Math 123-01
Fall 2025
Dr. Lily Yen

Assignment 3

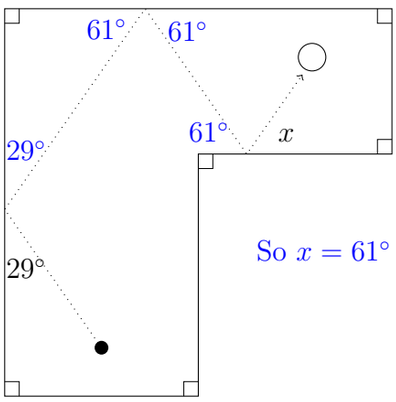
Show all your work

Name: _____
Number: _____
Signature: _____
Score: ___/10

Problem 1: Find the measure of angle x to make a hole-in-one at the miniature golf course hole. Use the following two facts to find x:

a. The angle the ball makes as it hits a flat surface has the same measure as the angle the ball makes as it leaves the same surface.

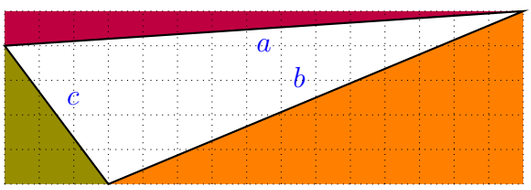
b. The interior angle sum of a triangle is 180°.



Starting at 29° using condition (a), alternate interior angles of parallel lines, and complementary angles of a right triangle, we reach $x = 61°$.

Score: /3

Problem 2: Below is a 5×15 grid containing a big triangle. Find the area and perimeter of the big triangle. Show your work.



Use the area of the rectangle minus the area of the three corner triangles:
$5 \times 15 - (1 \times 15 + 3 \times 4 + 12 \times 5)/2 = 75 - 43.5 = 31.5$ square units.
Since the corner triangles are right-angled, $a^2 = 1^2 + 15^2 = 226$, so $a = \sqrt{226}$;
$b^2 = 5^2 + 12^2 = 169$, so $b = \sqrt{169} = 13$; and $c^2 = 4^2 + 3^2 = 25$, so $c = \sqrt{25} = 5$. Therefore the perimeter of the given triangle is $a + b + c = \sqrt{226} + 13 + 5 = 18 + \sqrt{226} \approx 33.03$.

Score: /4

Problem 3: Set up a table for convex polygons' angle sums beginning with a triangle, followed by a quadrilateral, a pentagon, and so on. From your table, derive a formula for the measure of the interior angle sum in a regular n-sided polygon.

Polygon:								n-gon
Angle sum:	180	360	540	720	900	1080	...	$180(n-2)$

So the interior angle sum in an n-sided polygon is $180(n-2)$ degrees.

Score: /3