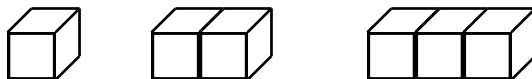**Introductory Geometry Quiz**   **Name** _____

1.   In the following sequence, the figures are made of cubes that are glued together. If only the exposed surfaces need to be painted (i.e., after gluing), how many squares will be painted in the 12th figure?

2.   A store clerk wanted to stack 21 boxes in a window display in a triangular arrangement like the one shown. How many boxes should the clerk place on the bottom row?
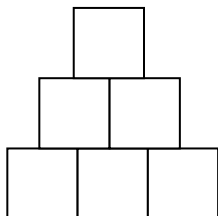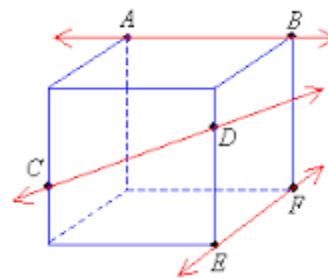

3.   Refer to the following line *m*.
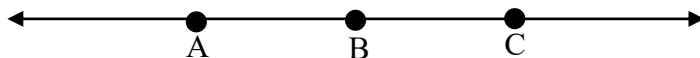
(a) Other than m, list two other ways to name the line. _____ , _____

(b) Name two rays on line m that have endpoint B. _____ , _____

(c) Find $\overrightarrow{AB} \cap \overrightarrow{CB}$. _____

4.   Refer to the diagram of a cube.

(a) $\overleftrightarrow{AB}$ and _____ are considered skew lines.

(b) $\overrightarrow{BF}$ and $\overrightarrow{DE}$ are considered _____ lines.

(c) $\overleftrightarrow{BF}$ and $\overrightarrow{AB}$ are considered _____ lines.

5.   Perform each of the following calculations.

(a)$180° - 45°30'$ (b) $0.75°$ in minutes

(c) $72°41'50'' + 17°18'10''$

6.   Draw an example of each of the following figures.

     (a) A simple closed curve   (b) A closed curve that is not simple

     (c) A convex hexagon   (d) A concave octagon

     (e) An equilateral pentagon that   (f) An equiangular quadrilateral that is not a square
          is not regular

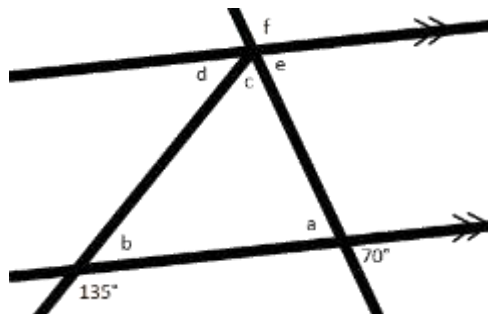7.   Draw   (a) An isosceles trapezoid   (b) A kite

8.   Find the measure of each interior angle, each exterior angle, and each central angle in a regular decagon.

     Interior angle _____   Exterior angle _____   Central angle _____

9.   Refer to the diagram below. Assume parallel lines.

     (a) m<a = _____   (b) m<b = _____   (c) m<c = _____

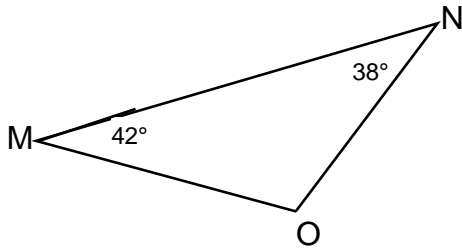   (d) m<d = _____   (e) m<e = _____   (f) m<f = _____

