

# Foundation GCSE: Rearranging Formulas

Name: \_\_\_\_\_

Class: \_\_\_\_\_

*Instructions: Answer all questions. Questions are ordered from easiest (1) to hardest (20). Working out should be shown where appropriate.*

1. Make  $x$  the subject of the formula:  $y = 3x + 5$
2. Rearrange the formula to make  $u$  the subject:  
 $v = u + at$
3. Make  $r$  the subject of the circle area formula:  
 $A = \pi r^2$
4. Rearrange to make  $x$  the subject:  $y = \frac{x-2}{4}$
5. Make  $b$  the subject of the formula:  $a = \frac{2b+c}{d}$
6. Make  $v$  the subject:  $s = vt$
7. Make  $y$  the subject:  $x = y - 7$
8. Make  $c$  the subject:  $a = b + c$
9. Make  $x$  the subject:  $y = 5x - 8$
10. Make  $t$  the subject:  $v = u + at$
11. Make  $r$  the subject:  $C = 2\pi r$
12. Make  $h$  the subject:  $V = \frac{1}{3}\pi r^2 h$
13. Make  $x$  the subject:  $y = \frac{2x+1}{3}$
14. Make  $u$  the subject:  $v^2 = u^2 + 2as$
15. Make  $x$  the subject:  $y = \frac{a}{x}$
16. Make  $x$  the subject:  $y = \frac{3}{x} + 4$
17. Make  $x$  the subject:  $y = x^2 + c$
18. Make  $b$  the subject:  $A = \frac{1}{2}(a+b)h$
19. Make  $x$  the subject:  $y = \frac{x+2}{x-3}$
20. Make  $x$  the subject:  $ax + b = cx + d$

## Answers & Worked Solutions

1.  $x = \frac{y-5}{3}$  – Subtract 5, then divide by 3.
2.  $u = v - at$  – Subtract  $at$ .
3.  $r = \sqrt{\frac{A}{\pi}}$  – Divide by  $\pi$ , then take square root.
4.  $x = 4y + 2$  – Multiply by 4, then add 2.
5.  $b = \frac{ad-c}{2}$  – Multiply by  $d$ , subtract  $c$ , divide by 2.
6.  $v = \frac{s}{t}$  – Divide by  $t$ .
7.  $y = x + 7$  – Add 7.
8.  $c = a - b$  – Subtract  $b$ .
9.  $x = \frac{y+8}{5}$  – Add 8, divide by 5.
10.  $t = \frac{v-u}{a}$  – Subtract  $u$ , divide by  $a$ .
11.  $r = \frac{C}{2\pi}$  – Divide by  $2\pi$ .
12.  $h = \frac{3V}{\pi r^2}$  – Multiply by 3, divide by  $\pi r^2$ .
13.  $x = \frac{3y-1}{2}$  – Multiply by 3, subtract 1, divide by 2.
14.  $u = \sqrt{v^2 - 2as}$  – Subtract  $2as$ , take square root.
15.  $x = \frac{a}{y}$  – Multiply by  $x$ , divide by  $y$ .
16.  $x = \frac{3}{y-4}$  – Subtract 4, invert/multiply.
17.  $x = \pm\sqrt{y-c}$  – Subtract  $c$ , take square root.
18.  $b = \frac{2A}{h} - a$  – Multiply by 2, divide by  $h$ , subtract  $a$ .
19.  $x = \frac{3y+2}{y-1}$  – Expand brackets, group  $x$  terms, factorise.
20.  $x = \frac{d-b}{a-c}$  – Group  $x$  terms on one side, factorise.