NTS GAT General Past Papers Questios

Quantitative – Exam No. 26

Ages Problems

Prepared by: GAT Online Tutor

Formulas:

1. Always write the present ages in the equation form.
2. If it is written, "A's age is twice the age of B." It will be written as:

$$A = 2B$$

3. If it is written, "A's age is half the age of B." It will be written as:

$$A = \frac{B}{2}$$

4. If it is written, "A is 10 years elder/older than B." It will be written as:

$$A = B + 10$$

5. If it is written, "A is 10 years younger/smaller than B." It will be written as:

$$A = B - 10$$

6. If it is written, "A mother after 10 years will be thrice the age of her son." It will be written in equation form as follows:

$$M + 10 = 3(S + 10)$$

7. If it is written, "10 years hence, mother's age thrice the age of her son." It will be written in equation form as follows:

$$M + 10 = 3(S + 10)$$

8. If it is written, "10 years ago/back, mother's age was thrice the age of her son." It will be written in equation form as follows:

$$M - 10 = 3(S - 10)$$

Note:

The same questions can be asked by replacing the word "age" with "weight".

Exercise:

1. Father's age is three times the age of son and the difference between their ages is 30. Find the age of son? (PP)

Solution:

$$F = 3S \ldots (1)$$

$$F - S = 30 \ldots (2)$$

We can write equation (2) as follows:

$$F = 30 + S$$

Put the value of F in equation (1), we get:

$$30 + S = 3S$$

$$30 = 3S - S$$

$$30 = 2S$$

$$S = \frac{30}{2}$$

$$S = 15$$

2. The age of A is twice the age of B. If A's age is 12 years now. What will be B's age in 2028?

Solution:

$$A = 2B$$

$$12 = 2B$$

$$B = \frac{12}{2} = 6\ years$$

B's age in 2028 will be:

$$B = 6 + 8$$

$$B = 14\ years$$

3. Rabia's age is two times the age of her brother waqas. Six years ago, rabia was five times the age of her brother. Find the present age of waqas? (PP)

Solution:

$$R = 2W$$

$$R - 6 = 5(W - 6)$$

Put the value of R from first equation into second equation:

$$2W - 6 = 5W - 30$$

$$-6 + 30 = 5W - 2W$$

$$24 = 3W$$

$$W = \frac{24}{3}$$

$$W = 8\ years$$

4. A is 7 years older than B. If A's age will be 21 in 2021. What was B's age in 2010?

Solution:

$$A = B + 7$$

If A's age in 2021 is 21, then his present age will be 20 years. So, by putting the present age of A in above equation:

$$20 = B + 7$$

$$B = 20 - 7$$

$$B = 13\ years$$

B's age in 2010 was:

$$B = 13 - 10$$

$$B = 3\ years$$

5. Lyba's age is half of the age of shazia. If shazia's age is 48 years now, what will be lyba's age is 2025?

Solution:

$$L = \frac{S}{2}$$

$$L = \frac{48}{2} = 24\ years$$

Lyba's age in 2025 will be:

$$L = 24 + 5$$

$$L = 29\ years$$

6. A mother after 4 years will be twice the age of her daughter. If the daughter's age is 14 now, find the age of mother? (PP)

Solution:

$$M + 4 = 2(D + 4)$$

$$M + 4 = 2(14 + 4)$$

$$M + 4 = 2(18)$$

$$M + 4 = 36$$

$$M = 36 - 4$$

$$M = 32\ years$$

7. The ratio of ages of three brothers is 1:3:5 and the sum of their ages is 81. What is the present age of middle brother?

Solution:

$$Middle\ brother's\ age = M = \frac{Sum\ of\ ages}{Sum\ of\ ratios} \times Middle\ brother's\ ratio$$

$$M = \frac{81}{1 + 3 + 5} \times 3$$

$$M = \frac{81}{9} \times 3$$

$$M = 27\ years$$

8. Ali's age is thrice the Umar's age. Seventeen years hence, Ali's age twice the age of Umar. Find the Umar's present age?

Solution:

$$A = 3U$$

$$A + 17 = 2(U + 17)$$

Put the value of A from first equation into second equation:

$$3U + 17 = 2U + 34$$

$$3U - 2U = 34 - 17$$

$$U = 17\ years$$

9. The sum of ages of grandfather and father of Ali is 250. If grandfather's age is 10 more than 3 times the age of father, find the age of father? (PP)

Solution:

$$G + F = 250 \ldots (1)$$

$$G = 3F + 10 \ldots (2)$$

From equation (1), we get:

$$G = 250 - F$$

Put the value of G in equation (2), we get:

$$250 - F = 3F + 10$$

$$250 - 10 = 3F + F$$

$$4F = 240$$

$$F = \frac{240}{4}$$

$$F = 60\ years$$

10. Asim's age is thrice the age of Tania. Five years back, his age was five times the age of Tania. What is Asim's present age? (PP)

