Make x the subject of the following:

1 $3x + 1 = y$

2 $12 - 2x = 4y + 2$

3 $y = \dfrac{x+1}{2}$

4 $3 + 4y + 2x = 9$

5 $2xy + 1 = 3y$

6 $2(x+3) = 3(x+2y-1)$

7 $\dfrac{x-1}{y+2} = 3$

8 $y = \dfrac{2}{x+1}$

9 $\dfrac{3-x}{y} = x$

10 $\dfrac{3}{x-1} = 5y$

11 $\dfrac{xy}{x+1} = 3$

12 $y - 3 = \dfrac{x}{2x+1}$

13 $z = x^2 y + 3$

14 $xyz = \dfrac{3b}{x}$

15 $(x+1)^2 = 3ab + 1$

16 $y = \sqrt{(2x+3)}$

17 $\dfrac{x-z}{2} = \dfrac{x+y}{3}$

18 $y = \dfrac{1}{\sqrt{x}}$

19 $z^2 = x^2 + y^2$

20 $2(x+3) - 3(y+2) = 4xy$

21 $z = \sqrt{xy} + 1$

22 $\dfrac{x}{y+1} = \dfrac{n}{x^2 y}$

23 $\dfrac{x+3y}{z-2x} = 3$

24 $\dfrac{(x-1)^2}{4} + (2y+1)^2 = 1$

Answers

1 $x = \dfrac{y-1}{3}$

2 $x = 5 - 2y$

3 $x = 2y - 1$

4 $x = 3 - 2y$

5 $x = \dfrac{3y-1}{2y}$

6 $x = 9 - 6y$

7 $x = 3y + 7$

8 $x = \dfrac{2}{y} - 1$

9 $x = \dfrac{3}{y+1}$

10 $x = \dfrac{3}{5y} + 1$

11 $x = \dfrac{3}{y-3}$

12 $x = \dfrac{3-y}{2y-7}$

13 $x = \sqrt{\dfrac{z-3}{y}}$

14 $x = \sqrt{\dfrac{3b}{yz}}$

15 $x = \sqrt{(3ab+1)} - 1$

16 $x = \dfrac{y^2 - 3}{2}$

17 $x = 2y + 3z$

18 $x = \dfrac{1}{y^2}$

19 $x = \sqrt{z^2 - y^2}$

20 $x = \dfrac{3y}{2-4y}$

21 $x = \dfrac{(z-1)^2}{y}$

22 $x = \sqrt[3]{\dfrac{n(y+1)}{y}}$

23 $x = \dfrac{3(z-y)}{7}$

24 $x = 2\sqrt{1 - (2y+1)^2} + 1$

Some to try

1 Make I the subject of $V = IR$

2 Make m the subject of $y = mx + c$

3 Make h the subject of $V = \pi r^2 h$

4 Make r the subject of $V = \pi r^2 h$

5 Make u the subject of $v = u + at$

6 Make P the subject of $I = \dfrac{PRT}{100}$

7 Make W the subject of $P = 2(L + W)$

8 Make l the subject of $L = l(1 + \alpha t)$

9 Make h the subject of $A = \dfrac{h(a + b)}{2}$

10 Make a the subject of $A = \dfrac{h(a + b)}{2}$

11 Make m the subject of $I = mv - mu$

12 Make u the subject of $I = mv - mu$

13 Make h the subject of $A = 2\pi r^2 + 2\pi r h$

14 Make a the subject of $s = ut + \frac{1}{2}at^2$

15 Make d the subject of $F = \dfrac{L}{4\pi d^2}$

16 Make v the subject of $E = \frac{1}{2}cv^2$

17 Make T the subject of $c = \sqrt{\dfrac{T}{\mu}}$

18 Make C the subject of $F = \frac{9}{5}C + 32$

19 Make r the subject of $A = \pi(R^2 - r^2)$

20 Make l the subject of $T = 2\pi\sqrt{\dfrac{l}{g}}$

21 Make p the subject of $E^2 = p^2c^2 + m^2c^4$

22 Make R the subject of $\dfrac{1}{R} = \dfrac{1}{R_1} + \dfrac{1}{R_2}$

23 Make v the subject of $E = \dfrac{mc^2}{\sqrt{1 - \dfrac{v^2}{c^2}}}$

24 Make v the subject of $p = \dfrac{mv}{\sqrt{1 - \dfrac{v^2}{c^2}}}$

Some to try   Answers

1 $I = \dfrac{V}{R}$

2 $m = \dfrac{y-c}{x}$

3 $h = \dfrac{V}{\pi r^2}$

4 $r = \sqrt{\dfrac{V}{\pi h}}$

5 $u = v - at$

6 $P = \dfrac{100I}{RT}$

7 $W = \dfrac{P}{2} - L \text{ or } \dfrac{P-2L}{2}$

8 $l = \dfrac{L}{1+\alpha t}$

9 $h = \dfrac{2A}{a+b}$

10 $a = \dfrac{2A}{h} - b \text{ or } \dfrac{2A - hb}{h}$

11 $m = \dfrac{I}{v-u}$

12 $u = \dfrac{mv - I}{m}$

13 $h = \dfrac{A - 2\pi r^2}{2\pi r}$

14 $a = \dfrac{2(s-ut)}{t^2}$

15 $d = \sqrt{\dfrac{L}{4\pi F}}$

16 $v = \sqrt{\dfrac{2E}{c}}$

17 $T = \mu c^2$

18 $C = \frac{5}{9}\left(F - 32\right)$

19 $r = \sqrt{\dfrac{\pi R^2 - A}{\pi}}$

20 $l = \left(\dfrac{T}{2\pi}\right)^2 g$

21 $p = \sqrt{\dfrac{E^2 - m^2 c^4}{c^2}}$

22 $R = \dfrac{R_1 R_2}{R_1 + R_2}$

23 $v = c\sqrt{1 - \left(\dfrac{mc^2}{E}\right)^2}$

24 $v = \dfrac{1}{\sqrt{\dfrac{m^2}{p^2} + \dfrac{1}{c^2}}}$