

TRANSPOSING FORMULAE

Show each stage of the working carefully.

1. Change the subject of the formula to w :

(a) $f = w + 7m$

(b) $d = w \div r^2$

(c) $s = w \div 6t$

(d) $p = 2w + r$

(e) $n = 3w \div g$

(f) $r = 2 + 5w$

(g) $h = nw + 3$

(h) $t = fw \div r$

(i) $m = kw + r^2$

(j) $a = n + t^2w$

(k) $v = 2aw \div h$

(l) $e = rtw + k$

(m) $r = 3d \div w$

(n) $u = r^2 \div w$

(o) $h = at \div w$

(p) $g = t \div 3w$

(q) $y = 4 \div nw$

(r) $x = p \div rw$

(s) $r = m \div 2aw$

(t) $h = s \div mnw$

(u) $p = n \div r^2w$

2. Change the subject of the formula to t :

(a) $h = \frac{1}{3}t$

(b) $f = \frac{3}{4}t$

(c) $v = \frac{5t}{2}$

(d) $s = \frac{t \div 2}{3}$

(e) $g = \frac{t \div 5}{n}$

(f) $r = \frac{t \div 1}{n}$

(g) $d = \frac{2t + 3}{5}$

(h) $x = \frac{4t \div k}{n}$

(i) $w = \frac{3t + r}{2}$

(j) $p = \frac{1}{4}(t \div 6)$

(k) $u = \frac{2}{5}(t \div 3)$

(l) $c = \frac{1}{3}(2t + 5)$

(m) $n = \frac{1}{3}t \div 2$

(n) $e = 3 + \frac{1}{4}t$

(o) $u = \frac{1}{2}t \div w$

(p) $d = \frac{2}{3}t + n$

(q) $w = 5 \div \frac{1}{2}t$

(r) $k = u \div \frac{1}{3}t$

(s) $m = \frac{t}{a} + w$

(t) $v = \frac{mt}{n} \div 3$

(u) $p = h \div \frac{a}{b}t$

3. Change the subject of the formula to r :

(a) $s = r^2 + t$

(b) $m = r^2 \div 5$

(c) $h = r^2 \div t$

(d) $w = \frac{1}{8}r^2$

(e) $g = \frac{3}{2}r^2$

(f) $t = \frac{n}{a}r^2$

(g) $p = \frac{r^2 \div 3}{4}$

(h) $x = \frac{r^2 + 4}{n}$

(i) $v = \frac{r^2 \div h}{5}$

(j) $u = \frac{1}{3}r^2 \div 2$

(k) $e = \frac{1}{2}r^2 + t$

(l) $k = \frac{3}{4}r^2 + m$

(m) $b = 3r^2 \div 5$

(n) $c = 4r^2 \div n$

(o) $a = 5r^2 + f$

(p) $h = nr^2 \div 3$

(q) $w = pr^2 \div m$

(r) $v = ar^2 + c$

(s) $x = (r \div 2)^2$

(t) $w = (r + n)^2$

(u) $t = (2r + c)^2$

4. Change the subject of the formula to n:

(a) $t = \sqrt{n} \square 2$

(b) $h = \sqrt{r + n}$

(c) $w = \sqrt{n} \square at$

(d) $x = \sqrt{2} \square n$

(e) $f = \sqrt{c} \square n$

(f) $g = \sqrt{ab} \square n$

(g) $r = \sqrt{3n + 2}$

(h) $p = \sqrt{3n} \square d$

(i) $c = \sqrt{2n + f}$

(j) $d = \sqrt{an} \square 3$

(k) $s = \sqrt{an} \square c$

(l) $e = \sqrt{nt + u}$

(m) $u = \sqrt{5} \square 2n$

(n) $k = \sqrt{w} \square 3n$

(o) $t = \sqrt{h} \square an$

(p) $p = \sqrt{n} \square 5$

(q) $g = \sqrt{n} \square t$

(r) $s = 3 \square \sqrt{n}$

(s) $h = x \square \sqrt{n}$

(t) $y = \sqrt{3n} + r$

(u) $v = t \square \sqrt{mn}$

5. Change the subject of the formula to t:

(a) $p = nt + 2t$

(b) $u = at \square rt$

(c) $c = r^2t + 2t$

(d) $r = \frac{3t + wt}{2}$

(e) $e = \frac{at + 3t}{4}$

(f) $v = \frac{r^2t \square t}{3}$

(g) $s = \frac{2t + 5}{t}$

(h) $m = \frac{a \square 3t}{t}$

(i) $w = \frac{r^2 \square t}{t}$

(j) $d = \frac{\square t + 2}{t}$

(k) $g = \frac{t + a}{3t}$

(l) $s = \frac{4n + t}{t}$

(m) $f = \frac{3t \square 2}{t}$

(n) $n = \frac{t \square 3}{t}$

(o) $p = \frac{\square t \square a}{t}$

6. Change the subject of the formula to that given in square brackets:

(a) $v = u + at$ [a]

(b) $v^2 = u^2 + 2as$ [s]

(c) $s = ut + \frac{1}{2}at^2$ [u]

(d) $P = mgh$ [g]

(e) $V = \square r^2h$ [h]

(f) $K = \frac{1}{2}mv^2$ [m]

(g) $A = \square r^2$ [r]

(h) $V = \square r^2h$ [r]

(i) $V = \frac{1}{3} \square r^2h$ [r]

(j) $V = \frac{4}{3} \square r^3$ [r]

(k) $v = \sqrt{t^2 \square 3}$ [t]

(l) $p = \square n^2 + 2n^2$ [n]

(m) $m = 2 \square \sqrt{v}$ [v]

(n) $d = \sqrt{\frac{4A}{\square}}$ [A]

(o) $T = 2 \square \sqrt{\frac{L}{g}}$ [L]

