Half Term 1 (ANSWERS)	Week 1

1

$3(x-3) = 4(x-4)$
$3x - 9 = 4x - 16$
$x = 7$

2

$$\frac{3(x+1)}{(x-1)(x+1)} + \frac{2(x-1)}{(x-1)(x+1)}$$
$$= \frac{3x+3+2x-2}{(x-1)(x+1)}$$
$$= \frac{5x+1}{(x-1)(x+1)}$$

3

$(x+3)^2 - 9 - 10$
$= (x+3)^2 - 19$

4

$$\frac{(x+3)(x-4)}{(x-4)}$$
$= (x+3)$

5

$x = y + 7 \quad (y+7)^2 + y^2 = 25$
$y^2 + 14y + 49 + y^2 = 25$
$2y^2 + 14y + 24 = 0$
$2(y^2 + 7y + 12) = 0$
$2(y+3)(y+4) = 0$
$y = -3, -4$
$y = -3 \quad x = 4$
$y = -4 \quad x = 3$

Half Term 1 (ANSWERS)	Week 2

1

$20(x+1) = 3(4x+20)$
$20x + 20 = 12x + 60$
$8x = 40$
$x = 5$

2

$$\frac{4(x+1)}{(x+2)(x+1)} - \frac{2(x+2)}{(x+2)(x+1)}$$
$$= \frac{4x+4-2x-4}{(x+2)(x+1)}$$
$$= \frac{2x}{(x+2)(x+1)}$$

3

$(x-5)^2 - 25 + 10$
$= (x-5)^2 - 15$

4

$$\frac{(x+6)(x-6)}{2(x-6)}$$
$$= \frac{1}{2}(x+6)$$

5

$x = y + 2 \quad (y+2)^2 + y^2 = 10$
$y^2 + 4y + 4 + y^2 = 10$
$2y^2 + 4y - 6 = 0$
$2(y^2 + 2y - 3) = 0$
$2(y+3)(y-1) = 0$
$y = -3,\ 1$
$y = -3 \quad x = -1$
$y = 1 \quad x = 3$

Half Term 1 (ANSWERS)	Week 3

1

$9x + 60 = 2(11 - 5x)$
$9x + 60 = 22 - 10x$
$19x = \quad -38$
$x = -2$

2

$$\frac{4(x-1)}{(x-3)(x-1)} - \frac{2(x-3)}{(x-3)(x-1)}$$
$$= \frac{4x - 4 - 2x + 6}{(x-3)(x-1)}$$
$$= \frac{2x + 2}{(x-3)(x-1)}$$

3

$(x-1)^2 - 1 - 1$
$= (x-1)^2 - 2$

4

$$\frac{(2x+3)(x-2)}{x-2}$$
$= 2x + 3$

5

$x = 4 - y \quad (4-y)^2 + y^2 - (4-y) - y = 6$
$y^2 - 8y + 16 + y^2 - 4 + y - y = 6$
$2y^2 - 8y + 6 = 0$
$2(y^2 - 4y + 3) = 0$
$2(y-3)(y-1) = 0$
$y = 3,\ 1 \qquad y = 3 \quad x = 1$
$y = 1 \quad x = 3$

Half Term 1 (ANSWERS)	Week 4

1

$2(6-4x)=5(3x+7)$
$12-8x=15x+35$
$23x=\quad -23$
$x=-1$

2

$$\frac{2x(x+5)}{(x-3)(x+5)}+\frac{2(x-3)}{(x-3)(x+5)}$$
$$=\frac{2x^2+10x+2x-6}{(x-3)(x+5)}$$
$$=\frac{2x^2+12x-6}{(x-3)(x+5)}$$

3

$2(x^2+6)+5$
$=2((x+3)^2-9)+5$
$=2(x+3)^2-18+5$
$=2(x+3)^2-13$

4

$$\frac{(2x+3)(3x-2)}{(2x+3)(x-1)}$$
$$=\frac{3x-2}{x-1}$$

5

$x=y+4 \quad (y+4)^2+y^2=8$
$y^2+8y+16+y^2=8$
$2y^2+8y+8=0$
$2(y^2+4y+4)=0$
$2(y+2)^2=0$
$y=-2 \quad x=2$

Half Term 1 (ANSWERS)	Week 5

1

$6(4x-7) = 7((30-2x)+2)$
$24x - 42 = 210 - 14x + 14$
$38x = 266$
$x = 7$

2

$$\frac{2x}{(x-1)^2} - \frac{1(x-1)}{(x-1)^2}$$
$$= \frac{2x - x + 1}{(x-1)^2}$$
$$= \frac{x+1}{(x-1)^2}$$

3

$2(x^2 - 2x) + 1$
$= 2((x-1)^2 - 1) + 1$
$= 2(x-1)^2 - 2 + 1$
$= 2(x-1)^2 - 1$

4

$$\frac{(4x-1)(3x+4)}{(4x+1)(4x-1)}$$
$$= \frac{3x+4}{4x+1}$$

5

$x = 6 - y \quad (6-y)^2 + y^2 = 20$
$y^2 - 12y + 36 + y^2 = 20$
$2y^2 - 12y + 16 = 0$
$2(y^2 - 6y + 8) = 0$
$2(y-2)(y-4) = 0$
$y = 2 \quad x = 4$
$y = 4 \quad x = 2$

Half Term 1 (ANSWERS)	Week 6

1

$5(7x-2)=6(6x-1)$
$35x-10=36x-6$
$x=-4$

2

$$\frac{(2x+1)(x+2)}{(x+1)(x+2)}-\frac{2x(x+1)}{(x+1)(x+2)}$$
$$=\frac{2x^2+5x+2-2x^2-2x}{(x+1)(x+2)}$$
$$=\frac{3x+2}{(x+1)(x+2)}$$

3

$(2x-5)^2-25+2$
$=(2x-5)^2-23$

4

$$\frac{(4x-5)(5-x)}{(4x-5)(x+5)}$$
$$=\frac{5-x}{x+5}$$

5

$x=1-y \quad (1-y)^2+y^2-y(1-y)=37$
$y^2-2y+1+y^2-y+y^2=37$
$3y^2-3y-36=0$
$3(y^2-y+12)=0$
$2(y-4)(y+3)=0$
$y=4 \quad x=-3$
$y=-3 \quad x=4$

Half Term 1 (ANSWERS)	Week 7

1

$12(5x + 3) = 9(4x + 12)$
$60x + 36 = 36x + 108$
$24x = 72$
$x = 3$

2

$$\frac{4x}{2(x+3)^2} - \frac{3x(x+3)}{2(x+3)^2}$$
$$= \frac{4x - 3x^2 - 9x}{2(x+3)^2}$$
$$= \frac{-3x^2 - 5x}{2(x+3)^2}$$

3

$(2x + 10)^2 - 100 - 1$
$= (2x + 10)^2 - 101$

4

$$\frac{2(2x+3)(3x-2)}{4(x-2)(2x+3)}$$
$$= \frac{3x-2}{2(x-2)}$$

5

$x = 5 - y \quad (5 - y)^2 + y^2 + y(5 - y) - (5 - y) - y = 16$
$y^2 - 10y + 25 + y^2 + 5y - y^2 - 5 + y - y - 16 = 0$
$y^2 - 5y + 4 = 0$
$(y - 4)(y - 1) = 0$

$y = 4 \quad x = 1$
$y = 1 \quad x = 4$