

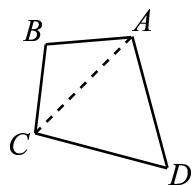
Math 804T
Experimentation, Conjecture, Reasoning
Fall 2007

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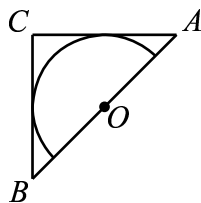
November 5, 2007

Solidifying Ideas:

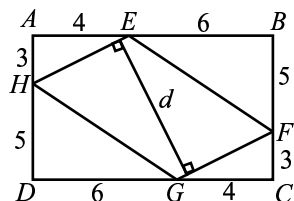
1. Points A , B , C and D have coordinates $A(3, 2)$, $B(3 - 2,)$, $C(-3, -2)$ and $D(-3, 0)$. What is the area of quadrilateral $ABCD$?
2. In quadrilateral $ABCD$, sides \overline{AB} and \overline{BC} both have length 10, sides \overline{CD} and \overline{DA} have length 17, and the measure of angle ADC is 60° . What is the length of diagonal \overline{AC} ?



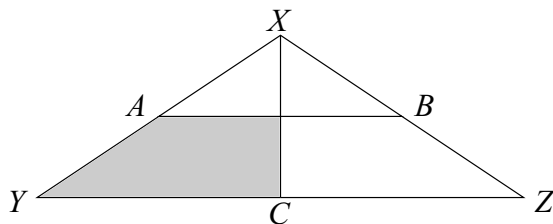
3. Isosceles right triangle ABC encloses a semicircle of area 2π . The circle has its center on hypotenuse \overline{AB} and is tangent to sides \overline{AC} and \overline{BC} . What is the area of triangle ABC ?



4. In the figure, $ABCD$ is a rectangle and $EFGH$ is a parallelogram. Using the measurements given in the figure, what is the length of the segment that is perpendicular to \overline{HE} and \overline{FG} ?

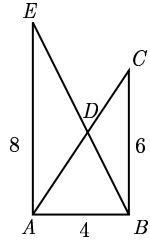


5. The area of triangle XYZ has base 4 inches and altitude 4 inches. Points A and B are midpoints of congruent segments \overline{XY} and \overline{XZ} . Altitude \overline{XC} bisects \overline{YZ} . What is the area (in square inches) of the shaded region?



New Ideas:

6. Spot's doghouse has a regular hexagonal base that measures one yard on each side. He is tethered to a vertex with a two-yard rope. What is the area, in square yards, of the region outside the doghouse that Spot can reach?
7. In the Figure, $\angle EAB$ and $\angle ABC$ are right angles, $AB = 4$, $BC = 6$, $AE = 8$, and \overline{AC} and \overline{BE} intersect at D . What is the difference between the areas of $\triangle ADE$ and $\triangle BDC$?



Habits of Mind:

8. In rectangle $ABCD$, we have $AB = 8$, $BC = 9$, H is on \overline{BC} with $BH = 6$, E is on \overline{AD} with $DE = 4$, line EC intersects line AH at G and F is on the line AD with $\overline{GF} \perp \overline{AF}$. Find the length GF .

