More quadratic revision

1 Solve for x:

a $4x^2 + 12x = 0$ **b** $3x^2 + 9x = 0$ **c** $4x^2 = 16x$

d $3x^2 = 21x$ **e** $2x^2 + 7x = 0$ **f** $2x^2 = 18x$

g $3x^2 = 7x$ **h** $4x^2 = 9x$ **i** $0 = 3x^2 + 8x$

2 Solve for x:

a $x^2 + 6x + 8 = 0$ **b** $x^2 + 11x + 24 = 0$ **c** $x^2 + 4x + 4 = 0$

d $x^2 + 2x = 15$ **e** $x^2 + 2x = 48$ **f** $x^2 + 25 = 10x$

g $x^2 = 2x + 15$ **h** $x^2 = 5x + 14$ **i** $x^2 = 7x - 12$

j $x^2 + 60 = 17x$ **k** $x^2 = 9x + 22$ **l** $x^2 = 3x + 18$

3 Solve for x:

a $2x^2 + 11x + 5 = 0$ **b** $5x^2 + 21x + 4 = 0$ **c** $3x^2 = 11x + 4$

d $3x^2 + 10x = 8$ **e** $2x^2 = 13x + 7$ **f** $7x^2 = 11x + 6$

g $3x^2 + 10 = 17x$ **h** $2x^2 + 20 = 13x$ **i** $3x^2 + x = 10$

j $2x^2 = 13x + 15$ **k** $2x^2 = 7x + 15$ **l** $3x^2 - 7x + 2 = 0$

4 Solve for x:

a $6x^2 + 11x + 3 = 0$ **b** $6x^2 = 17x + 3$ **c** $6x^2 + x = 2$

d $10x^2 + 21x = 10$ **e** $12x^2 + 13x + 3 = 0$ **f** $6x^2 = 17x + 14$

g $14x^2 + 15x + 4 = 0$ **h** $6x^2 + 13x + 6 = 0$ **i** $12x^2 + 13x = 4$

j $25x^2 + 10x = 8$ **k** $15x^2 + 6 = 23x$ **l** $8x^2 = 10x + 3$

m $2x^2 + 5x = 12$ **n** $3x^2 + 2x = 16$ **o** $10x^2 + 5 = 27x$

5 Solve for x by first expanding brackets and then making one side of the equation zero:

a $x(x + 2) + 3(x - 1) = 11$ **b** $x(3 + x) + 3 = 31$

c $(x + 2)(x - 7) = 8x$ **d** $2x(x - 1) - 3(x + 2) = -3$

e $3x(x + 2) = 9$ **f** $3x(x + 4) = x - 10$

6 Solve for x by first eliminating the algebraic fractions:

a $\frac{x}{4} = \frac{1}{x}$ **b** $\frac{5}{x} = \frac{x}{2}$ **c** $\frac{x}{8} = \frac{2}{x}$

d $\frac{x+1}{4} = \frac{1}{2x}$ **e** $\frac{x+4}{2} = \frac{6}{x}$ **f** $\frac{x+2}{x} = x$

g $\frac{x-1}{x+2} = \frac{2}{x}$ **h** $\frac{x}{1+2x} = \frac{1}{3x}$ **i** $\frac{3x+1}{2x} = x + 2$

Answers

1 **a** $x = 0$ or -3 **b** $x = 0$ or -3 **c** $x = 0$ or 4
d $x = 0$ or 7 **e** $x = 0$ or $-\frac{7}{2}$ **f** $x = 0$ or 9
g $x = 0$ or $\frac{7}{3}$ **h** $x = 0$ or $\frac{9}{4}$ **i** $x = 0$ or $-\frac{8}{3}$

2 **a** $x = -2$ or -4 **b** $x = -3$ or -8 **c** $x = -2$
d $x = 3$ or -5 **e** $x = 6$ or -8 **f** $x = 5$
g $x = 5$ or -3 **h** $x = 7$ or -2 **i** $x = 3$ or 4
j $x = 5$ or 12 **k** $x = 11$ or -2 **l** $x = 6$ or -3

3 **a** $x = -\frac{1}{2}$ or -5 **b** $x = -\frac{1}{5}$ or -4 **c** $x = -\frac{1}{3}$ or 4
d $x = \frac{2}{3}$ or -4 **e** $x = -\frac{1}{2}$ or 7 **f** $x = -\frac{3}{7}$ or 2
g $x = \frac{2}{3}$ or 5 **h** $x = \frac{5}{2}$ or 4 **i** $x = \frac{5}{3}$ or -2
j $x = \frac{15}{2}$ or -1 **k** $x = -\frac{3}{2}$ or 5 **l** $x = \frac{1}{3}$ or 2

4 **a** $x = -\frac{1}{3}$ or $-\frac{3}{2}$ **b** $x = -\frac{1}{6}$ or 3 **c** $x = -\frac{2}{3}$ or $\frac{1}{2}$
d $x = \frac{2}{5}$ or $-\frac{5}{2}$ **e** $x = -\frac{3}{4}$ or $-\frac{1}{3}$ **f** $x = -\frac{2}{3}$ or $\frac{7}{2}$
g $x = -\frac{4}{7}$ or $-\frac{1}{2}$ **h** $x = -\frac{2}{3}$ or $-\frac{3}{2}$ **i** $x = \frac{1}{4}$ or $-\frac{4}{3}$
j $x = \frac{2}{5}$ or $-\frac{4}{5}$ **k** $x = \frac{6}{5}$ or $\frac{1}{3}$ **l** $x = -\frac{1}{4}$ or $\frac{3}{2}$
m $x = \frac{3}{2}$ or -4 **n** $x = -\frac{8}{3}$ or 2 **o** $x = \frac{1}{5}$ or $\frac{5}{2}$

5 **a** $x = 2$ or -7 **b** $x = 4$ or -7 **c** $x = 14$ or -1
d $x = -\frac{1}{2}$ or 3 **e** $x = -3$ or 1 **f** $x = -\frac{5}{3}$ or -2

6 **a** $x = \pm 2$ **b** $x = \pm\sqrt{10}$ **c** $x = \pm 4$
d $x = -2$ or 1 **e** $x = -6$ or 2 **f** $x = 2$ or -1
g $x = 4$ or -1 **h** $x = -\frac{1}{3}$ or 1 **i** $x = \frac{1}{2}$ or -1