10. Refer to the diagram. If the two lines are parallel, list

(a) 2 pairs of corresponding angles

(b) 2 pairs of nonadjacent angles that are supplementary
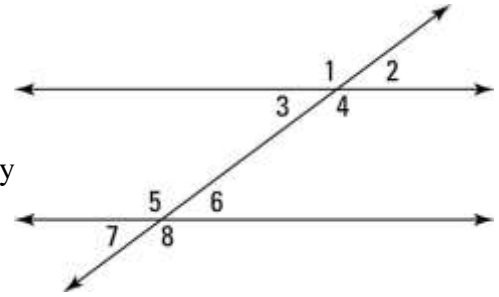
11. Find the missing angle measure.   m<MON = _____

12. In general, (a) a polygon with 8 sides is called a(n) _____ , and
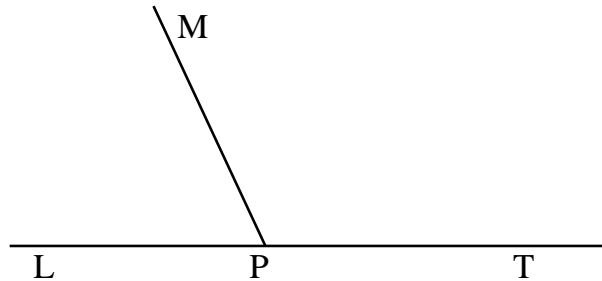
(b) a polygon with 12 sides is called a(n) _____ .

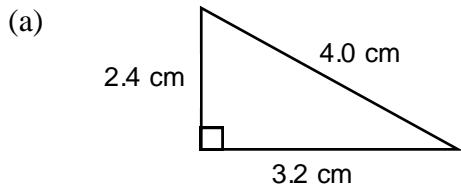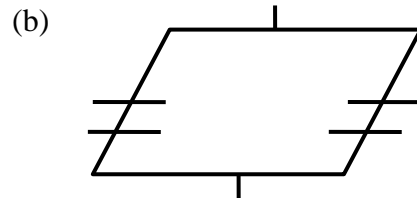13. What type of angle is <LPT? Circle the best answer.

Acute

Right

Obtuse

Straight

14. Give the most detailed name of the following types of triangle and quadrilateral. Give two names in part (a).

(a)

2.4 cm

4.0 cm

3.2 cm

_____ _____ triangle

(b)

_____

15. Find the missing angle x in the drawings below.
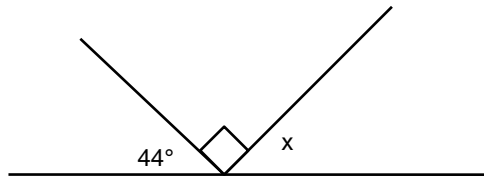
(a)   (b) Assume lines n and m are parallel.
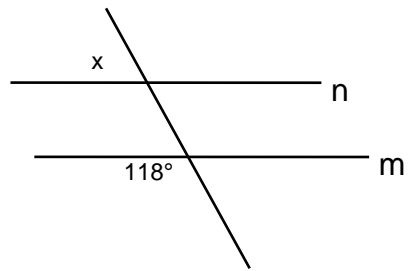
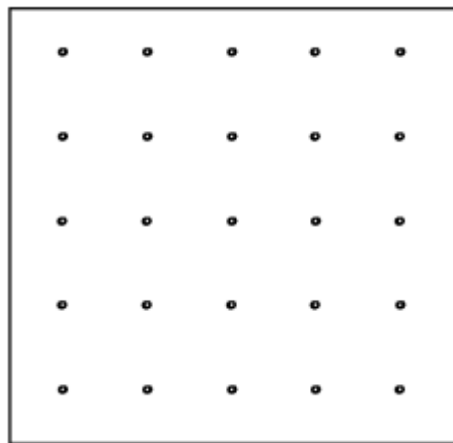16. On the following representations of a geoboard, construct

(a) a nonconvex (concave) hexagon.   (b) a convex pentagon
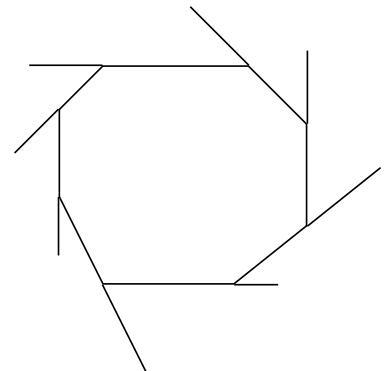
5 x 5 Large Geoboard Dot Paper   5 x 5 Large Geoboard Dot Paper

