Age Problems

1.1 How to solve equations involving age

An age problem will generally talk about the age of two people. Some information will be given to connect the age of the two people. Once the equation is formed just solve the equations to get the ages.
Best approach is to assume the present age of the two people as x and y. Mathematically we call x and y as variables. Now suppose, we have assumed the age of A and B as x and y respectively. Mostly the information will be like a years from now , in that case the age a years from now for A and B will be x+a and y+a years respectively. Similarly if the problem talks about their age a years ago the age of A and B then would be x-a and y-a respectively.

Let us see a simple problem involving the age of only one person.

Example -1 Five years ago, Jane's age was half of the age he will be in 8 years. How old is he now?

Go step by step . First identify the person involved. Here we are talking about Jane and no other person is involved.
So first step is to assume the present age of Jane as x.
Read the first part ,it says 5 years ago, so find the age of Jane 5 years ago= x-5
"He will be in 8 years" means we have to find the age 8 years from now= x+8
Now we need a connection between these two ages to solve for x, the connection comes from **"was half of the age "** , this sentence relates the two equations , read the statement carefully and then make the equation.
x-5=1/2(x+8)
2x-10=x+8
x=18.
So the present age is 18.

Example-2 Al's father is 45. He is 15 years older than twice Al's age. How old is Al?

Go step by step. First identify the number of people involved. Here we are talking about Al and his father, so two people are involved..
It is stated that the age of the father is 45.
Let us assume the present age of Al=x
The problem talks about twice Al's age so let us do twice of x= 2x
"15 years older than twice Al's age(2x)" = 15+2x
It means that 15+2x =45
2x=30
x=15.

In the above two examples we identify the people involved, assume the variables and then try to connect the variables. But the most important part is to break the problem into parts. Once broken into parts the problem is simplified.Try to catch the words like age increases , decreases , two times and so. For all these make the corresponding changes in the variable x. Now after making the changes just find the connection between these to form equations. Now form the equations and solve them to get the required results.

If we tabulate the information given in a table then the process of forming equations becomes more easier. The following exampels will show the process.

Example 3 : Ravish is 20 years older than Radha. In 10 years, Radha's age will be half that of Ravish's. What is Radha's age?

Identify the people involved,here there are two people involved i.e. Ravish and Radha.Let the present age of Radha be x . Now using the first statement we can conclude that the age of Ravish as x+20 because Ravish is 20 years older than Radha. Now once we know the age of all the people in terms of x we can note down in a table.

	Age now	Age in 10 years
Radha	x	x+10
Ravish	x+20	x+30

Identify the sentence,"**Radha's age(x+10) will be half that of Ravish's(x+30).**"
x+10=1/2(x+30)
=> $x + 30 = 2(x + 10)$
$x + 30 = 2x + 20$
$x = 10$
So Radha's age is 10 years.

Example 4: Rajesh is twice as old as his friend Preeti. Preeti is 5 years older than Aman. In 5 years, Rajesh will be three times as old as Aman. How old is Preeti now?

Identify the people involved. There are 3 people involved namely Rajesh, Preeti and Aman. Since we need to find out the current age of Preeti , we will assume her age as x ad try to find the age of others in terms of x.
"**Rajesh is twice(2) old than Preeti(x)**" so Rajesh's age=2x
"**Preeti is 5 years older than Aman**" so Aman's age is= x-5
From here we can tabulate the information given

	age now	age in 5 yrs
Rajesh	2x	2x+5
Preeti	x	x+5
Aman	x-5	x-5+5 = x

Now look at the phrase: **In 5 years, Rajesh (2x+5) will be three times (3) as old as Aman (x)**
=> 2x+5 = 3(x)
=> x =5
Hence Preeti is now 5 years old.

Example 5: MarryJane's father is 5 times older than MarryJane and MarryJane is twice as old as his sister Alice. In two years time, the sum of their ages will be 58. How old is Jane now?

