

**Bergen County Math League
NO Calculators Permitted**



Contest #2

2024-2025

Answers/Solutions

2-1. **Answer:** (3, 2)

Since $y = \frac{2^x}{4}$ is a power of 2, $3^x = 27$ and $(x, y) = (3, 2)$.

2-2. **Answer:** $60 + 9\pi$ **Approximations may not be accepted.**

The area sought is that of a region bounded by two semicircles of radius 3 and two parallel segments 6 cm apart. The area is $60 + 9\pi$ square cm.

2-3. **Answer:** (1, 7)

Long (or other) division indicates that the remainder is $(a - 1)x + b - 7$ which equals 0 iff $(a, b) = (1, 7)$.

2-4. **Answer:** 60 or 60°

Drawing \overline{AC} creates equilateral $\triangle ABC$. Thus $m\angle ABC = 60^\circ$.

2-5. **Answer:** (Stan, Setauket)

Completing the partially completed matrix below indicates that the answer sought (who, where) is (Stan, Setauket).

	Selden	Setauket	Smithtown	Skiing	Skating	Shooting
Stan	x					
Steve						
Stu		x		x		
Skiing	yes	x	x			
Skating	x					
Shooting	x		x			

2-6. **Answer:** 16

The statement of the problem suggests the equation $8n^2 + 6 = \frac{13}{5}(3n^2 + n + 6)$. The two solutions to this equation are 16 and -3, so n is the positive of these.