## 8 Algebra CC

## Essential Question: How can we set up an equation to solve problems about age?

Do Now:
a) Brandon is 14 years old. What will be his age in 6 years?
b) Tom is $\boldsymbol{x}$ years old. What will be his age in 6 years?
c) Vicki is $\boldsymbol{y}$ years old. What was her age 2 years ago?
d) Pete is 1 year older than twice his sister's age. Represent each of their ages in the table below.

|  | now | in 5 years |
| :--- | :--- | :--- |
| Pete's age |  |  |
| Sister's age |  |  |

## Age Problems

When solving age problems, represent the following in terms of a variable:

- the present ages of all people
- the age, at the other specified time (past/future), of all people

Use the relationships described in the problem to write an equation.
Solve the equation and answer the question.

## For example:

Phil is 35 years old. Three years ago, Phil was four times as old as his son was then. How old is his son now?

|  | now | 3 years ago |
| :---: | :---: | :---: |
| Phil's age | 35 | 32 |
| Son's age | $t$ | $t-3$ |

$$
\begin{aligned}
& \text { Three years ago } \underbrace{\text { Phil }}_{32} \underbrace{\text { was }}_{=} \underbrace{\text { four times }}_{4 \text { times }} \text { as old as his } \underbrace{\text { son was then. }}_{(t-3)} \\
& 32=4(t-3) \\
& \frac{32}{4}
\end{aligned}=\frac{4(t-3)}{4} .
$$

His son is $\mathbf{1 1}$ years old now.

1. Bill is three times as old as Pete. Six years from now Bill will be twice as old as Pete will be. How old are they now?

|  | now |  |
| :--- | :--- | :--- |
| Pete's age |  |  |
| Bill's age |  |  |

2. Ali's age plus her Dad's age is 50. In 8 years Ali's dad will be twice as old as she is. Find their ages now.
3. Sue is 20 years old and Anne is 10 years old. How many years ago was Sue 3 times as old as Anne?

To solve age problems, it is helpful to organize the ages in a $\qquad$ .

The headings should show time periods such as $\qquad$ , and $\qquad$ .

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For each problem, define all unknowns with variable expressions,
HW \# $\qquad$ solve.

1. Al is twice as old as Judy. Three years ago Al was 3 times as old as Judy. Find their ages now.
2. The total age of a woman and her son is 51 years. Three years ago, the woman was eight times as old as her son. How old is her son now?
3. A man is 40 years old and his son is 8 years old. In how many years will the man be three times his son's age?
