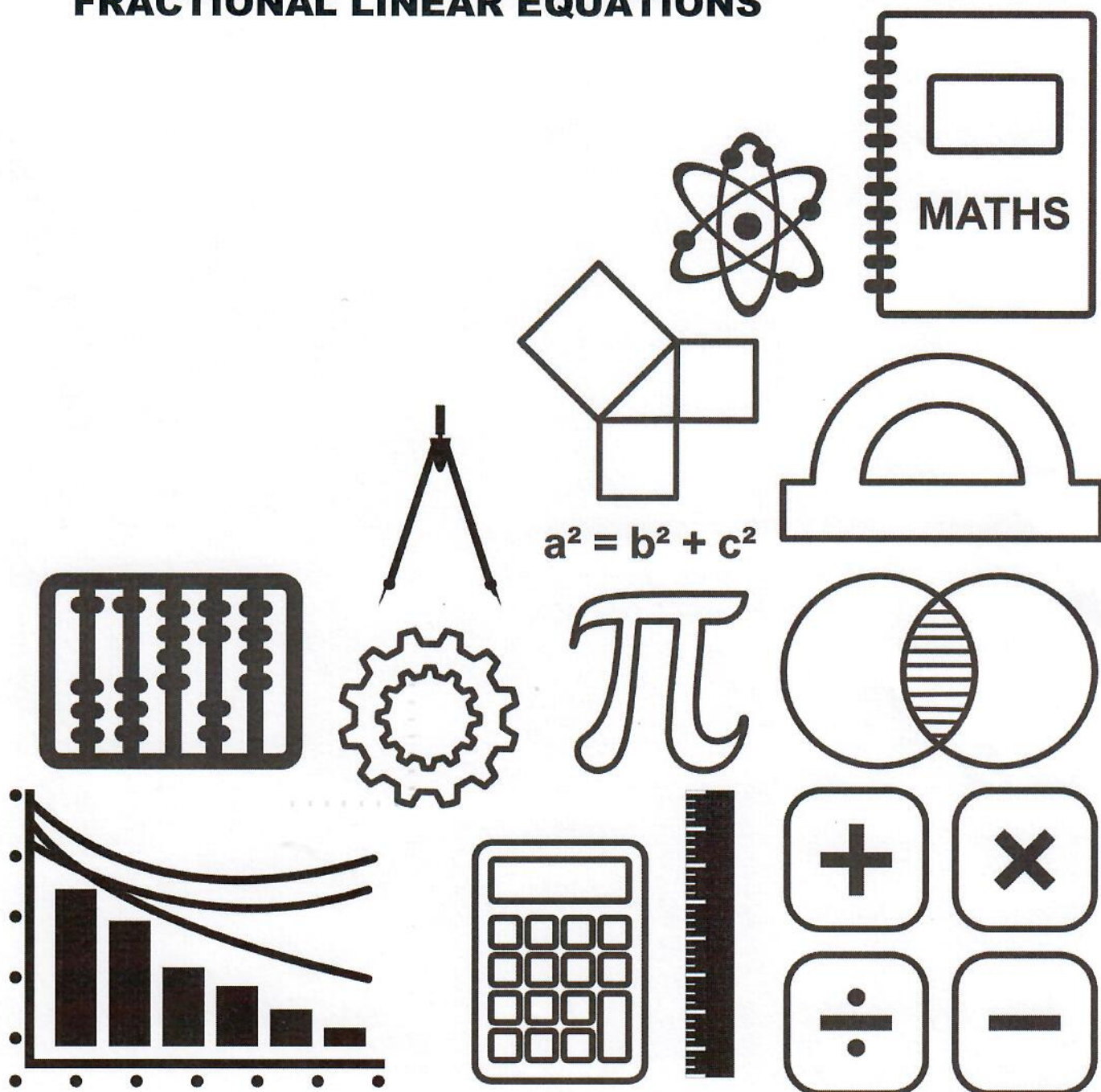


### GCSE TOPIC BOOKLET FRACTIONAL LINEAR EQUATIONS



1.

Solve the following equation.

[3]

$$\frac{5x-1}{2} - x = \frac{1}{2} \quad (\times 2)$$

$$5x - 1 - 2x = 1$$

$$3x - 1 = 1 \quad (+1)$$

$$3x = 2$$

$$x = \frac{2}{3}$$

2.

Solve  $\frac{8x-5}{3} + \frac{4x+5}{4} = \frac{149}{12}$ . ( $\times 12$ )

$$4(8x-5) + 3(4x+5) = 149$$

$$32x - 20 + 12x + 15 = 149$$

$$44x - 5 = 149$$

$$\downarrow +5$$

$$\downarrow +5$$

$$44x = 154$$

$$\downarrow \div 44$$

$$\downarrow \div 44$$

$$x = \frac{154}{44}$$

$$44$$

$$x = 3.5$$

[4]

3.

