



Problem of the Week

Problem B and Solution

A Family Matter

Problem

A family has one set of twin children, one set of triplets, and two parents. The youngest children are five years old.

If the mean of the family members' ages is 18 years, the mode is 10 years, and the parents are the same age, how old are the parents?



Solution

Since the mode is the age which occurs most frequently, the triplets must be 10 years old. It follows that the youngest children must be the twins, each aged 5 years.

For the average age to be 18 years, the sum of the ages of all 7 people must be $18 \times 7 = 126$ since $126 \div 7 = 18$. So the total age of the twins plus the total age of the triples plus the age of the two parents must be 126. Symbolically, this can be written

$$\underbrace{(2 \times 5)}_{\text{twins}} + \underbrace{(3 \times 10)}_{\text{triplets}} + (\text{two parents' ages}) = 126.$$

The total age of the twins is $2 \times 5 = 10$ years. The total age of the triplets is $3 \times 10 = 30$ years. The total age of all five children is $10 + 30 = 40$ years.

Removing the children's ages from the total 126 leaves the 2 parents with a total age of 86. Since both parents are the same age, each parent's age must be $\frac{1}{2}$ of 86. It follows that the age of each parent is 43 years.

