

Name _____

Date _____

Geometric Constructions Unit — Final Exam

A pencil, compass, and straightedge will be provided. No other tools or reference materials are permitted!

You may take as long as you need to complete the exam.

Part 1. Definitions

Write the term that is defined by each of the following (2 points each):

1. A portion of a line with two endpoints.
2. A portion of a line with one endpoint.
3. The set of all points in a plane equidistant from a given point.
4. Two lines in a plane that do not intersect.
5. A five-sided polygon.
6. A quadrilateral with sides of equal length.
7. The set of all points in a plane equidistant from the endpoints of a given line segment.
8. A triangle with two equal sides.
9. Two triangles that have equal sides and equal angles.
10. Two triangles that have equal angles but unequal sides.

Part 2. Short answer

11. If you inscribe a triangle in a circle, and one side of that triangle is a diameter of the circle, what is true of the triangle? (5 points)
12. How many degrees do the angles of a triangle sum to? (5 points)

13. Which of the following combinations of information are sufficient to allow you to construct a unique triangle? (1 point for each correct answer, -1 for each incorrect)

____ three sides
____ three angles
____ two sides
____ two sides and the angle between them
____ two angles
____ two angles and the side between them
____ two angles and the side next to one of them
____ two sides and the angle next to one of them
____ the hypotenuse and one leg of a right triangle

Part 3. Constructions

We have not done all of the following constructions in class, but you have learned everything you need to complete them. Good luck!

(15 points each)

14. Construct a square given one side (below).

15. Construct a triangle with the following two sides

joined by this angle:

16. Construct the incircle and circumcircle of the triangle you just drew. Label which is which.
17. Construct a rhombus where one pair of opposite angles is 60° .
18. Construct a regular dodecagon (12-sided polygon).