Solve the equation  $\frac{12x-1}{5} - \frac{x}{2} = -4$ .

( $\times 10$ )

[4]

$$2(12x-1) - 5(x) = 10(-4)$$

$$24x - 2 - 5x = -40$$

$$19x - 2 = -40$$

$\downarrow +2$

$\downarrow +2$

$$19x = -38$$

$\downarrow \div 19$

$\downarrow \div 19$

$$x = \frac{-38}{19}$$

$$\underline{x = -2}$$

4.

Solve the following equation.

$$\frac{4x+1}{2} = \frac{5x-2}{3}$$

$\times 6$

[3]

$$3(4x+1) = 2(5x-2)$$

$$12x + 3 = 10x - 4$$

$\downarrow -10x$

$\downarrow -10x$

$$2x + 3 = -4$$

$\downarrow -3$

$\downarrow -3$

$$2x = -7$$

$\downarrow \div 2$

$\downarrow \div 2$

$$\underline{x = -3.5}$$

7. Solve the following equation.

$$\frac{2x-5}{3} = 4 \quad (\times 3)$$

$$2x - 5 = 12$$

$$\downarrow \quad \downarrow$$

$$+5 \quad +5$$

$$2x = 17$$

$$\downarrow \quad \downarrow$$

$$\div 2 \quad \div 2$$

$$x = 17 \div 2$$

$$x = 8.5$$

[3]

8. Solve the following equation.

$$5x + 6 - \frac{4x-1}{2} = 8 \quad (\times 2)$$

$$2(5x+6) - (4x-1) = 8 \times 2$$

$$10x + 12 - 4x + 1 = 16$$

$$6x + 13 = 16$$

$$\downarrow \quad \downarrow$$

$$-13 \quad -13$$

$$6x = 3$$

$$\downarrow \quad \downarrow$$

$$\div 6 \quad \div 6$$

$$x = 3/6$$

$$x = 0.5$$

[3]

9. Solve the following equation.

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

$$3x + 1 - 2(2x + 1) = 3$$

$$3x + 1 - 4x - 2 = 3$$

$$-x - 1 = 3$$

$$\downarrow \quad \downarrow$$

$$+1 \quad +1$$

$$-x = 3 + 1$$

$$-x = 4$$

$$x = -4$$

[3]

10. Solve the equation

$$\frac{2x+3}{3} - \frac{x-1}{4} = 5 \quad (\times 12)$$

$$4(2x+3) - 3(x-1) = 5(12)$$

$$8x + 12 - 3x + 3 = 60$$

$$5x + 15 = 60$$

$$5x = 60 - 15$$

$$5x = 45$$

$$\underline{x = 9}$$

[4]

11. Solve the following equation.

$$\frac{4x-8}{3} - \frac{x}{6} = 2 \quad (\times 6)$$

$$2(4x-8) - x = 12$$

$$8x - 16 - x = 12$$

$$7x - 16 = 12$$

$$7x = 12 + 16$$

$$7x = 28$$

$$x = 28/7$$

$$\underline{x = 4}$$

[3]

12. Solve the following equation.

$$\frac{4x-1}{4} + \frac{x+8}{2} = \frac{3}{4} \quad (\times 4)$$

$$4x - 1 + 2(x+8) = 3$$

$$4x - 1 + 2x + 16 = 3$$

$$6x + 15 = 3$$

$$6x = -12$$

$$\underline{x = -2}$$

[3]

10. Solve the equation

$$\frac{2x+3}{3} - \frac{x-1}{4} = 5 \quad (\times 12)$$

$$4(2x+3) - 3(x-1) = 5(12)$$

$$8x + 12 - 3x + 3 = 60$$

$$5x + 15 = 60$$

$$5x = 60 - 15$$

$$5x = 45$$

$$x = 9$$

[4]

11. Solve the following equation.

$$\frac{4x-8}{3} - \frac{x}{6} = 2 \quad (\times 6)$$

$$2(4x-8) - x = 6(2)$$

$$8x - 16 - x = 12$$

$$7x - 16 = 12$$

$$7x = 12 + 16$$

$$7x = 28$$

$$x = 28/7$$

$$x = 4$$

[3]

12. Solve the following equation.

$$\frac{4x-1}{4} + \frac{x+8}{2} = \frac{3}{4} \quad (\times 4)$$

$$4x - 1 + 2(x+8) = 3$$

$$4x - 1 + 2x + 16 = 3$$

$$6x + 15 = 3$$

$$6x = -12$$

$$x = -2$$

[3]