

USING LINEAR EQUATIONS TO SOLVE PROBLEMS

Equations can be used to solve problems.

Example: when Kate adds her current age and her age next year, the result is 19. How old is Kate now?

1. Let k be the age of Kate.
2. the equation is $k+(k+1)=19$
3. $2k+1 = 19 \Leftrightarrow 2k = 18 \Leftrightarrow k = 9$
4. include the unit, and check that your answer works $k=9$
years

WRITING EQUATIONS FROM A DESCRIPTION

Write equations for the following scenarios.

- a The number k is doubled, then three is added and the result is 52.
- b Akira works n hours, earning \$12 per hour. The total she earned was \$156.

SOLUTION

a $2k + 3 = 52$

b $12n = 156$

EXPLANATION

The number k is doubled, giving $k \times 2$. This is the same as $2k$.

Since 3 is added, the left-hand side is $2k + 3$, which must be equal to 52 according to the description.

If Akira works n hours at \$12 per hour, the total amount earned is $12 \times n$, or $12n$.

FOUR STEPS TO SOLVE A PROBLEM:

1. define pronumerals
2. write the equation describing the problem
3. solve the equation (by inspection or systematically)
4. check that your solution works, and include the correct units (e.g. dollars, metres, kilograms, seconds, etc)