Lesmahagow High School

Mathematics Department

S3

Solving Quadratics after Factorising

Solving after Factorising

1. Solve these quadratic equations, which are already in factorised form.

(a)	$x(x - 5) = 0$	**(b)**	$x(x + 7) = 0$	**(c)**	$x(x - 1) = 0$
(d)	$2b(b - 3) = 0$	**(e)**	$3a(a + 1) = 0$	**(f)**	$5m(m - 2) = 0$
(g)	$(a - 4)(a - 2) = 0$	**(h)**	$(y - 3)(y - 4) = 0$	**(i)**	$(c - 5)(c - 3) = 0$
(j)	$(w + 1)(w + 2) = 0$	**(k)**	$(s + 5)(s + 4) = 0$	**(l)**	$(z + 7)(z + 8) = 0$
(m)	$(x + 3)(x - 1) = 0$	**(n)**	$(t + 2)(t - 12) = 0$	**(o)**	$(y + 1)(y - 9) = 0$
(p)	$(a - 4)(a + 4) = 0$	**(q)**	$(p - 7)(p + 7) = 0$	**(r)**	$(c - 5)(c + 5) = 0$
(s)	$(d - 4)(2d - 1) = 0$	**(t)**	$(2x + 3)(x + 2) = 0$	**(u)**	$(3s + 1)(2s - 5) = 0$

2. Solve these quadratic equations by factorising first.

(a)	$x^2 + 4x = 0$	**(b)**	$c^2 - 2c = 0$	**(c)**	$y^2 + 8y = 0$
(d)	$p^2 - p = 0$	**(e)**	$z^2 + z = 0$	**(f)**	$n^2 + 7n = 0$
(g)	$2t^2 + 4t = 0$	**(h)**	$5x^2 - 20x = 0$	**(i)**	$6b^2 - 18b = 0$
(j)	$4y^2 - 6y = 0$	**(k)**	$6a^2 + 9a = 0$	**(l)**	$14x^2 + 21x = 0$
(m)	$5x - x^2 = 0$	**(n)**	$9b - b^2 = 0$	**(o)**	$2m - m^2 = 0$
(p)	$6w - 4w^2 = 0$	**(q)**	$9c - 12c^2 = 0$	**(r)**	$4y - 10y^2 = 0$

3. Solve these quadratic equations by factorising first.

(a)	$x^2 - 25 = 0$	**(b)**	$b^2 - 1 = 0$	**(c)**	$y^2 - 4 = 0$
(d)	$a^2 - 36 = 0$	**(e)**	$z^2 - 9 = 0$	**(f)**	$k^2 - 64 = 0$
(g)	$x^2 - 16 = 0$	**(h)**	$p^2 - 144 = 0$	**(i)**	$m^2 - 100 = 0$
(j)	$t^2 - 49 = 0$	**(k)**	$a^2 - 81 = 0$	**(l)**	$s^2 - 121 = 0$
(m)	$2a^2 - 18 = 0$	**(n)**	$5c^2 - 80 = 0$	**(o)**	$4y^2 - 64 = 0$

4. Solve these quadratic equations by factorising first.

(a)	$x^2 + 4x + 3 = 0$	**(b)**	$y^2 + 6y + 5 = 0$	**(c)**	$a^2 + 8a + 7 = 0$
(d)	$m^2 + 5m + 6 = 0$	**(e)**	$c^2 + 6c + 8 = 0$	**(f)**	$z^2 + 7z + 12 = 0$
(g)	$15 - 2x - x^2 = 0$	**(h)**	$b^2 - 8b + 16 = 0$	**(i)**	$x^2 - 7x + 10 = 0$
(j)	$w^2 - 12w + 27 = 0$	**(k)**	$18 + 7y - y^2 = 0$	**(l)**	$k^2 - 10k + 24 = 0$
(m)	$8 - 2x - x^2 = 0$	**(n)**	$6 + m - m^2 = 0$	**(o)**	$t^2 - 7t - 30 = 0$
(p)	$a^2 + 5a - 14 = 0$	**(q)**	$c^2 - 2c - 15 = 0$	**(r)**	$12 - 4p - p^2 = 0$

