

**Geometry Test 1**  
**Chapters 1 and 2**

Fill in the blank with the appropriate word or number.

1. An instrument used to measure angles in degrees is a(n) \_\_\_\_\_.
2. A(n) \_\_\_\_\_ is a pair of rays that have the same endpoint.
3. Lines are \_\_\_\_\_ if they all contain the same point.
4. Drawings made with just a compass and straightedge are called \_\_\_\_\_.
5. Three non-collinear points determine a(n) \_\_\_\_\_.
6. A set of points are said to be \_\_\_\_\_ if there is a line which contains them all.
7. A statement that is accepted to be true without proof is called a \_\_\_\_\_.
8. A(n) \_\_\_\_\_ is the part of a line bounded by endpoints.
9. The \_\_\_\_\_ is the measure of the perimeter of a circle.
10. The \_\_\_\_\_ of a polygon is the sum of the lengths of all of its sides.
11. A statement that is written in "iff" form is called a \_\_\_\_\_.
12. \_\_\_\_\_ points determine a line.
13. A \_\_\_\_\_ has one endpoint and extends endlessly in the other direction.
14. The \_\_\_\_\_ of the hypotenuse of a \_\_\_\_\_ triangle is equal to the \_\_\_\_\_ of the squares of the other two \_\_\_\_\_.
15. A \_\_\_\_\_ is a statement that can be proven by reasoning deductively from already accepted statements.
16. A(n) \_\_\_\_\_ is bounded by line segments and lies in a plane.
17. The \_\_\_\_\_ is the part of the statement which contains the 'then' clause.
18. A(n) \_\_\_\_\_ is an instrument used to draw arcs and circles.
19. A \_\_\_\_\_ is the set of all points in a plane that are a fixed distance from a given point in the plane.
20. A pictorial way to represent a conditional statement is with a(n) \_\_\_\_\_.
21. The \_\_\_\_\_ is the distance from the center of a circle to any point on the circle.
22. A series of statements,  $a \rightarrow b$ ,  $b \rightarrow c$ ,  $c \rightarrow d$ , therefore  $a \rightarrow d$ , is called a(n) \_\_\_\_\_.
23. The sum of the angles of a triangle is \_\_\_\_\_.
24. If the radius of a circle is  $r$ , then the area is \_\_\_\_\_.
25. The part of a statement that contains the 'if' clause is the \_\_\_\_\_.

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26. Draw Euler diagrams and label them appropriately for the following statements.

- a. If you walk tight ropes, then you are high strung.
- b. If a triangle has two equal sides, then it is an isosceles triangle.

27. The following statement is a definition for egotist.

***You are an egotist iff you are always me-deep in conversation.***

Write two conditional statements that are equivalent to the definition. What is their relationship to each other? \_\_\_\_\_

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28. Fill in the missing parts of the following direct proof.

Theorem: If there is a total eclipse of the sun, then the temperature can be determined without a thermometer.

If there is a total eclipse of the sun, then \_\_\_\_\_.

If the sky becomes dark, then \_\_\_\_\_.

If the crickets think it is night, then they will start chirping.

If \_\_\_\_\_, then one can count the chirps.

If one can count the number of cricket chirps per minute, the temperature can be estimated without a thermometer.

Therefore, if \_\_\_\_\_,

then \_\_\_\_\_.

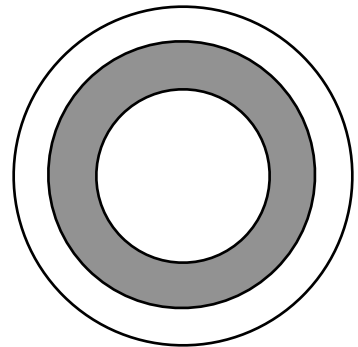
29. What is the logical conclusion of the following?

a. Claudia is a registered voter in the state.

b. Registered voters of the state must be at least 18 years of age.

c. Therefore, \_\_\_\_\_.