ANSWERS

1. (a) $w = f \square 7m$

(d) $w = \frac{p \square r}{2}$

(g) $w = \frac{h \square 3}{n}$

(j) $w = \frac{a \square n}{t^2}$

(m) $w = 3d \square r$

(p) $w = \frac{t \square g}{3}$

(s) $w = \frac{m \square r}{2a}$

(b) $w = d + r^2$

(e) $w = \frac{n + g}{3}$

(h) $w = \frac{t + r}{f}$

(k) $w = \frac{v + h}{2a}$

(n) $w = r^2 \square u$

(q) $w = \frac{4 \square y}{n}$

(t) $w = \frac{s \square h}{mn}$

(c) $w = s + 6t$

(f) $w = \frac{r \square 2}{5}$

(i) $w = \frac{m \square r^2}{k}$

(l) $w = \frac{e \square k}{rt}$

(o) $w = at \square h$

(r) $w = \frac{p \square x}{r}$

(u) $w = \frac{n \square p}{r^2}$

2. (a) $t = 3h$

(d) $t = 3s + 2$

(g) $t = \frac{5d \square 3}{2}$

(j) $t = 4p + 6$

(m) $t = 3n + 6$

(p) $t = \frac{3d \square 3n}{2}$

(s) $t = am \square aw$

(b) $t = \frac{4}{3}f$

(e) $t = ng + 5$

(h) $t = \frac{nx + k}{4}$

(k) $t = \frac{5}{2}u + 3$

(n) $t = 4e \square 12$

(q) $t = 10 \square 2w$

(t) $t = \frac{nv + 3n}{m}$

(c) $t = \frac{2v}{5}$

(f) $t = nr + 1$

(i) $t = \frac{2w \square r}{3}$

(l) $t = \frac{3c \square 5}{2}$

(o) $t = 2u + 2w$

(r) $t = 3u \square 3k$

(u) $t = \frac{bh \square bp}{a}$

3. (a) $r = \sqrt{s \square t}$

(d) $r = \sqrt{6w}$

(g) $r = \sqrt{4p + 3}$

(j) $r = \sqrt{3u + 6}$

(m) $r = \sqrt{\frac{b + 5}{3}}$

(p) $r = \sqrt{\frac{h + 3}{n}}$

(s) $r = \sqrt{x} + 2$

(b) $r = \sqrt{m + 5}$

(e) $r = \sqrt{\frac{2g}{3}}$

(h) $r = \sqrt{nx \square 4}$

(k) $r = \sqrt{2e \square 2t}$

(n) $r = \sqrt{\frac{c + n}{4}}$

(q) $r = \sqrt{\frac{w + m}{p}}$

(t) $r = \sqrt{w} \square n$

(c) $r = \sqrt{h + t}$

(f) $r = \sqrt{\frac{at}{n}}$

(i) $r = \sqrt{5v + h}$

(l) $r = \sqrt{\frac{4k \square 4m}{3}}$

(o) $r = \sqrt{\frac{a \square f}{5}}$

