

Age problems: a reasoning ladder

Student questions | 13 problems | Work on separate paper

Explain your reasoning in words, with a diagram or with calculations. Problems 10-13 are optional extensions.

Ladder A Start with ages and equal parts

1. Follow the family links

USA: AMC 8, 2000, Problem 1

Anna, aged 42, is Brianna's aunt. Brianna is half Anna's age, and Caitlin is 5 years younger than Brianna. Find Caitlin's age.

2. The same number of years passes

Supplied MMMF age sheet, 29 November 2025, Problem 3

A mother is 25 years old and her son is 4. How old will the mother be when her son is 25?

3. One third and ten more

Supplied MMMF age sheet, Problem 1

If you add 10 years to one third of my present age, you get my present age. How old am I?

4. Three equal parts and one more

Supplied MMMF age sheet, Problem 8

A mathematics teacher is three times as old as her pupil Katya. Together their ages add to 40 years. How old is each?

Ladder B Move everyone along the same timeline

5. A future total

Supplied MMMF age sheet, Problem 5

In 5 years, Vitya and Mitya will have a combined age of 18. Mitya is 2 years younger than Vitya. How old is each now?

6. When will one be twice as old?

Supplied MMMF age sheet, Problem 2

Sergey is 12 and Andrey is 2. How old will Sergey be when he is twice as old as Andrey?

7. Three brothers grow older

Supplied MMMF age sheet, Problem 10

When the youngest of three brothers turned 4, their ages added to 19. What will their combined age be when the youngest turns 15?

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Student questions | continued

8. Two birthdays and a kitten

USA: AMC 8, 2022, Problem 5

At Bella's sixth birthday, five years before today, she was given a newborn kitten. Anna and Bella share a birthday and are celebrating today. Their current ages, together with the kitten's, add to 30 years. How many years older is Anna than Bella?

9. A shared hundredth birthday total

UKMT Junior Mathematical Challenge, 2013, Problem 16

On the same day in 2013, Ulysses, Kim, Mei and Tanika turn 12, 14, 15 and 15, respectively. In which year will their ages first add to 100?

Ladder C Combine the ideas [Optional problems 10-13]

10. An elephant and a zebra

Supplied MMMF age sheet, Problem 7

When an elephant was 27, a zebra was 3. The elephant is now three times as old as the zebra. (a) How old is each now? (b) How many years ago was the elephant four times as old as the zebra?

11. Read the comparison carefully

Supplied MMMF age sheet, Problem 11

In 7 years, Misha will be 7 years older than Grisha is now. Three years ago their ages added to 10. How old is Grisha now?

12. A mother and three children

UKMT Junior Mathematical Olympiad, 2018, Section B, Problem 1

Polly Garter had her first child on her 20th birthday. Her second child arrived exactly 2 years later, and her third another 2 years after that. At what age did Polly's age equal her three children's combined age?

13. Three different moments

Supplied MMMF age sheet, Problem 12 | Final stretch

When Vanya was as old as his sister Masha is now, he was five times her age at that time. Masha's age three years from now will be half Vanya's age at the future moment when Masha is as old as Vanya is today. How old is Vanya now?