17. For a convex octagon, find the <u>sum</u> of the measures of the

(a) Interior angles

(b) Exterior angles, one from each vertex (as shown)

18. List 2 relationships that are true about pairs of sides, angles or diagonals in

(a) A rhombus   (b) A rectangle

19. Find the missing angles in the following diagram (resembling a roof truss). Assume that the figure has line symmetry.
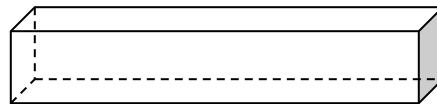

(a) m<a = _____   (b) m<b = _____   (c) m<c = _____

(d) m<d = _____   (e) m<e = _____   (f) m<f = _____
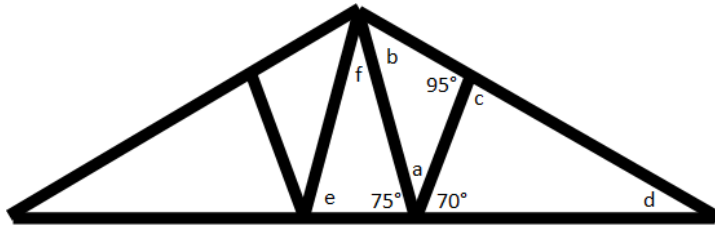
20. Draw diagrams to illustrate 3 different types of triangles, and give their classification(s).

(a)   (b)   (c)
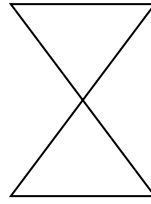
21. Give the name of any 2 of the 5 Platonic solids pictured below.

(a)   (b)   (c)   (d)   (e)
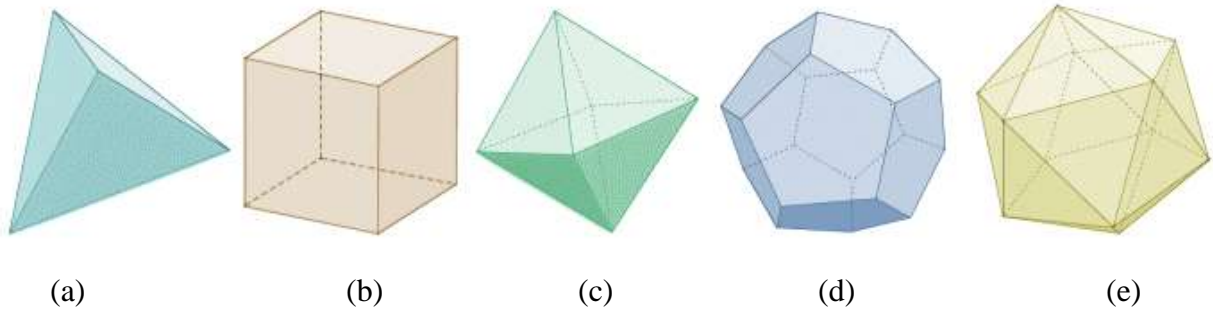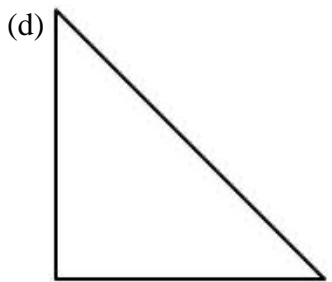
22. Give the name of the solid.

