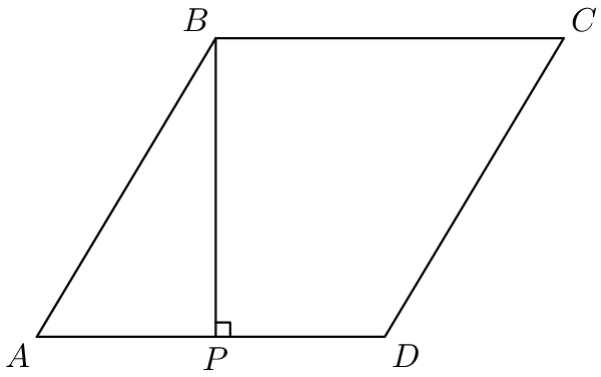
Problem Set - 19 Jan 2024

PROBLEM 1 (2022 AMC 10B #2)

In rhombus $ABCD$, point P lies on segment $\overline{AD}$ so that $\overline{BP} \perp \overline{AD}$, $AP = 3$, and $PD = 2$. What is the area of $ABCD$? (Note: The figure is not drawn to scale.)



(A) $3\sqrt{5}$ **(B)** 10 **(C)** $6\sqrt{5}$ **(D)** 20 **(E)** 25

PROBLEM 2 (2018 AMC 10A #2)

Liliane has 50% more soda than Jacqueline, and Alice has 25% more soda than Jacqueline. What is the relationship between the amounts of soda that Liliane and Alice have?

(A) Liliane has 20% more soda than Alice.

(B) Liliane has 25% more soda than Alice.

(C) Liliane has 45% more soda than Alice.

(D) Liliane has 75% more soda than Alice.

(E) Liliane has 100% more soda than Alice.

PROBLEM 3 (2021 AMC 10B #3)

In an after-school program for juniors and seniors, there is a debate team with an equal number of students from each class on the team. Among the 28 students in the program, 25% of the juniors and 10% of the seniors are on the debate team. How many juniors are in the program?

(A) 5 **(B)** 6 **(C)** 8 **(D)** 11 **(E)** 20

PROBLEM 4 (2010 AMC 12B #5)

Lucky Larry's teacher asked him to substitute numbers for a, b, c, d, and e in the expression $a-(b-(c-(d+e)))$ and evaluate the result. Larry ignored the parenthese but added and subtracted correctly and obtained the correct result by coincidence. The number Larry substituted for a, b, c, and d were 1, 2, 3, and 4, respectively. What number did Larry substitute for e?

$\textbf{(A)}\ -5 \qquad \textbf{(B)}\ -3 \qquad \textbf{(C)}\ 0 \qquad \textbf{(D)}\ 3 \qquad \textbf{(E)}\ 5$

PROBLEM 5 (2016 AMC 10A #12)

Three distinct integers are selected at random between 1 and 2016, inclusive. Which of the following is a correct statement about the probability p that the product of the three integers is odd?

$\textbf{(A)}\ p<\frac{1}{8} \qquad \textbf{(B)}\ p=\frac{1}{8} \qquad \textbf{(C)}\ \frac{1}{8}<p<\frac{1}{3} \qquad \textbf{(D)}\ p=\frac{1}{3} \qquad \textbf{(E)}\ p>\frac{1}{3}$