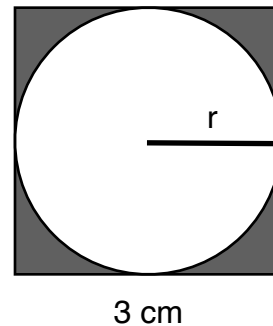
30. Find the area of the shaded region. The **radius** of the inside circle is 2 cm. The **diameter** of the middle circle (shaded) is 8 cm and the **radius** of the outside circle is 5 cm. Be sure to show all your work. You may leave your answer in terms of  $\pi$ .



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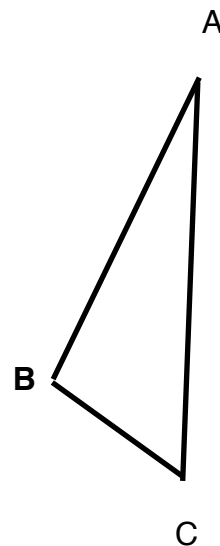
31. Given that the length of one side of the square is 3 cm, find the following. You may write your answers in terms of  $\pi$ . Be sure to show all your work.

- a. What is the area of the square? \_\_\_\_\_
- b. What is the radius of the circle in centimeters? \_\_\_\_\_
- b. What is the area of the enclosed circle? \_\_\_\_\_
- c. What is the area of the shaded region? \_\_\_\_\_
- d. What is the circumference of the circle? \_\_\_\_\_
- e. What is the perimeter of the square? \_\_\_\_\_



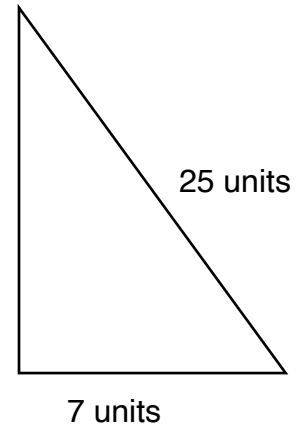
32.  $\angle CAB = 22^\circ$  and  $\angle ACB = 61^\circ$   
What is the measure of  $\angle ABC$  in the triangle?

Be sure to show your work. **Do not measure it.** Calculate it.



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33. What is the measure of the third side of this right triangle? \_\_\_\_\_  
Be sure to show your work.



34. What is the name of the theorem you used to find this measurement? \_\_\_\_\_

35. Mrs. Pots purchased a set of kitchen pans advertised as a being stainless steel because they are not supposed to rust. After using the set for a few weeks, she discovered that some of the pans were beginning to rust. She went back to the store, claimed that the pans were not stainless steel, and asked for a refund.

In her conversation with the store manager, she used an **indirect proof**. Write each of the following.

- a. The conditional statement she wanted to prove.
- b. The assumption she made for an indirect proof.
- c. The conclusion resulting from the assumption.
- d. The known fact contradictory to part c.

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36. In the space below, **draw a line segment**,  $\overline{AB}$ , that is 9 cm long. Now using only your compass and straightedge, **construct an equilateral triangle** using  $\overline{AB}$  as one side of the triangle. Label the third vertex C. Now **construct the bisector** of the side  $\overline{AB}$ . Leave all construction marks on your diagram to receive credit.

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37. In the space below, **construct an obtuse angle**,  $\angle FAT$ . Using only your compass and straight-edge, **bisect**  $\angle FAT$ . Label the bisecting ray  $\overrightarrow{AS}$ . Now **construct the angle bisector** of  $\angle SAT$  only using your compass and straight-edge. Leave all construction marks on your diagram to receive credit.

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38. Simplify the following expressions.

a.  $(4x + 2y^2) + (3y^2 - 2x)$

b.  $(4y + 2x^2) - (3x^2 - 2y)$

c.  $(7x^2 - 3y) - (5y - 2x^2)$

d.  $x^2 + 3x^2 + x^2 + 2x$

36. Solve the following equations. **Show all work for these problems to receive any credit.**

a.  $3x - 10 = 4(8 - x)$

b.  $5(x - 1) = 2(x + 3) - 32$

c.  $5x(x + 2) - x(x + 6) = 2(x^2 - 2) + 2x(x + 3)$