2021 AMC 10A Problems/Problem 1

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Problem

What is the value of

$$(2^2-2)-(3^2-3)+(4^2-4)$$

(A) 1

(C)
$$5$$
 (D) 8

$$(\mathbf{D})$$
 8

Solution 1

$$(4-2)-(9-3)+(16-4)=2-6+12=8$$
. This corresponds to (\mathbf{D}) 8

-happykeeper

Solution 2

We have

$$(2^{2}-2) - (3^{2}-3) + (4^{2}-4) = 2(2-1) - 3(3-1) + 4(4-1)$$

$$= 2(1) - 3(2) + 4(3)$$

$$= 2 - 6 + 12$$

$$= (D) 8.$$

~MRENTHUSIASM

Solution 3 (Overkill: Just for Fun)

We have

$$(2^{2} - 2) - (3^{2} - 3) + (4^{2} - 4) = \overline{2^{2} + 4^{2}} - 3^{2} - 2 + 3 - 4$$
$$= 2^{2} + (4 - 3)(4 + 3) - 3$$

$$= 2^{2} + 7 - 3 = 2^{2} + 4$$

$$= 4 \cdot 2$$

$$= (D) 8.$$

-PureSwag

Video Solution 1 (Lightning Fast)

https://youtu.be/cAMg15KhK6E

~ Education, the Study of everything

Video Solution 2

https://youtu.be/cAMg15KhK6E

Video Solution 3 (Very Very Quick Computation)

 $https://www.youtube.com/watch?v=m0_UMI2mnZs\&list=PLexHyfQ8DMuKqltG3cHT7Di4jhVl6L4YJ\&index=2~North~America~Mathematic~Contest~Go~Go~Go~Contest~Contest~Go~Go~Contest~$

Video Solution 4 (Quick Computation)

https://youtu.be/C3n2hgBhyXc?t=37 ~ThePuzzIr

Video Solution 5 (Arithmetic Computation)

https://youtu.be/0VvM_f-IDvE

~ pi_is_3.14

Video Solution 6

https://youtu.be/4dkzuRHJieQ

~savannahsolver

Video Solution 7

https://youtu.be/50CThrk3RcM

~IceMatrix

Video Solution 8 (Problems 1-3)

https://youtu.be/CupJpUzKPB0

~MathWithPi

Video Solution 9

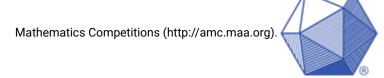
https://youtu.be/sIVBYmcDMOI

~TheLearningRoyal

See Also

`	· (http://www.artofproblemsolving.com/community/c 3))
Preceded by First Problem	Followed by Problem 2
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