

Find the value of  $x$  in each of the following equations :

1.  $2x = x + 8$ ;  $6x = 2x + 12$ ;  $4x = 8 + 2x$ ;  $9x - 8 = 8x$ .
2.  $3x = 8 - x$ ;  $8 + 3x = 4x$ ;  $4x + 6 = 7x$ ;  $20 - 3x = 2x$ .
3.  $18 - 2x = 4x$ ;  $5x - 30 = 2x$ ;  $6x = 50 - 4x$ ;  $8x - 8 = 3x$ .
4.  $2x + 4 = x + 12$ ;  $6x + 3 = 2x + 15$ ;  $3x + 20 = 6x + 2$ .
5.  $6x + 18 = 4x + 36$ ;  $8x - 12 = 2x + 24$ ;  $9x + 10 = 12x - 20$ .
6.  $6x - 18 = 0$ ;  $8x - 56 = 0$ ;  $0 = 24 - 2x$ ;  $0 = 6x - 24$ .
7.  $x + 9 = \frac{2x}{3} + 12$ ;  $x + 8 = \frac{3x}{4} + 13$ ;  $2x - 19 = 14 + \frac{5x}{8}$ .
8.  $\frac{3x}{4} - \frac{x}{2} = 15 - x$ ;  $4x - \frac{3x}{5} = 3x + 8$ ;  $40 - \frac{4x}{9} = \frac{x}{3} + 19$ .
9.  $\frac{x+1}{2} = 3$ ;  $\frac{x+4}{6} = 2$ ;  $\frac{2x+6}{8} = 7$ ;  $3x = 9x - 7x + 27$ .
10.  $3x + 1 = \frac{4x-2}{2} + 8$ ;  $\frac{3x}{4} - 1 = \frac{3x+12}{6}$ ;  $\frac{4x+6}{3} = \frac{4x+36}{6}$ .

Remove parentheses from the following expressions :

11.  $20 - (6 + 4)$ ;  $18 - (10 + 3)$ ;  $2x - (x + 1)$ .
12.  $4x - (2x + 8)$ ;  $8x - (18 + 4)$ ;  $6x - (18 + 3x)$ .
13.  $12 - (8 - 4)$ ;  $9x - (2x - 1)$ ;  $5x - (20 + x)$ .
14.  $5x - (2x + 6)$ ;  $20x - (12x + 16)$ ;  $7x - (8x - 6)$ .
15.  $16x - (18 + 4x)$ ;  $24 - (16 - 8x)$ ;  $12x - (7x + 12)$ .

Find the value of  $x$  in the following equations :

16.  $x - \frac{x+4}{2} = 2$ ;  $x - \frac{x+3}{3} = 3$ ;  $x - \frac{2x-6}{8} = 12$ .
17.  $2x - \frac{x+15}{9} = 21$ ;  $3x - \frac{2x+7}{3} = 21$ ;  $8x - \frac{3x-4}{4} = 30$ .
18.  $\frac{x+6}{2} - \frac{x+3}{3} = 4$ ;  $\frac{2x+2}{2} - \frac{3x-8}{4} = 5$ ;  $\frac{8x+9}{9} - \frac{60-2x}{6} = 2$ .
19.  $\frac{2x-6}{6} - \frac{x-12}{4} = 3$ ;  $\frac{20+x}{2} - \frac{x-10}{8} = 18$ ;  $\frac{60+2x}{12} - \frac{3x-45}{60} = 9\frac{1}{2}$ .
20.  $\frac{4x-8}{3} - \frac{2x-4}{6} = 6$ ;  $\frac{x}{2} - \frac{x-12}{3} = 8$ ;  $\frac{30+x}{2} - \frac{2x-20}{6} = 20\frac{1}{2}$ .