

Student Name: _____
Please write your name on *every* page.

1 Section A

A1

What is the sum of 20 and 23?

Solution. $20 + 23 = 43$.

Answer to A1: 43

A2

A diver jumps off of a diving board that is 10 feet above the surface of a pool that is 15 feet deep, and then touches the bottom. How far does the diver travel vertically?

Solution. The diver travels 10 feet down to the surface of the pool, and then a further 15 feet to get to the bottom of the pool. This is a total of $10 + 15 = 25$ feet.

Answer to A2: 25 feet

A3

What time is it 78 minutes after midnight?

Solution. There are 60 minutes in an hour, so 60 minutes after midnight is 1 : 00. After this, we have $78 - 60 = 18$ minutes remaining. So going up by 18 minutes means the time is 1 : 18.

Answer to A3: 1 : 18

A4

An apple orchard wants to pick apples from trees and bake them into apple pies. Each pie needs 6 apples, and each tree has 10 apples on it. If they want to make 5 pies, what is the minimum number of trees they need to pick apples from?

Solution. If it takes 6 apples to make 1 pie, then to make 5 pies it will take $6 \times 5 = 30$ apples. If each tree has 10 apples, we will need to pick from $30 \div 10 = 3$ trees.

Answer to A4: 3

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A5

Kevin wants to divide his cookies among 7 friends. He currently has 24 cookies. What is the minimum number of additional cookies he needs in order to give each friend the same number of cookies, with none left over?

Solution. Right now, Kevin can give each friend 3 cookies, for a total of $7 \times 3 = 21$ cookies. There will be $24 - 21 = 3$ cookies left over, which is not enough to give each friend a fourth cookie. To give each friend 4 cookies, he would need $7 \times 4 = 28$ cookies. This means he needs $28 - 24 = 4$ additional cookies.

Answer to A5: 4

A6

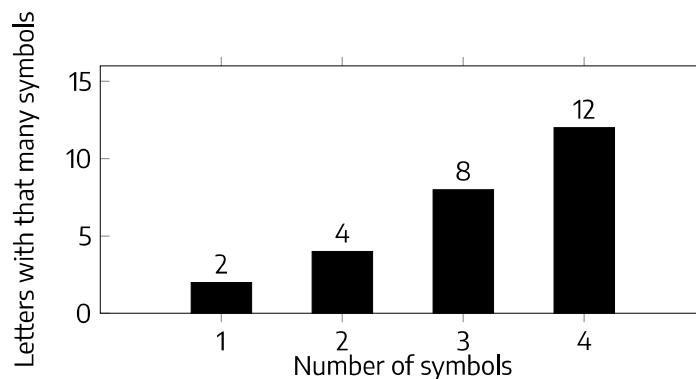
If someone celebrates their 65th birthday in 2023, what year were they born in?

Solution. To find this, we subtract 65 from 2023 (you can try subtracting your age from 2023 to get the year you were born). We get that $2023 - 65 = 1958$.

Answer to A6: 1958

A7

In Morse Code, each letter of the alphabet is represented by some symbols called “dots” and “dashes”. Here is a graph of the number of symbols it takes to represent letters in Morse Code.



How many letters are represented by an even number of symbols?

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Solution. The even numbers out of 1, 2, 3, and 4 are 2 and 4. The graph says that 4 letters have 2 symbols and 12 letters have 4 symbols. Then $4 + 12 = 16$ letters have an even number of symbols.

Answer to A7: 16

A8

Starting with the number 1, Jackson repeatedly adds a number to itself, and then uses that as the next number to be added to itself. For example, if he does this three times, he gets $1 + 1 = 2$, then $2 + 2 = 4$, and then $4 + 4 = 8$. In this case, the final number that he gets is 8. Starting at 1, if he does this seven times, what is the final number that he gets?

Solution. Doing this for the first time, $1 + 1 = 2$.
Doing this for the second time, $2 + 2 = 4$.
Doing this for the third time, $4 + 4 = 8$.
Doing this for the fourth time, $8 + 8 = 16$.
Doing this for the fifth time, $16 + 16 = 32$.
Doing this for the sixth time, $32 + 32 = 64$.
Doing this for the seventh time, $64 + 64 = 128$.

Answer to A8: 128