HOW MANY SUMS?

Put positive whole numbers into the boxes to make the sum correct? Here is one way to do it.

$$2000 + 25 = 2025$$

How many other ways can you put positive whole numbers into the boxes to make the sum correct?

Explain your answer.

Now answer the same question for the year you were born.

HELP

What would the ? represent in 5 + ? = 2025

What other numbers could you use instead of 5?

Now answer the question: How many ways can you put positive whole numbers into the boxes to make the sum correct?

So how many ways can you do it apart from 1 + 2024 = 2025 and 5 + 2020 = 2025?

Explain your answer.

NEXT

The answer is 2025, what is the question?

This time make up your own questions that have the answer 2025, work out the solution and then exchange one of your questions with your partner. You must do your partner's question and your partner must do your question.

NOTES FOR TEACHERS

SOLUTION

As there are only two boxes we are looking for pairs of positive whole numbers that add up to 2021. Possibilities are:
1 + 2024
2 + 2023
3 + 2022 …
…
2024 + 1
so there are exactly 2024 different ways to put positive whole numbers into the boxes to make the sum correct.

Why do this activity?

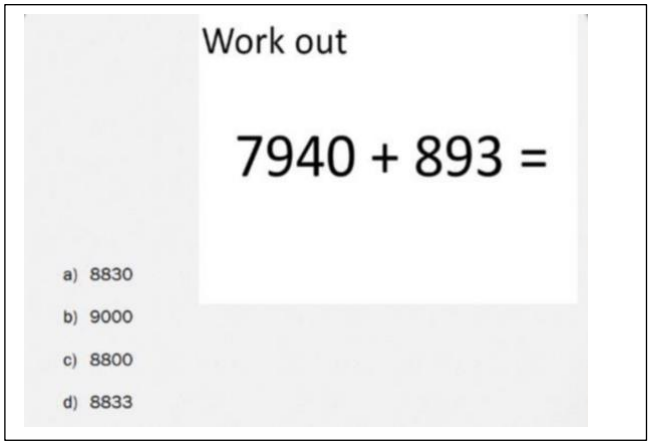
This is a 'quickie' that could be a lesson starter. It is important for learners to think mathematically and to explain their reasoning. This gives learners practice in doing that while reinforcing their number sense.

Learning objectives

For learners to solve a non-standard problem and be able to explain their reasoning.

DIAGNOSTIC ASSESSMENT This should take about 5–10 minutes.

Write the question on the board, say to the class:
"Put up 1 finger if you think the answer is A, 2 fingers for B, 3 fingers for C and 4 for D".



1. Notice how the learners respond. Ask a learner who gave answer A to explain why he or she gave that answer. DO NOT say whether it is right or wrong but simply thank the learner for giving the answer.
2. It is important for learners to explain the reasons for their answers. Putting thoughts into words may help them to gain better understanding and improve their communication skills.
3. Then do the same for answers B, C and D. Try to make sure that learners listen to these reasons and try to decide if their own answer was right or wrong.
4. Ask the class to vote for the right answer by putting up 1, 2, 3 or 4 fingers. Notice if there is a change and who gave right and wrong answers.

D is the correct answer. You might reason :
"7940 is 60 LESS THAN 8000 so the answer is 60 LESS THAN 8893"
Possible misconceptions: **A.** Learners may have done some mental arithmetic to work out that the answer is 8 thousand 8 hundred and thirty something and stopped there. This seems to show the learner did not add the units digit first.
B. Reveals that the learner had no idea how to add the numbers.
C. As with A. learners may have done some mental arithmetic to work out that the answer is 8 thousand 8 hundred and something and stopped there.
https://diagnosticquestions.com

Suggestions for teaching

NOTE You can change this question to use any total.

Write the question on the board at the start of the lesson and encourage learners to work individually for a few minutes and then to talk about their answers with their partner. Then ask learners to explain their answers to the class.

Key questions

1. What would the ? represent in 5 + ? = 2025

   What other numbers could you use instead of 5?
2. You have quite a lot of possible answers there. Can you put your answers in order?
3. Can you explain how you added up those two numbers?
4. What would you get if you subtracted 25 from 2025? How did you work that out?
5. How many different whole numbers can you subtract, one at a time, from 2025 and still get a positive answer?

Follow up

The answer is 2025 but what is the question?
https://aiminghigh.aimssec.ac.za/the-answer-is-2025-what-is-the-question/

Go to the **AIMSSEC AIMING HIGH** website for lesson ideas, solutions and curriculum links: http://aiminghigh.aimssec.ac.za
Subscribe to the **MATHS TOYS YouTube Channel**
https://www.youtube.com/c/MathsToys/videos
Download the whole AIMSSEC collection of resources to use offline with the **AIMSSEC App** see https://aimssec.app or find it on Google Play.

Note: The Grades or School Years specified on the AIMING HIGH Website correspond to Grades 4 to 12 in South Africa and the USA, to Years 4 to 12 in the UK and school years up to Secondary 5 in East Africa.
New material will be added for Secondary 6.
For resources for teaching A level mathematics (Years 12 and 13) see https://nrich.maths.org/12339
Mathematics taught in Year 13 (UK) & Secondary 6 (East Africa) is beyond the SA CAPS curriculum for Grade 12

	Lower Primary Approx. Age 5 to 8	Upper Primary Age 8 to 11	Lower Secondary Age 11 to 15	Upper Secondary Age 15+
South Africa	Grades R and 1 to 3	Grades 4 to 6	Grades 7 to 9	Grades 10 to 12
East Africa	Nursery and Primary 1 to 3	Primary 4 to 6	Secondary 1 to 3	Secondary 4 to 6
USA	Kindergarten and G1 to 3	Grades 4 to 6	Grades 7 to 9	Grades 10 to 12
UK	Reception and Years 1 to 3	Years 4 to 6	Years 7 to 9	Years 10 to 13