

**SHOE SIZE RIDDLE: Take your shoe size to the nearest integer. Multiply by 5. Add 50. Multiply by 20. If your birthday has happened this year add 1020, if it hasn't happened this year add 1019. Subtract the year you were born. The answer is your shoe size and your age (shoe size is first).**

Does this work? If yes, why???

Test: Shoe size is 10.

Multiply by 5 and get  $10 * 5 = 50$

Add 50:  $50 + 50 = 100$

Multiply by 20:  $100 * 20 = 2000$

Birthday happened, add 1020:  $2000 + 1020 = 3020$

Subtract year born: 1973:  $3020 - 1973 = 1047$

Notice the first two digits are the shoe size, 10, and 47 is how old someone born in 1973 is today if they've had a birthday this year.

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4. Multiply by 20.
5. If your birthday has happened this year add 1020, if it hasn't happened this year add 1019.
6. Subtract the year you were born.

**The answer is your shoe size and your age (shoe size is first).**

Need information: birth year and shoe size and if birthday happened.

Let's let  $Y$  be the birth year, and  $s$  be the shoe size. Assuming birthday happened.

Step 1: We assume  $s$  is already the nearest integer (say 4, 5, 10, et cetera)

Step 2: Multiply  $s$  by 5 and get  $5 * s = 5 s$ .

Step 3: Add 50:  $5 s$  goes to  $5 s + 50$ .

Step 4: Multiply by 20:  $(5 s + 50) * 20 = 5 s * 20 + 50 * 20 = 100 s + 1000$

Step 5: If birthday has happened add 1020, else add 1019. Add 1020 as assuming birthday happened.  $100 s + 1000$  goes to  $100 s + 1000 + 1020 = 100 s + 2020$ . Note 2020 is this year!!!

Step 6: Subtract year born:  $100 s + 2020$  goes to  $100 s + (2020 - Y)$ . Note since we've had our birthday this year that  $2020 - Y$  ( $Y$  is the year we were born) is our age!

So we get  $100 s +$  our age.

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The answer is your shoe size and your age (shoe size is first).

Born 1910, shoe size of 10, have had birthday.

Step 1: shoe size to nearest integer is 10

Step 2: multiply by 5:  $10 * 5 = 50$

Step 3: add 50:  $50 + 50 = 100$ .

Step 4: multiply by 20:  $100 * 20 = 2000$ .

Step 5: add 1020:  $2000 + 1020 = 3020$ .

Step 6: subtract 1910:  $3020 - 1910 = 1110$ .

So not 10 years old with a shoe size of 11

Not a shoe size of 1 and 110 years old!

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The answer is your shoe size and your age (shoe size is first).

Born 2015, shoe size of 2.5, have had birthday.

Skip step 1 – no rounding!

Step 2: multiply by 5:  $5 * 2.5 = 12.5$

Step 3: add 50:  $12.5 + 50 = 62.5$

Step 4: multiply by 20: 1250

Step 5: add 1020:  $1250 + 1020 = 2270$

Step 6: subtract 2015:  $2270 - 2015 = 255$

So shoe size 2.5 and 5 years old!

