

Translations. Other Homework problems

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Geometry is the art of coming to true conclusions from wrong-drawn pictures.

Finish the problems from the class handout.

Competition practice

Exercise 1. 2006 AMC 10A, Problem 19. How many non-similar triangles have angles whose degree measures are distinct positive integers in arithmetic progression?

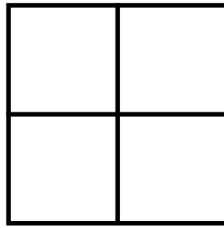
Exercise 2. 2006 AMC 10A, Problem 23. Circles with centers A and B have radii 3 and 8, respectively. A common internal tangent touches the circles at C and D . Lines AB and CD intersect at E , and $AE = 5$. What is CD ?

Exercise 3. 2006 AMC 10A, Problem 24. Centers of adjacent faces of a unit cube are joined to form a regular octahedron. What is the volume of this octahedron?

Warm Up

Exercise 4. It is easy to divide a square into four congruent pieces (see Figure): Can you divide a square into 5 congruent pieces?

Exercise 5. A certain sheik named Hassan had eight horses. Four of them were white, three were black, and one was brown. How many of Hassan's horses can each say that it is the same color as another one of Hassan's horses?

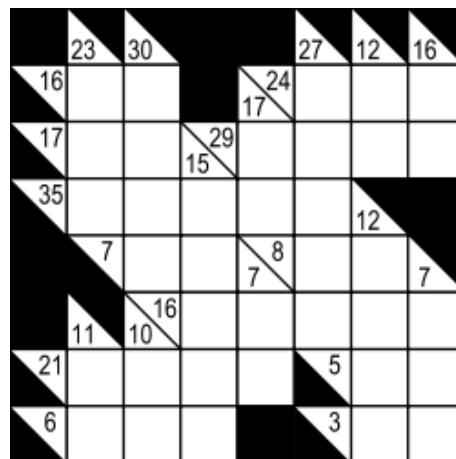


Challenge Problems

Exercise 6. Construct a quadrilateral $ABCD$ in which the diagonal AC bisects the angle A , given the lengths of the sides of the quadrilateral.

Exercise 7. Describe the composition of two reflections in parallel lines. Describe the composition of two reflections in intersecting lines.

Exercise 8. Solve the following kakuro puzzle.



Exercise 9. Abu, Ibn, and Hasib were suspects in a robbery. At the trial, they made the following statements:

- Abu: I didn't commit the robbery!
- Ibn: Hasib certainly didn't!
- Hasib: Yes, I did!

Later on, two of them confessed to having lied. Who committed the robbery?