Solution:

$$A = 3T$$

$$A - 5 = 5(T - 5)$$

Put the value of A from first equation into second equation:

$$3T - 5 = 5T - 25$$

$$-5 + 25 = 5T - 3T$$

$$20 = 2T$$

$$T = \frac{20}{2}$$

$$T = 10\ years$$

Put the value of T in first equation to find the age of Asim:

$$A = 3 \times 10$$

$$A = 30\ years$$

11. A father is double the age of his son. 20 years ago, he was 12 times the age of his son, what is father's present age? (PP)

Solution:

$$F = 2S$$

$$F - 20 = 12(S - 20)$$

Put the first equation in second equation, we get:

$$2S - 20 = 12(S - 20)$$

$$2S - 20 = 12S - 240$$

$$240 - 20 = 12S - 2S$$

$$220 = 10S$$

$$S = \frac{220}{10}$$

$$S = 22$$

Put the value of S in first equation, we get:

$$F = 2(22)$$

$$F = 44\ years$$

12. My age plus my son's age is equal to my father's age, which is 78 years old. When I was my son's age, he was just a quarter as old as I am now. How old am I? (PP)

Solution:

Let M denotes my age, S denotes my son's age and D be the difference between my age and my son's age, so:

$$M + S = 78 \ldots (1)$$

$$M - S = D \ldots (2)$$

$$S - D = \frac{M}{4} \ldots (3)$$

Re-arrange equation (3) as follows:

$$-\frac{M}{4} + S = D \ldots (4)$$

Subtracting equation (2) from equation (4) as follows:

$$-\frac{M}{4} + S = D \ldots (4)$$

$$M - S = D \ldots (2)$$

$$\begin{array}{cccc} - & + & - & \\ \hline -\frac{M}{4} & -M & +S & +S = D - D \end{array}$$

$$-\frac{5M}{4} + 2S = 0 \ldots (5)$$

Multiplying equation (1) with "2", we get:

$$2M + 2S = 156 \ldots (6)$$

Subtracting equation (5) from equation (6) as follows:

$$2M + 2S = 156 \ldots (6)$$

$$-\frac{5M}{4} + 2S = 0 \ldots (5)$$

$$\begin{array}{cccc} + & - & & \\ \hline 2M & +\frac{5M}{4} & +2S & -2S = 156 \end{array}$$

$$\frac{13M}{4} = 156$$

$$13M = 156 \times 4$$

$$13M = 624$$

$$M = \frac{624}{13}$$

$$M = 48\ years$$

13. Seven years ago, father was 13 times as old as his son. Three years hence, father's age thrice the age of son. Find the age of son? (PP)

Solution:

$$(F - 7) = 13(S - 7) \ldots (1)$$

$$(F + 3) = 3(S + 3) \ldots (2)$$

Equation (1) can be simplified as follows:

$$F - 7 = 13S - 91$$

$$F = 13S - 91 + 7$$

$$F = 13S - 84 \ldots (3)$$

Equation (2) can be simplified as follows:

$$F + 3 = 3S + 9$$

$$F = 3S + 9 - 3$$

$$F = 3S + 6 \ldots (4)$$

Subtracting equation (4) from equation (3), we get:

$$F - F = (13S - 84) - (3S + 6)$$

$$0 = 13S - 84 - 3S - 6$$

$$0 = 10S - 90$$

$$10S = 90$$

$$S = \frac{90}{10}$$

$$S = 9\ years$$

14. A mother tells her daughter, 'I was half your present age when you were born.' If the mother is 18 years older than her daughter, what is the present age of mother? (PP)

Solution:

$$M - D = \frac{1}{2} \times D \ldots (1)$$

$$M - D = 18 \ldots (2)$$

Substituting the value of $M - D$ from equation (2) in equation (1), we get:

$$18 = \frac{1}{2} \times D$$

$$D = 18 \times 2$$

$$D = 36$$

Substituting the value of D in equation (2), we get:

$$M - 36 = 18$$

$$M = 18 + 36$$

$$M = 54\ years$$

15. The sum of ages of mother and daughter is 50. Five years ago, mother's age was seven times the age of daughter. Find their present ages? (PP)

Solution:

$$M + D = 50 \ldots (1)$$

$$M - 5 = 7(D - 5) \ldots (2)$$

Equation (1) can be written as follows:

$$M = 50 - D$$

Substituting the value of M in equation (2), we get:

$$50 - D - 5 = 7(D - 5)$$

$$50 - D - 5 = 7D - 35$$

$$50 - 5 + 35 = 7D + D$$

$$80 = 8D$$

$$D = \frac{80}{8} = 10\ years$$

Substituting the value of D in equation (1), we get:

$$M + 10 = 50$$

$$M = 50 - 10 = 40\ years$$

16. The age of a man is four times that of his son. Five years ago, the man was nine times as old as his son was at that time. Find the present age of the man? (PP)