(r) $r = \sqrt{\frac{v \square c}{a}}$

(u) $r = \frac{\sqrt{t} \square c}{2}$

4. (a) $n = t^2 + 2$

(b) $n = h^2 \square r$

(c) $n = w^2 + at$

(d) $n = 2 \square x^2$

(e) $n = c \square f^2$

(f) $n = ab \square g^2$

(g) $n = \frac{r^2 \square 2}{3}$

(h) $n = \frac{p^2 + d}{3}$

(i) $n = \frac{c^2 \square f}{2}$

(j) $n = \frac{d^2 + 3}{a}$

(k) $n = \frac{s^2 + c}{a}$

(l) $n = \frac{e^2 \square u}{t}$

(m) $n = \frac{5 \square u^2}{2}$

(n) $n = \frac{w \square k^2}{3}$

(o) $n = \frac{h \square t^2}{a}$

(p) $n = (p + 5)^2$

(q) $n = (g + t)^2$

(r) $n = (3 \square s)^2$

(s) $n = (x \square h)^2$

(t) $n = \frac{(y \square r)^2}{3}$

(u) $n = \frac{(t \square v)^2}{m}$

5. (a) $t = \frac{p}{n + 2}$

(b) $t = \frac{u}{a \square r}$

(c) $t = \frac{c}{r^2 + 2}$

(d) $t = \frac{2r}{3 + w}$

(e) $t = \frac{4e}{a + 3}$

(f) $t = \frac{3v}{r^2 \square 1}$

(g) $t = \frac{5}{s \square 2}$

(h) $t = \frac{a}{m + 3}$

(i) $t = \frac{r^2}{w + 1}$

(j) $t = \frac{2}{d \square \square}$

(k) $t = \frac{a}{3g \square 1}$

(l) $t = \frac{4n}{s \square 1}$

(m) $t = \frac{2}{3 \square f}$

(n) $t = \frac{3}{1 \square n}$

(o) $t = \frac{a}{\square \square p}$

6. (a) $a = \frac{v \square u}{t}$

(b) $s = \frac{v^2 \square u^2}{2a}$

(c) $u = \frac{2s \square at^2}{2t}$

(d) $g = \frac{P}{mh}$

(e) $h = \frac{V}{\square r^2}$

(f) $m = \frac{2K}{v^2}$

(g) $r = \sqrt{\frac{A}{\square}}$

(h) $r = \sqrt{\frac{V}{\square h}}$

(i) $r = \sqrt{\frac{3V}{\square h}}$

(j) $r = \sqrt[3]{\frac{3V}{4 \square}}$

(k) $t = \sqrt{v^2 + 3}$

(l) $n = \sqrt{\frac{p}{\square + 2}}$

(m) $v = \frac{\square m \square \square}{\square 2 \square \square}$

(n) $A = \frac{1}{4} \square d^2$

(o) $L = g \frac{\square T \square \square}{\square 2 \square \square}$