23. A prism has 10 faces. Use Euler's formula to find how many vertices (V) and edges (E) the prism has.

V = _____   E = _____

24. Describe all symmetries of the figure shown.

25. Draw any lines of symmetry for the given figures.

(a)

(b)

(c)

(d)

(e)

(f)

(g)

(h)

(i)
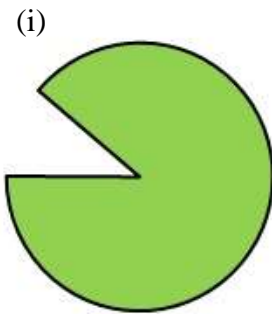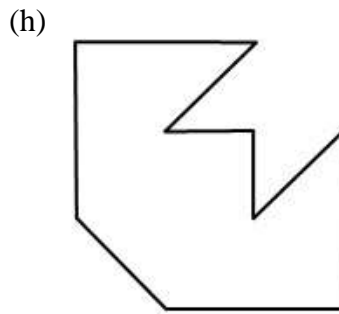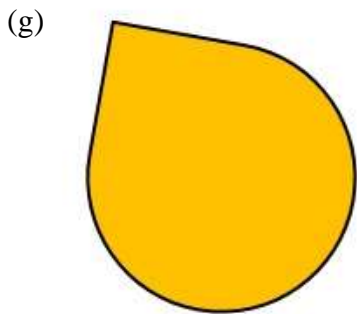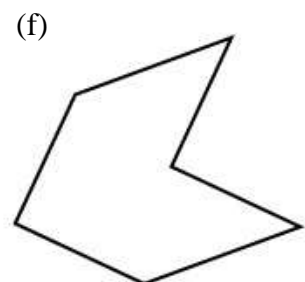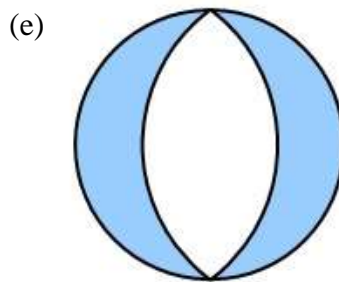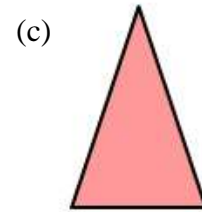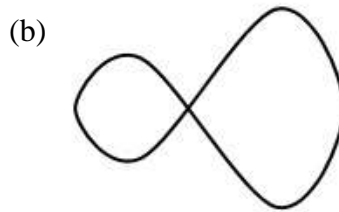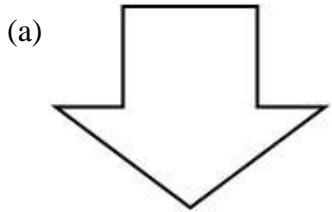
26. True or False.

(a) A triangle can have two obtuse angles. _____

(b) A parallelogram can have four acute angles. _____

(c) A quadrilateral can have three right angles. _____

27. In a certain triangle, the measure of one angle is twice the measure of the smallest angle. Another angle is 6 degrees more than the smallest angle. Find the measures of all three angles in the triangle.

28. If ΔABC is a right triangle and m(<A) = 43°, what is the measure of the other acute angle?

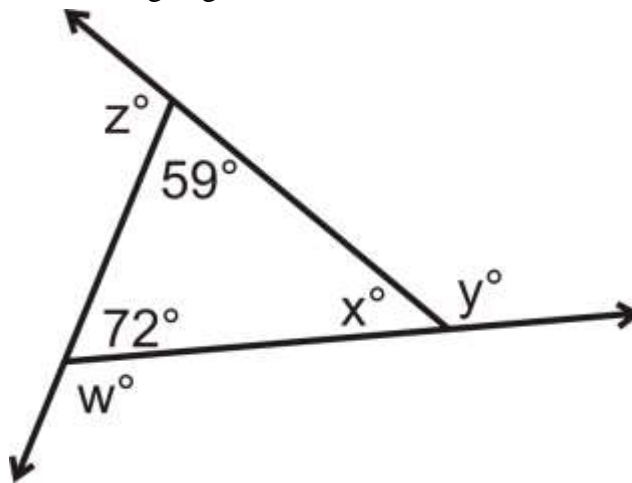29. Determine the missing angles. Assume AB and CD are parallel.

