

## **Math 117 Unit 1 Review Guide**

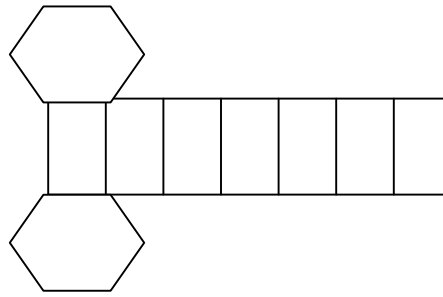
*The test next Tuesday covers chapters 1, 9, 10, 11 in the Billstein text, plus the material covered in lecture and labs. The following list should **not** be considered all-inclusive, but rather a guide for review. To be prepared for the test, review the following:*

- Arithmetic and Geometric sequences, formulas for  $n$ th term and sum of  $n$  terms
- Fibonacci, figurative (square, triangular, geometric arrays, etc.), and misc. sequences - find next terms
- Polya's steps for problem-solving
- Problem-solving strategies discussed in lecture
- Logic and truth tables
- Polygons, Circles, and sectors - be able to find area and perimeter
- Areas on a geoboard - rectangular and addition method
- Pythagorean Theorem, and find distance between 2 points
- 7 basic Euclidean constructions,
- inscribed and circumscribed circles in scalene triangles, perpendicular bisectors, etc.
- Platonic solids, polyhedra and nets
- Surface Area and Volumes
- Triangle congruence properties
- Similar triangles and proportion
- Taxicab geometry
- Golden ratio

*The following problems were extracted from an old test used in Math 203. The intent is to give you a feel for the test items, and **NOT** a comprehensive review.*

1. If a polygon has 5 sides, it is called a(n) \_\_\_\_\_.
2. In general, how many diagonals will one vertex of a polygon with  $n$ -sides have? \_\_\_\_\_.
3. State the golden ratio to three decimal places. \_\_\_\_\_.
4. What is the degree measure of each interior angle of a regular octagon? \_\_\_\_\_.
5. How many faces does a rectangular pyramid have? \_\_\_\_\_.
6. An octahedron is of the platonic solids.  
What geometric figure forms the faces of the octahedron? \_\_\_\_\_.
7. The two characteristics of a **regular** polygon are: \_\_\_\_\_ and \_\_\_\_\_.
8. The sequence: 2, 6, 18, 54, 162, . . . would be classified as: \_\_\_\_\_.
9. The 12th term of the sequence in problem 24 is: \_\_\_\_\_.

9. Name the polyhedron that be constructed using the following net (pattern):



10. Explain how the formula for the area of a triangle can be determined by using the formula for the area of a parallelogram. (You may use diagrams to support your explanation.)

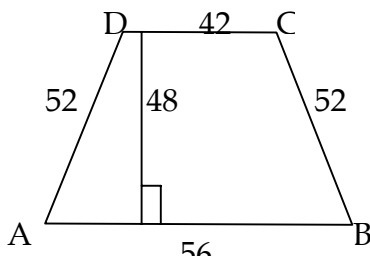
11. Find the taxicab perimeter of the triangle formed by the points (2,3), (6,7) and (5,0).

**TRUE/FALSE:** Circle your choice. (For a statement to be true, it must **always** be true.)

- T    F    12. Every equilateral triangle is a scalene triangle.
- T    F    13. A parallelogram has four acute angles.
- T    F    14. Only triangles can be isosceles.
- T    F    15. The sum of the exterior angles of a pentagon is  $450^\circ$ .
- T    F    16. A polygon with opposite sides parallel is a parallelogram.
- T    F    17. All equiangular polygons are regular polygons.
- T    F    18. If a parallelogram has one right angle, it must be a square.
- T    F    19. Similar triangles have the same size.
- T    F    20. If two angles are complementary, then one is obtuse.
- T    F    21. A triangle **cannot** be both isosceles and right.
- T    F    22. The formula for the sum of the angles of a polygon is  $180(n-3)$ .

Find the perimeter and area of each of the following:

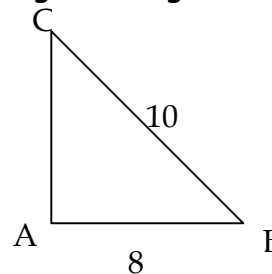
a. trapezoid ABCD



23. P = \_\_\_\_\_

24. A = \_\_\_\_\_

b. right triangle ABC



25. P = \_\_\_\_\_

26. A = \_\_\_\_\_