5. Solve these quadratic equations by factorising first.

(a)	$2x^2 + 7x + 5 = 0$	**(b)**	$2p^2 + 11p + 5 = 0$	**(c)**	$3t^2 + 10t + 3 = 0$
(d)	$3k^2 + 7k + 2 = 0$	**(e)**	$3y^2 + 8y + 5 = 0$	**(f)**	$6 - 7a - 5a^2 = 0$
(g)	$3 - 5w - 2w^2 = 0$	**(h)**	$3d^2 - 5d + 2 = 0$	**(i)**	$5x^2 - 16x + 3 = 0$
(j)	$3m^2 - 14m + 8 = 0$	**(k)**	$7 + 5c - 2c^2 = 0$	**(l)**	$1 - 5y - 6y^2 = 0$
(m)	$3x^2 - 2x = 1$	**(n)**	$4q^2 + 5q = 6$	**(o)**	$4t(t - 1) - 3 = 0$
(p)	$3m^2 + 2m = 5$	**(q)**	$36v^2 = -v + 2$	**(r)**	$7s^2 = 4 + 27s$

ANSWERS

FACTORISING – you must include the variable – look at 1(a) and 1(b) as an example

1. **(a)** $x = 0$, $x = 5$ **(b)** $x = 0$, $x = -7$

(c) 0 and 1 **(d)** 0 and 3

(e) 0 and –1 **(f)** 0 and 2 **(g)** 2 and 4 **(h)** 3 and 4

(i) 3 and 5 **(j)** –2 and –1 **(k)** –5 and –4 **(l)** –7 and –8

(m) –3 and 1 **(n)** –2 and 12 **(o)** –1 and 9 **(p)** –4 and 4

(q) –7 and 7 **(r)** –5 and 5 **(s)** 4 and ½ **(t)** $-\frac{3}{2}$ and –2

(u) $-\frac{1}{3}$ and $\frac{5}{2}$

2. **(a)** 0 and –4 **(b)** 0 and 2 **(c)** 0 and –8 **(d)** 0 and 1

(e) 0 and –1 **(f)** 0 and –7 **(g)** 0 and –2 **(h)** 0 and 4

(i) 0 and 3 **(j)** 0 and $\frac{3}{2}$ **(k)** 0 or $-\frac{3}{2}$ **(l)** 0 or $-\frac{3}{2}$

(m) 0 and 5 **(n)** 0 and 9 **(o)** 0 and 2

(p) 0 and $\frac{3}{2}$ **(q)** 0 and $\frac{3}{4}$ **(r)** 0 and $\frac{2}{5}$

3. **(a)** –5 and 5 **(b)** –1 and 1 **(c)** –2 and 2 **(d)** –6 and 6

(e) –3 and 3 **(f)** –8 and 8 **(g)** –4 and 4 **(h)** –12 and 12

(i) –10 and 10 **(j)** –7 and 7 **(k)** –9 and 9 **(l)** –11 and 11

(m) –3 and 3 **(n)** –4 and 4 **(o)** –4 and 4

4. **(a)** –3 and –1 **(b)** –5 and –1 **(c)** –7 and –1 **(d)** –3 and –2

(e) –4 and –2 **(f)** –3 and –4 **(g)** –5 and 3 **(h)** 4 (twice)

(i) 5 and 2 **(j)** 3 and 9 **(k)** 9 and –2 **(l)** 4 and 6

(m) –4 and 2 **(n)** –2 and 3 **(o)** –3 and 10 **(p)** –7 and 2

(q) –3 and 5 **(r)** –6 and 2

5. **(a)** $-\frac{5}{2}$ and -1 **(b)** $-\frac{1}{2}$ and -5 **(c)** $-\frac{1}{3}$ and -3 **(d)** $-\frac{1}{3}$ and -2

(e) $-\frac{5}{3}$ and -1 **(f)** $\frac{3}{5}$ and -2 **(g)** $\frac{1}{2}$ and -3 **(h)** $\frac{2}{3}$ and 1

(i) $\frac{1}{5}$ and 3 **(j)** $\frac{2}{3}$ and 4 **(k)** $\frac{7}{2}$ and -1 **(l)** $\frac{1}{6}$ and -1

(m) $-\frac{1}{3}$ and 1 **(n)** $\frac{3}{4}$ and -2 **(o)** $-\frac{1}{2}$ and $\frac{3}{2}$ **(p)** $-\frac{5}{3}$ and 1

(q) $\frac{2}{9}$ and $-\frac{1}{4}$ **(r)** $-\frac{1}{7}$ and 4