Sol: See we will start off by finding out the number of people involved. Here 3 people are involved We need to find out the current age of Marry Jane so, let *x* be MarryJane's age now
Then the age of his father = 5x and
The age of his sister Alice = x/2
Let us summarize all the given data in a table:

	age now	age in 2 yrs
MarryJane's father	5x	5x+2
Marry Jane	x	x+2
Alice	x/2	x/2+2

Now look at the phrase: "**In two years time, the sum of their ages will be 58.**"
=> (5x + 2) + (x + 2) +(x/2 + 2) = 58
=> 13x/2 + 6 = 58
=> 13x = 52*2
=>x = 8
Hence the MarryJane is now 8 years old

Exerceise 1

1. Mohan is 3 years older than John. In 4 years, Mohan will be 3/2 as old as John . How old is Mohan now ?
A) 3 B) 4 C)5 D)6

2.Lucy is 4 times as old as Amy. Three years ago, Lucy was 13 times as old as Amy. How old is Lucy now?
A)16 B)21 C)19 D)18

3 Marie is twelve years older than her brother Ben. Four years from now, Ben will be two-thirds as old as Marie. How old is Ben now?
A)10 B)20 C)30 D)40

4.Mary's age and Bob's age are in the ration 3:2. Eight years later, the ratio of their ages will be 4:3. Find their present ages.
A)18,12 B)33,22 C)36,24 D)24,16

5.In 18 years, Jenny will be three times as old as she is now. How old is she?
A)9 B) 10 C)11 D)12

6. Ricardo is 4 years less than twice as old as his sister. The sum of their ages is 20. How old is Ricardo?
A)9 B)10 C)11 D)12

7.Kim is 3 times as old as she was 2 years ago. How old is she?
A) 5 B)10 C)3 D)12

8 In 20 years, John will be 5 times as old as he is now. How old is he?
A) 5 B)6 C)7 D)8

9.Shawn is 4/5ths as old now as he will be in 7 years. How old is he now?
A) 37 B) 36 C) 35 D)28

10 Jeff is two years younger than Carrie. 12 years ago, Carrie was twice as old as Jeff. How old is Jeff now?
A) 21 B)16 C)22 D)32

11 Steve is twice as old as Sylvie. Sylvie is three years older than Jacob. 4 years ago, Sylvie was twice Jacob's age. How old is Sylvie?
A)11 B) 12 C)10 D) 15

12 Karen is twice as old as Lori. Three years from now, the sum of their ages will be 42. How old is Karen?
A)24 B)62 C)29 D) 31

13 In January of the year 2000, I was thirteen times as old as my son William. In January of 2009, I was four times as old as him. How old was my son in January of 2000?
A)6 B)7 C)3 D)5

14 In three more years, Miguel's grandfather will be six times as old as Miguel was last year. When Miguel's present age is added to his grandfather's present age, the total is 68. How old is the grandfather now?
A)55 B)56 C)57 D)58

15 Pat and Chris have the same birthday. Pat is twice as old as Chris was when Pat was as old as Chris is now. If Pat is 24 now, how old is Chris now?
A)15 B)16 C)17 D)18

16 Dorothy is 6 years older than Ricardo. The product of their present ages is twice what the product of their ages was 6 years ago. How old is Dorothy?
A)24 B)30 C)35 D)40

17 When Gary and Rowena were married, Rowena was two years younger than Gary. How old was Gary on his wedding day if sixteen years before his wedding he was twice as old as Rowena was the?
A)21 B) 22 C) 23 D) 20

18 Riza is 25 when her first son was born,today the sum of their ages is 105.how old is her son now?
A) 37 B)38 C)39 D)40

19. The age of *B* is half the sum of the ages of *A* and *C*. If *B* is 2 years younger than *A* and *C* is 32 years old, then the age of *B* must be.
A) 32 B) 34 C) 36 D)38

20. The ages of three people are such that the age of one person is twice the age of the second person and three times the age of the third person. If the sum of the ages of the three people is 33, then the age of the youngest person is.
A)5 B)6 C)7 D)8