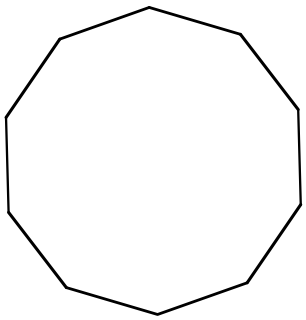
1. What does it mean for a polygon to be *regular*?

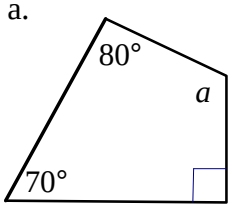
2. Find the measure of an interior angle of this regular decagon. Show how you figured it out.



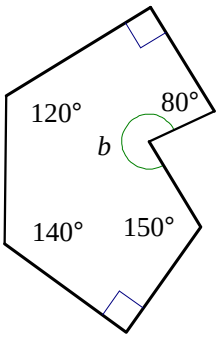
3. Show and explain how to find the measure of an interior angle of a regular nonagon (9 sides).

4. Find the missing angles:

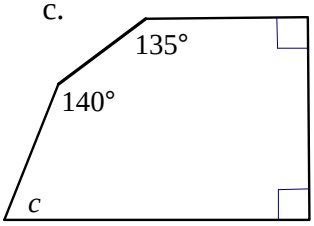
a.



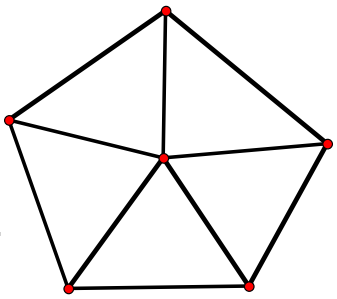
b.



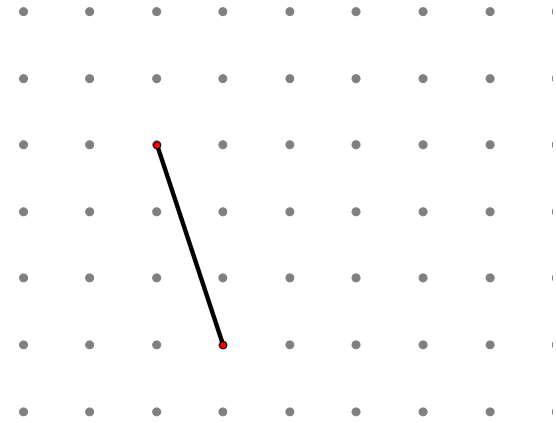
c.



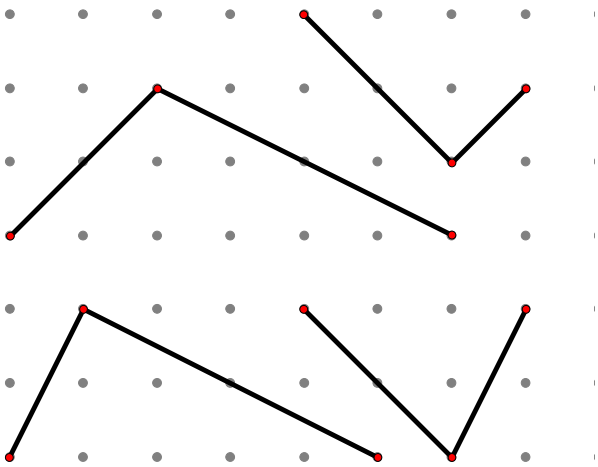
5. Jack figured out the sum of angles in this pentagon this way:
Make triangles going out from the center to each of the vertices.
That's 5 triangles, so the sum of the angles in the pentagon is 5x180 °
What's wrong with Jack's reasoning? What could Jack to get the right answer from his picture?



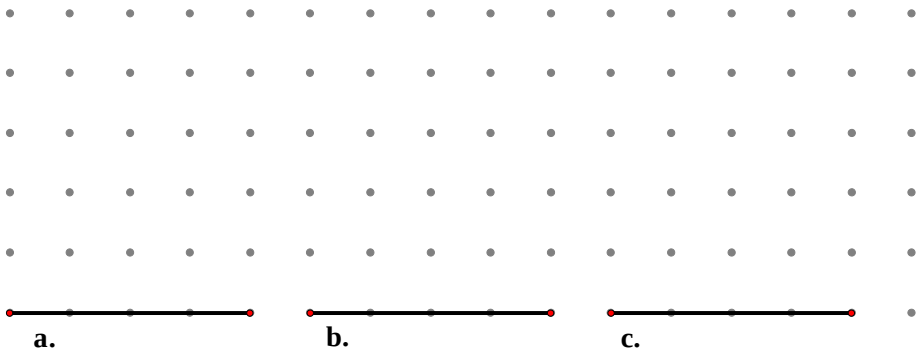
6. On this grid, draw a line perpendicular to the given line (as though they were two sides of a square)



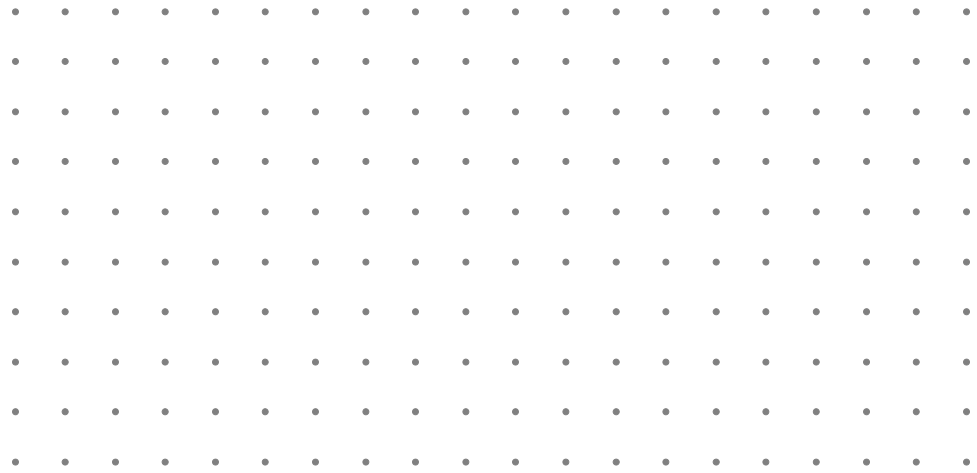
7. For each of these grid angles, compare it to a right angle to decide if it is right, acute or obtuse:



8. Using the shown segments as the base (the not-equal side), add two equal sides to make
a. A right isosceles triangle
b. An acute isosceles triangle
c. An obtuse isosceles triangle



9. Draw (either on the grid or on another piece of paper):
a. An octagon that has all equal sides, but not all equal angles
b. An octagon that has all equal angles, but not all equal sides
c. A concave hexagon
d. A pentagon with a pair of parallel sides



10. Draw a Venn diagram that shows the relationships between kites and rhombi. Use our lettered shape examples to show where the shapes J, K, L and O would go.	11. Draw a Venn diagram that shows the relationship between parallelograms, kites and squares. Use our lettered shape examples to show where the shapes K, L, M, O, P, Q and R would go.
12. Draw a Venn diagram that shows the relationship between acute and isosceles triangles in the universe consisting of all triangles. Show where the shapes A-G would go.	13. What kind of quadrilateral always has two pairs of sides that are equal, but usually has a pair of opposite angles that are not equal? 14. What kind of quadrilateral always diagonals that are the same length and are perpendicular to each other?

15. What kind of quadrilateral always has diagonals that bisect its angles?