(a) m(<x) = _____   (b) m(<y) = _____   (c) m(<z) = _____
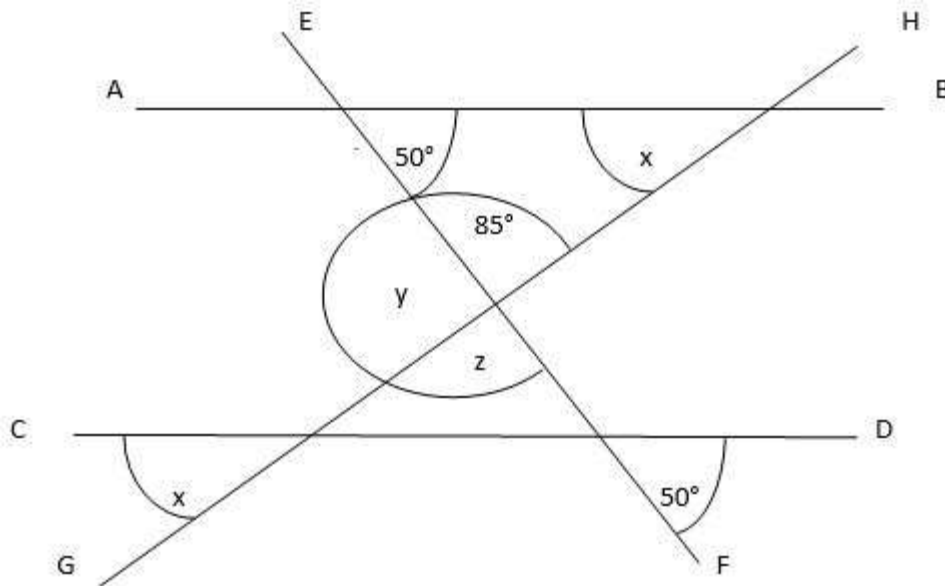
30. Determine the missing angles.


(a) m(<x) = _____   (b) m(<y) = _____

31. Martha claims that she can easily prove that the sum of the measures of the interior angles in any triangle is 180°. She says that a right triangle is half of a rectangle. Because a rectangle has four right angles, its angles add up to 360°, so the angles of a right triangle add up to half of 360°, or 180°. Next, she claims that she can divide any triangle into two right triangles and use what she proved for right triangles to prove the theorem for any triangle. Is Martha's approach correct? Explain why or why not.

32. Refer to the diagram. Find the following measures.

    (a) m(arc ADC) = _____

    (b) m(<ABC) = _____

    (c) m(<AOC) = _____
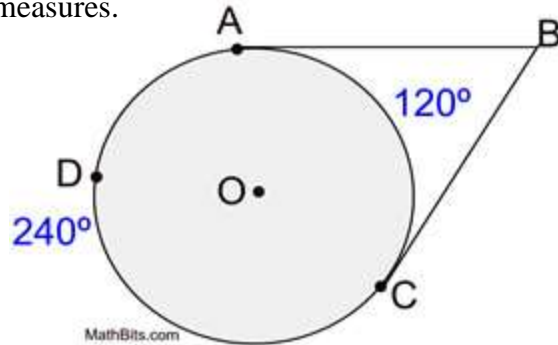
33. In each of the following figures, determine the number of sides of a regular polygon with the stated property. If such a regular polygon does not exist, explain why.

    (a) Each exterior angle measures 30°.

    (b) Each exterior angle measures 35°.