Solution:

$$M = 4S \ldots (1)$$

$$M - 5 = 9(S - 5) \ldots (2)$$

Equation (1) can be written as follows:

$$S = M/4$$

Substituting the value of S in equation (2), we get:

$$M - 5 = 9(M/4 - 5)$$

$$M - 5 = \frac{9M}{4} - 45$$

$$-5 + 45 = \frac{9M}{4} - M$$

$$40 = \frac{9M - 4M}{4}$$

$$40 = \frac{5M}{4}$$

$$M = \frac{40 \times 4}{5}$$

$$M = \frac{8 \times 4}{1}$$

$$M = 32\ years$$

17. Ten years ago, Akram was thrice as old as Aslam was, but ten years hence, he will be only twice as old. What is Akram's present age? (PP)

Solution:

Let "K" denotes Akram and "S" denotes Aslam, so:

$$K - 10 = 3(S - 10) \ldots (1)$$

$$K + 10 = 2(S + 10) \ldots (2)$$

Subtracting equation (2) from equation (1), we get:

$$(K - 10) - (K + 10) = 3(S - 10) - 2(S + 10)$$

$$K - 10 - K - 10 = 3S - 30 - 2S - 20$$

$$-20 = S - 50$$

$$-20 + 50 = S$$

$$S = 30\ years$$

Substituting this value in equation (1), we get:

$$K - 10 = 3(30 - 10)$$

$$K - 10 = 3(20)$$

$$K = 60 + 10$$

$$K = 70\ years$$

18. Father's age is four times the age of son. After twenty years, father's age will be twice the age of son. Find their ages? (PP)

Solution:

$$F = 4S \ldots (1)$$

$$F + 20 = 2(S + 20) \ldots (2)$$

Substituting the value of F from equation (1) into equation (2), we get:

$$4S + 20 = 2S + 40$$

$$4S - 2S = 40 - 20$$

$$2S = 20$$

$$S = \frac{20}{2} = 10\ years$$

Substituting the value of S in equation (1), we get:

$$F = 4(10)$$

$$F = 40\ years$$

19. Brother is five years old and his sister is twice his age. Find the age of sister if brother is 8 years old? (PP)

Solution:

$$B = 5\ years$$

$$S = 2B = 2(5) = 10\ years$$

$$B = 8\ years\ (After\ 3\ years)$$

$$S = 13\ years\ (After\ 3\ years)$$

20. Father's age is four times the son's age. Five years ago, father's age was seven times the age of son. Find the present age of father? (PP)

Solution:

$$F = 4S \ldots (1)$$

$$F - 5 = 7(S - 5) \ldots (2)$$

Substituting the value of F from equation (1) into equation (2), we get:

$$4S - 5 = 7S - 35$$

$$-5 + 35 = 7S - 4S$$

$$30 = 3S$$

$$S = 10\ years$$

Substituting the value of S in equation (1), we get:

$$F = 4(10)$$

$$F = 40\ years$$

21. Rabia was p times as old as Bilal six years ago. If Rabia is seventeen years old now, then find Bilal's age in terms of p? (PP)

Solution:

$$R - 6 = p(B - 6) \ldots (1)$$

$$R = 17$$

Substituting the value of R is equation (1), we get:

$$17 - 6 = p(B - 6)$$

$$11 = p(B - 6)$$

$$\frac{11}{p} = B - 6$$

$$B = \frac{11}{p} + 6$$

22. Ali is 5 times as old as his son. 2 years ago the sum of their ages was 50. Find the present age of son? (PP)

Solution:

$$A = 5S \ldots (1)$$

$$(A - 2) + (S - 2) = 50 \ldots (2)$$

Solving equation (2) we get:

$$A + S - 4 = 50$$

$$A + S = 50 + 4 = 54$$

Substituting the value of A from equation (1), we get:

$$5S + S = 54$$

$$6S = 54$$

$$S = \frac{54}{6}$$

$$S = 9\ years$$

23. Lubna is 15 years old and her father is 40. How many years ago, was the father six times as old as Lubna? (PP)

Solution:

$$L = 15 \qquad and \qquad F = 40$$

$$F - x = 6(L - x)$$

$$40 - x = 6(15 - x)$$

$$40 - x = 90 - 6x$$

$$-x + 6x = 90 - 40$$

$$5x = 50$$

$$x = \frac{50}{5} = 10\ years$$