Math 123-02
Spring 2026
Dr. Lily Yen

Assignment 3

Show all your work

Name: _____
Number: _____
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Score: ___/10

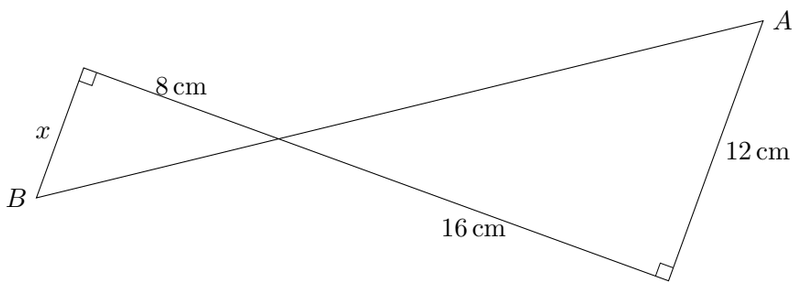
Problem 1: Set up a table for convex regular polygons' one interior angle beginning with a triangle, followed by a quadrilateral, a pentagon, and so on. From your table, derive a formula for the measure of one interior angle in a regular n-sided polygon.

Polygon:								n-gon
Angle:	60	90	108	120	900/7	1080/8	...	$180(n-2)/n$

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

Score: /3

Problem 2: Find $x =$ 6 cm. Also find the length of the line segment $AB =$ 30 cm.



The two inner angles are vertically opposite so equal. Since each triangle has a right angle, the third angles have to be equal, too. Hence the triangles are similar and $\frac{x}{8} = \frac{12}{16}$, so $x = 8 \times \frac{12}{16} = 6$.
Moreover, the hypotenuse of the small triangle is $\sqrt{x^2+8^2} = \sqrt{6^2+8^2} = 10$, and the hypotenuse of the large triangle is $\sqrt{12^2+16^2} = 20$. Therefore
$|AB| = 10\,\text{cm} + 20\,\text{cm} = 30\,\text{cm}$.

Score: /4

Problem 3: Take a 16 cm rope as a perimeter of a rectangle with whole-number side lengths. List all such rectangles. Find the largest rectangle (in area) with a perimeter of 16 cm.

Width	Length	Perimeter	Area		
1	7	16	7		
2	6	16	12		
3	5	16	15		
4	4	16	16		← largest

Score: /3