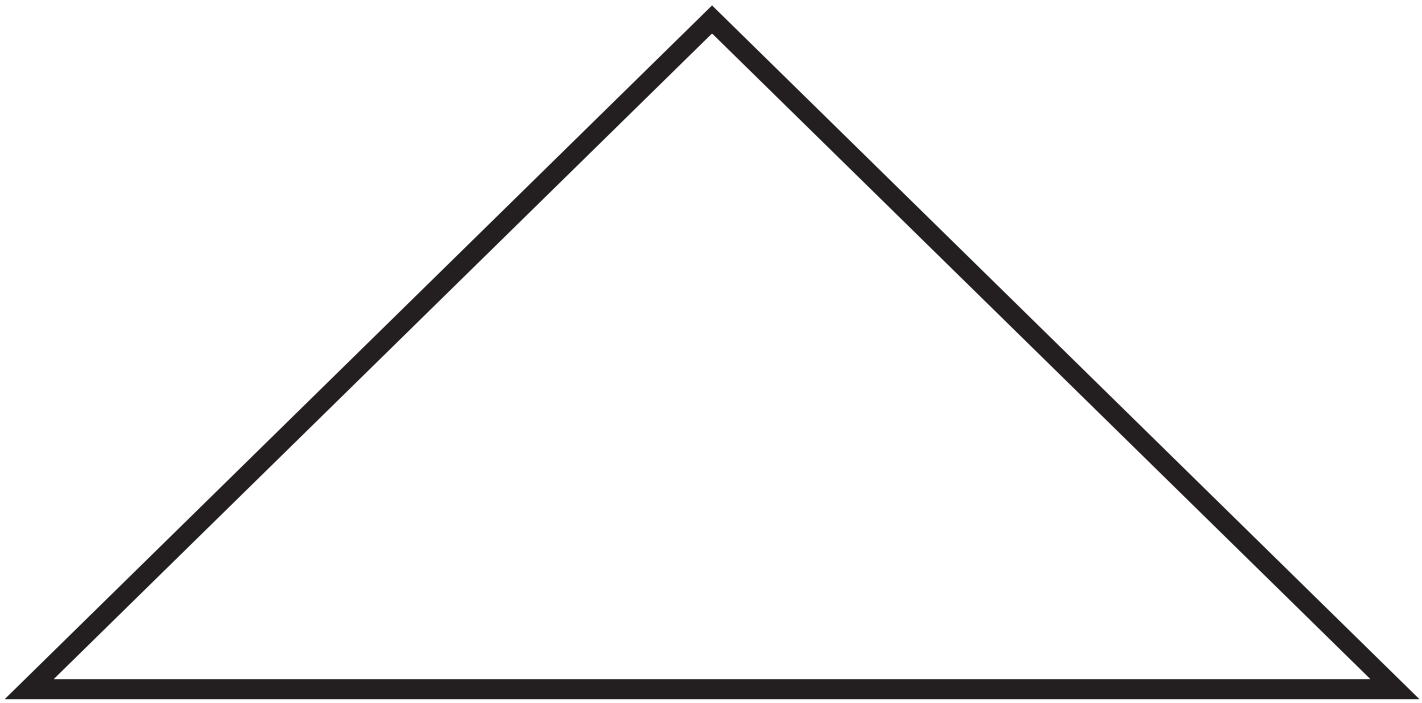
right angled scalene triangle



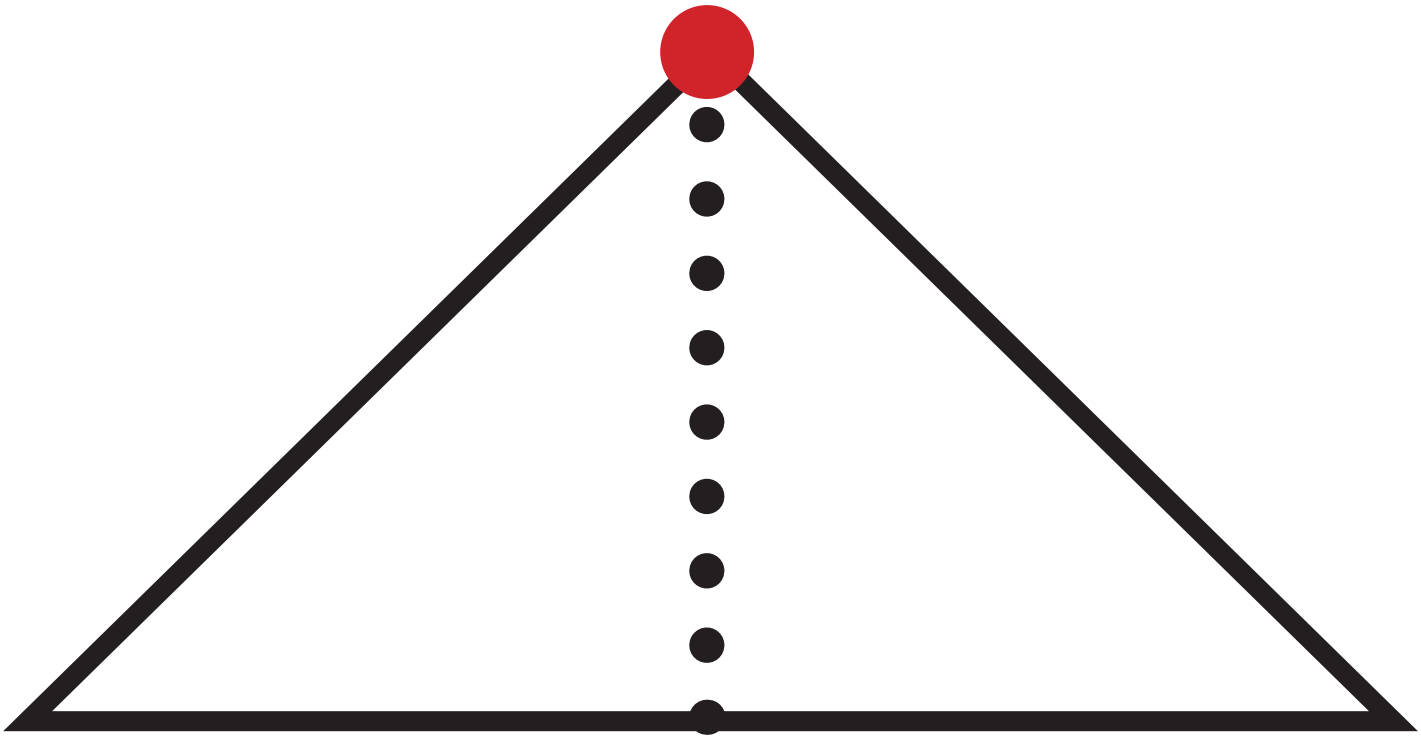
right angled scalene triangle



