2021 AMC 10A Problems/Problem 2

Contents

Problem

Portia's high school has 3 times as many students as Lara's high school. The two high schools have a total of 2600 students. How many students does Portia's high school have?

$\textbf{(A)}\ 600 \qquad \textbf{(B)}\ 650 \qquad \textbf{(C)}\ 1950 \qquad \textbf{(D)}\ 2000 \qquad \textbf{(E)}\ 2050$

Solution 1 (Two Variables)

The following system of equations can be formed with P representing the number of students in Portia's high school and L representing the number of students in Lara's high school:

$$P = 3L,$$
$$P + L = 2600.$$

Substituting $P = 3L$ gives $4L = 2600.$ Solving for L gives $L = 650.$ Since we need to find P, we multiply 650 by 3 to get $P = \boxed{\textbf{(C)}\ 1950}$.

~happykeeper (Solution)

~MRENTHUSIASM (Reformatting)

Solution 2 (One Variable)

Suppose Lara's high school has x students, so Portia's high school has $3x$ students. We have $x + 3x = 2600,$ or $4x = 2600.$ The answer is

$$3x = 2600 \cdot \frac{3}{4} = 650 \cdot 3 = \boxed{\textbf{(C)}\ 1950}.$$

~MRENTHUSIASM

Solution 3 (Arithmetic)

Clearly, 2600 is 4 times the number of students in Lara's high school. Therefore, Lara's high school has $2600 \div 4 = 650$ students, and Portia's high school has $650 \cdot 3 = \boxed{\textbf{(C)}\ 1950}$ students.

~MRENTHUSIASM

Solution 4 (Observations)

The number of students in Portia's high school must be a multiple of $3.$ This eliminates $\textbf{(B)}, \textbf{(D)},$ and $\textbf{(E)}.$ Since $\textbf{(A)}$ is too small (as it is clear that $600 + \frac{600}{3} < 2600$), we are left with $\boxed{\textbf{(C)}\ 1950}$.

~MRENTHUSIASM

Video Solutions

Video Solution 1 (Very Fast & Simple)

https://youtu.be/DOtysU-a1B4

~ Education, the Study of Everything

Video Solution 2 (Setting Variables)

https://youtu.be/qNf6SiIpIsk?t=119 ~ThePuzzlr

Video Solution 3 (Solving by Equation)

https://www.youtube.com/watch?v=aOpgeMfvUpE&list=PLexHyfQ8DMuKqltG3cHT7Di4jhVl6L4YJ&index=1 ~North America Math Contest Go Go Go

Video Solution 4

https://youtu.be/xXx0iP1tn8k

- pi_is_3.14

Video Solution 5

https://youtu.be/GwwDQYqptIQ

~savannahsolver

Video Solution 6

https://youtu.be/50CThrk3RcM?t=66

~IceMatrix

Video Solution 7 (Problems 1-3)

https://youtu.be/CupJpUzKPB0

~MathWithPi

Video Solution 8

https://youtu.be/slVBYmcDMOI

~The Learning Royal

See Also

2021 AMC 10A (**Problems** • **Answer Key** • Resources (http://www.artofproblemsolving.com/community/c13))	
Preceded by **Problem 1**	Followed by **Problem 3**
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