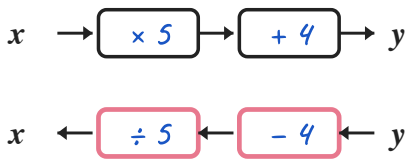
Rearranging Formulae

ANSWERS

1

Make x the subject of $y = 5x + 4$.

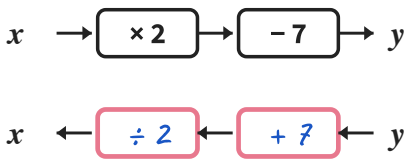


backwards: undo each step in reverse order

Answer $x = \frac{y - 4}{5}$

2

Make x the subject of $y = 2x - 7$.

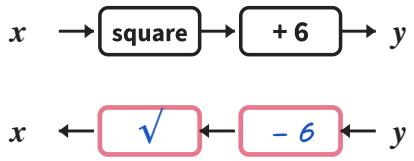


backwards: undo each step in reverse order

Answer $x = \frac{y + 7}{2}$

3

Make x the subject of $y = x^2 + 6$.

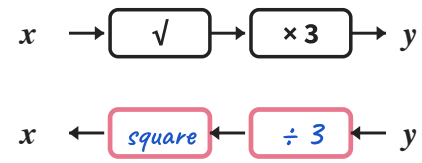


backwards: undo each step in reverse order

Answer $x = \sqrt{y - 6}$

4

Make x the subject of $y = 3\sqrt{x}$.

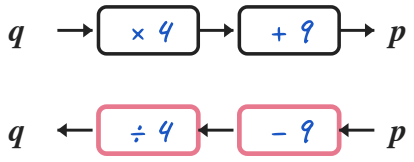


backwards: undo each step in reverse order

Answer $x = \left(\frac{y}{3}\right)^2$

5

Make q the subject of $p = 4q + 9$.



backwards: undo each step in reverse order

Answer $q = \frac{p - 9}{4}$

6

Zara makes x the subject of $y = 3x - 5$.

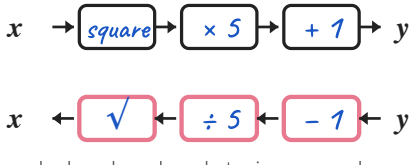
She writes $x = \frac{y}{3} + 5$. What has she done wrong? Write the right answer.

She divided first: undo − 5 first

Answer $x = \frac{y + 5}{3}$

7

Make x the subject of $y = 5x^2 + 1$.



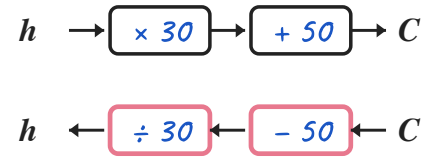
backwards: undo each step in reverse order

Answer $x = \sqrt{\frac{y - 1}{5}}$

8

It costs C pounds to hire a hall for h hours, where $C = 30h + 50$.

Make h the subject. How many hours can you hire the hall for with £200?



backwards: undo each step in reverse order

Formula $h = \frac{C - 50}{30}$

Hours 5 hours

Rearranging Formulae *further practice*

ANSWERS

9

Make x the subject of $y = 2\sqrt{x} + 5$.

$x \rightarrow [\sqrt{\ }] \rightarrow [\times 2] \rightarrow [+ 5] \rightarrow y$

$x \leftarrow [\text{square}] \leftarrow [\div 2] \leftarrow [- 5] \leftarrow y$

backwards: undo each step in reverse order

Answer $x = \left(\frac{y - 5}{2}\right)^2$

10

Make x the subject of $y = \frac{x + 4}{3}$.

$x \rightarrow [+ 4] \rightarrow [\div 3] \rightarrow y$

$x \leftarrow [- 4] \leftarrow [\times 3] \leftarrow y$

backwards: undo each step in reverse order

Answer $x = 3y - 4$

11

A square has sides of s cm and an area of A cm², where $A = s^2$. Make s the subject. Then find the perimeter of a square with an area of 49 cm².

$s \rightarrow [\text{square}] \rightarrow A$

$s \leftarrow [\sqrt{\ }] \leftarrow A$

backwards: undo each step in reverse order

Formula $s = \sqrt{A}$

Perimeter 28 cm

12

A taxi fare is T pounds for a journey of m miles, where $T = 2.5m + 3$. Make m the subject. How long was a journey that cost £23?

$m \rightarrow [\times 2.5] \rightarrow [+ 3] \rightarrow T$

$m \leftarrow [\div 2.5] \leftarrow [- 3] \leftarrow T$

backwards: undo each step in reverse order

Formula $m = \frac{T - 3}{2.5}$

Journey 8 miles

13

Omar makes x the subject of $y = x^2 - 9$. He writes $x = \sqrt{y} + 9$. Test his answer with $x = 5$, then write the right answer.

$y = 16$, but $\sqrt{16} + 9 = 13$

Answer $x = \sqrt{y + 9}$

14

A pendulum L metres long takes about T seconds to swing there and back, where $T = 2\sqrt{L}$. Make L the subject. How long is a pendulum that takes 3 seconds?

$L \rightarrow [\sqrt{\ }] \rightarrow [\times 2] \rightarrow T$

$L \leftarrow [\text{square}] \leftarrow [\div 2] \leftarrow T$

backwards: undo each step in reverse order

Formula $L = \left(\frac{T}{2}\right)^2$

Length 2.25 m

15

A ball is dropped from h metres. It hits the ground at v metres per second, where $v^2 = 20h$. Make h the subject. Then make v the subject.

$h = \frac{v^2}{20}$

$v = \sqrt{20h}$

16

Leo makes x the subject of $y = 3x + 6$. He says, "x was multiplied by 3 first, so I divide by 3 first." Is he right? Explain.

No: undo the last step, + 6, first

$x = \frac{y - 6}{3}$