Section 003

Name:	
Signature:	
Date:	

Do not start this exam until instructed; you will have 50 minutes to finish the exam. No notes, books, calculators, phones or electronic devices are allowed on this exam. If you have a question, raise your hand; otherwise, there is no talking during the exam.

There are 10 problems on this exam on 5 pages, in addition to this cover page. The point values of each problem vary, but are listed in the questions.

Good luck!



From Calvin and Hobbes.

- (2+2+2+2+2+2=12 points) For the following problems, no work is necessary just give the answer.
 (a) Give the definition of a circle.
 - (b) Give the definition of a trapezoid.
 - (c) Draw a figure with rotational symmetry of order 6.
 - (d) Determine whether the following "if... then" statement is true. Then write the converse and determine whether the converse is true.

If a figure is a parallelogram, then it is a rhombus.

(e) Describe the three steps in the teaching sequence for measurements.

(f) What is the measure of an interior angle in a regular 6-gon?

2. (3+3+3=9 points) For the following problems, mark true or false. No work is necessary. All pentagons are convex. True False
Supplementary angles add to 90°. True False
A triangle can have two obtuse angles. True False

3. (10 points) You are given the following 90° angle $\angle ABC$. Use a compass and straightedge to construct a 45° angle. Clearly identify your steps.



4. (6 points) Draw a clock face to represent the time at 1:20. Then find the angle between the clock hands at this time.

5. (6 points) A bucket holds 3 L 250 mL of water; 1 L 800 mL is removed from the bucket. How much water remains in the bucket?

6. (6 points) Two triangles both have internal angles 30° , 70° and 80° . They also each have one side with length 1 cm. Are the triangles necessarily congruent? If yes, prove this; if no, use a sketch to provide a counterexample.

7. (12 points) Write an equation for x and solve it. Justify each step using geometric facts.



8. (12 points) Write an equation for x and solve it. Justify each step using geometric facts. You are given that O is the center of the circle.



9. (12 points) Write an equation for x and solve it. Justify each step using geometric facts.



10. (15 points) Give a careful **proof** of the following statement. Make sure to clearly identify any additional constructions you use, as well as to reference all geometric facts used.



Hint: Start by extending one of the diagonal lines to form a transversal of the pair of parallel lines.