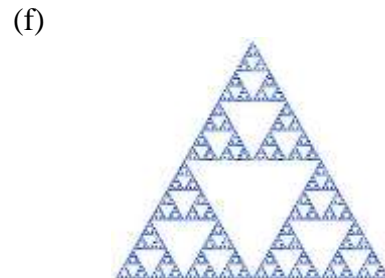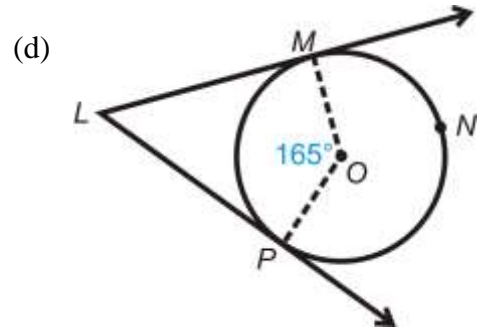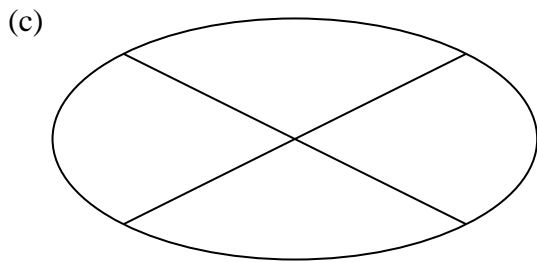   (c) The sum of all the exterior angles is 3600°.

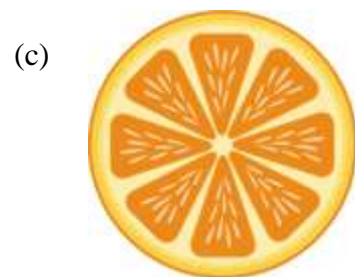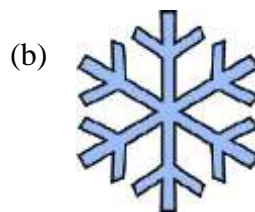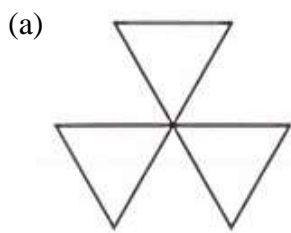   (d) The total number of diagonals is 252.

34. In the following figures, draw in dashed lines for the unseen segments.

    (a)

    (b)

    (c)
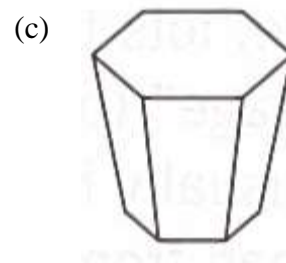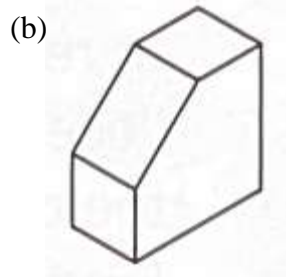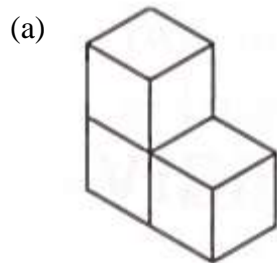
35.   Determine how many lines of symmetry, if any, each of the following figures has.

(a)

(b)

(c)

(d)

(e)

(f)

36.   For each of the following figures, identify the types of symmetry (line, turn, or point) it possesses.
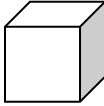
(a)

(b)

(c)
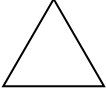
37.   Carefully draw nets that can be folded into each of the following.

(a) Tetrahedron   (b) Square pyramid   (c) Right circular cylinder

38. The first CCSSM Geometry standard for kindergarten states: "Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as *above*, *below*, *beside*, *in front of*, *behind*, and *next to*. Refer to the diagram below, and write 3 sentences using the correct name of shape(s) and their relationship to one another. Use all 6 descriptors in your 3 sentences.

★	▭	♥	▱ (cube)	(dog photo)
C	⇧	✚	A	Ⓢ
△	☀	G	(leaf)	○
🙂	⬡ (octagon)	(cylinder)	(crescent moon)	(rainbow)

(1) _____

(2) _____

(3) _____