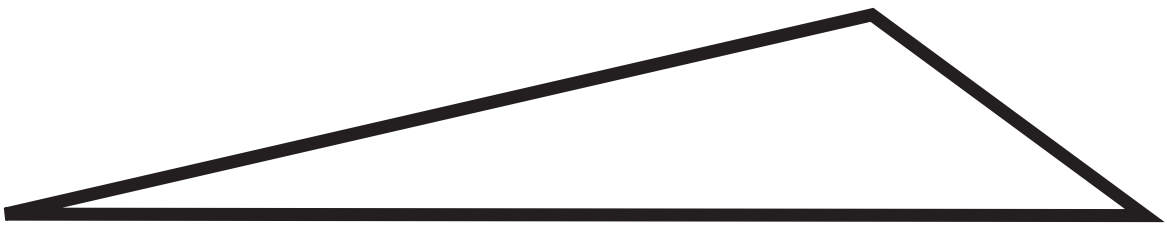
right angled isosceles triangle



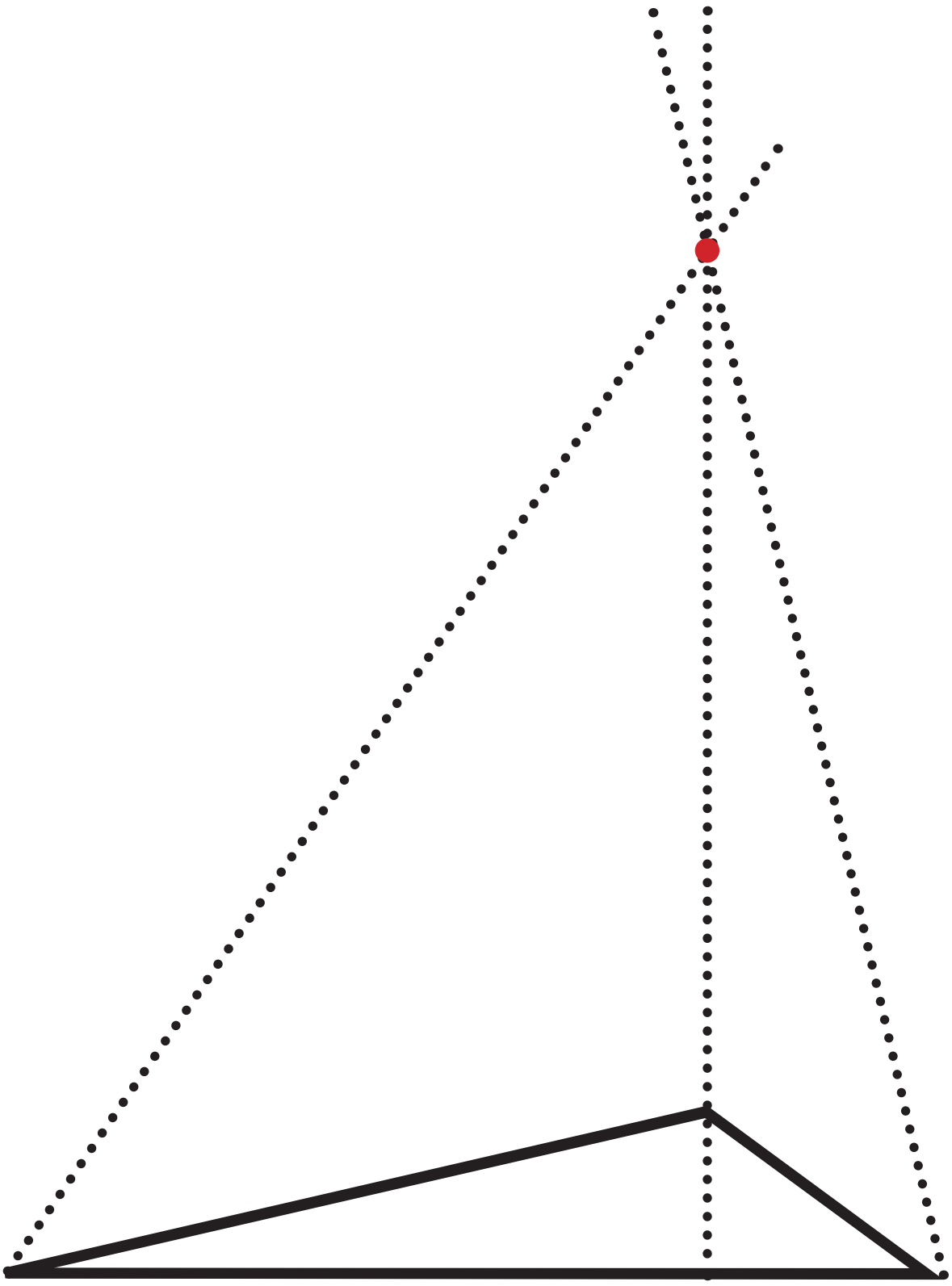
right angled isosceles triangle



obtuse angled scalene triangle



obtuse angled scalene triangle



obtuse angled isosceles triangle

obtuse angled isosceles triangle