

2021 AMC 10A Problems/Problem 2

Contents

- 1 Problem
- 2 Solution 1 (Two Variables)
- 3 Solution 2 (One Variable)
- 4 Solution 3 (Arithmetic)
- 5 Solution 4 (Observations)
- 6 Video Solutions
 - 6.1 Video Solution 1 (Very Fast & Simple)
 - 6.2 Video Solution 2 (Setting Variables)
 - 6.3 Video Solution 3 (Solving by Equation)
 - 6.4 Video Solution 4
 - 6.5 Video Solution 5
 - 6.6 Video Solution 6
 - 6.7 Video Solution 7 (Problems 1-3)
 - 6.8 Video Solution 8
- 7 See Also

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?

- (A) 600 (B) 650 (C) 1950 (D) 2000 (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:

$$\begin{aligned}P &= 3L, \\P + L &= 2600.\end{aligned}$$

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 $P = \boxed{\text{(C) } 1950}$.

~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

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

~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 $650 \cdot 3 = \boxed{(C) 1950}$ students.

~MRENTHUSIASM

Solution 4 (Observations)

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

~MRENTHUSIASM

Video Solutions

Video Solution 1 (Very Fast & Simple)

<https://youtu.be/D0tysU-a1B4>

~ Education, the Study of Everything

Video Solution 2 (Setting Variables)

<https://youtu.be/qNf6Silplsk?t=119> ~ThePuzzlr

Video Solution 3 (Solving by Equation)

<https://www.youtube.com/watch?v=aOpgeMfvUpE&list=PLexHyfQ8DMuKqItG3cHT7Di4jhVI6L4YJ&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/CupJpUzKPBO>

~MathWithPi

Video Solution 8

<https://youtu.be/sIVBYmcDMOI>

~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
1 • 2 • 3 • 4 • 5 • 6 • 7 • 8 • 9 • 10 • 11 • 12 • 13 • 14 • 15 • 16 • 17 • 18 • 19 • 20 • 21 • 22 • 23 • 24 • 25	
All AMC 10 Problems and Solutions	

The problems on this page are copyrighted by the Mathematical Association of America (<http://www.maa.org>)'s American

Mathematics Competitions (<http://amc.maa.org>).



Retrieved from "https://artofproblemsolving.com/wiki/index.php?title=2021_AMC_10A_Problems/Problem_2&oldid=162259"

Copyright © 2022 Art of Problem Solving