CENTRAL WISCONSIN MATHEMATICS LEAGUE

Meet I
November 8, 2000

Category I (Geometry)

1–10: Multiple Choice (4 points each). On your answer sheet, circle the letter of the one best choice.

1. The statements "if a, then b" and "if b, then a" are
   (a) contrapositives
   (b) converses
   (c) inverses
   (d) equivalent
   (e) none of these

2. An angle with measure 111° is an example of a(n)
   (a) acute angle
   (b) obtuse angle
   (c) right angle
   (d) complementary angle
   (e) supplementary angle

3. If a triangle is equilateral, then it has
   (a) three congruent sides
   (b) three congruent angles
   (c) exactly two congruent sides and two congruent angles
   (d) both (a) and (b)
   (e) none of these

4. If a line ℓ has two different points A and B on a plane p, then we can say
   (a) p is contained in ℓ
   (b) $\overline{AB}$ is contained in p
   (c) ℓ is contained in p
   (d) both (a) and (b)
   (e) both (b) and (c)

5. In three-dimensional space, distinct lines a, b, and c are such that a is perpendicular to b, and b is perpendicular to c. Which one of the following is impossible?
   (a) a is parallel to c.
   (b) a, b, and c are concurrent.
   (c) a is not parallel to b.
   (d) a is skew to c.
   (e) a and c are parallel to b.

6. A line segment has
   (a) 0 endpoints
   (b) 1 endpoint
   (c) 2 endpoints
   (d) (a) or (b)
   (e) none of these

7. If two angles are vertical angles, then we know
   (a) the two angles are congruent
   (b) the sum of their measures is 180°
   (c) the sum of their measures is 90°
   (d) both angles are right angles
   (e) both angles are straight angles

8. A triangle with three sides of different lengths is
   (a) obtuse
   (b) acute
   (c) isosceles
   (d) equilateral
   (e) scalene

9. If line segments $\overline{AB}$ and $\overline{CD}$ are congruent to each other, we may conclude that
   (a) the segments are perpendicular
   (b) the segments are parallel
   (c) the segments have equal length
   (d) $A = C$ and $B = D$
   (e) both (b) and (c)

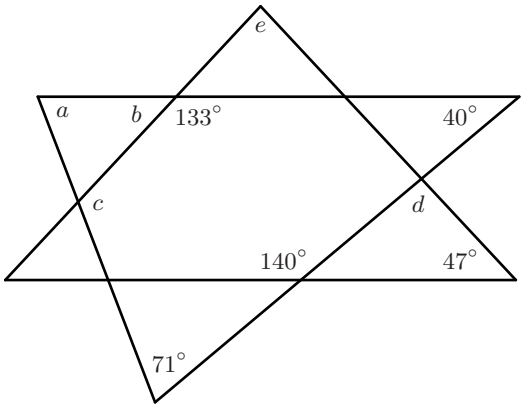
10. The geometric symbol for *congruent* is
    (a) $\sim$
    (b) $\cong$
    (c) $\approx$
    (d) $=$
    (e) $\perp$

11–16: Miscellaneous Problems (point values as indicated). On your answer sheet, circle the correct response or write your answer in the blank(s) provided. (P) means that partial credit may be given.

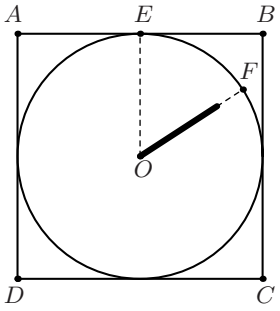
11. [10 points] The measure of the complement of an angle X is four-ninths the measure of the supplement of X. Find the *exact* measure of X.

12. [10 points] How many different lines are determined by five coplanar points, no three of which are collinear?

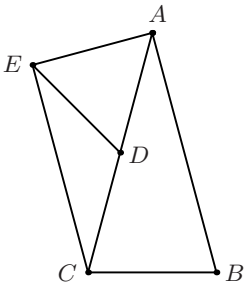
13. [10 points](P) Use the information in the given figure to find the *exact* angle measures a, b, c, d, and e.



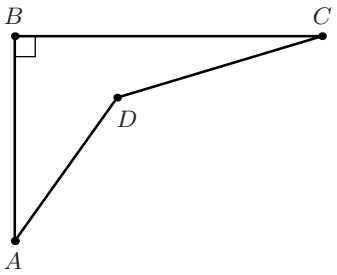
14. [10 points] The face of a clock consists of a circle with radius r and center O which is inscribed in square $ABCD$. Let E be the midpoint of $\overline{AB}$ and let F be the point on the circle which corresponds to the tip of the hour hand. To the *nearest minute*, what time does the clock read when the measure of $\angle EOF$ is $57°$?



15. [10 points] The measures of $\angle ACB$ and $\angle ABC$ both equal $75°$, D is the midpoint of $\overline{AC}$, and triangle ADE is equilateral. Find the *exact* measure of $\angle DCE$.



16. [10 points] Point D lies in the interior of the right angle ABC such that $m(\angle BCD) = 17°$ and $m(\angle CDA) = 129°$. Find the *exact* measure of $\angle DAB$.



Student's Answer Sheet

Name: _____
PRINT: First Last

School: _____ Code [ ]

Multiple Choice (4 points each). Circle the letter of the one best choice.

1. **a** **b** **c** **d** **e**
2. **a** **b** **c** **d** **e**
3. **a** **b** **c** **d** **e**
4. **a** **b** **c** **d** **e**
5. **a** **b** **c** **d** **e**
6. **a** **b** **c** **d** **e**
7. **a** **b** **c** **d** **e**
8. **a** **b** **c** **d** **e**
9. **a** **b** **c** **d** **e**
10. **a** **b** **c** **d** **e**

FOR GRADING USE ONLY

Mult Choice: _____ correct × 4 = _____

Misc Problems: total = _____

TOTAL SCORE [ ]

Miscellaneous Problems (point values as indicated). Circle the correct response or write your answer in the blank(s) provided; the boxes at the right are for grading use only. (P) means that partial credit may be given.

11. measure of X = _____ ° | 10 [ ]

12. _____ lines | 10 [ ]

13. a = _____ °
b = _____ °
c = _____ °
d = _____ °
e = _____ ° | 10P [ ]

14. clock reads _____ | 10 [ ]

15. $m(\angle DCE)$ = _____ ° | 10 [ ]

16. $m(\angle DAB)$ = _____ ° | 10 [ ]