SUPER 12s

SUPER 12s CAN BE USED AS AN INDIVIDUALISED MASTERY LEARNING PROGRAM.

2 ALGEBRA
2.8 REARRANGING EQUATIONS
2.8 LEVEL 2

NAME: _____

Skill description: Rearranging equations that involve addition, subtraction, multiplication, and division of variables.

Essential Revision

1. Solve for the unknown.

$$x + 11 = 18$$

2. Rearrange the equation to make A the subject.

$$V = Ah$$

3. Solve for the unknown.

$$5x = 35$$

4. Rearrange the equation to make L the subject.

$$Q = mL$$

5. Solve for the unknown.

$$y - 4 = 12$$

6. Rearrange the equation to make t the subject.

$$I = \frac{q}{t}$$

7. Solve for the unknown.

$$\frac{x}{6} = 7$$

8. Rearrange the equation to make W the subject.

$$V = \frac{W}{q}$$

9. Solve for the unknown.

$$p + 9 = 19$$

10. Rearrange the equation to make I the subject.

$$V = IR$$

11. Solve for the unknown.

$$4y = 16$$

12. Rearrange the equation to make a the subject.

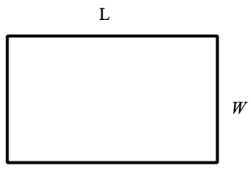
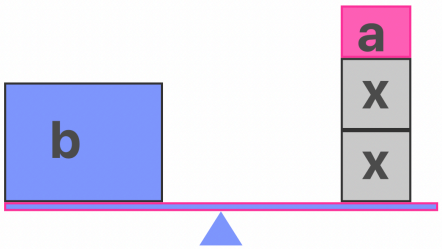
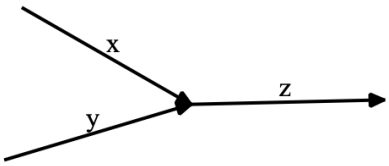
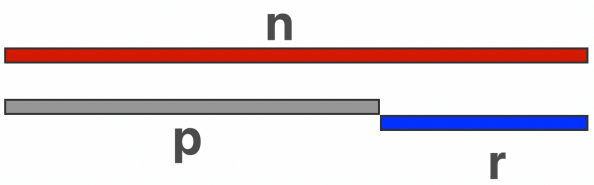
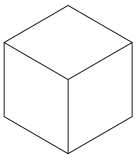
$$F = ma$$

Solutions can be found at the end of the booklet.

score $\frac{\quad}{12}$

EQUATIONS

At this level, you will be rearranging equations sourced from mathematics and science.

Equation	Explanation
$P = R - L$	Finance – profit/loss.
$P = 2L + 2W$	Perimeter of a rectangle. 
$2x + a = b$	When balancing equations. 
$x + y = z$	When looking at flow rates in pipes. 
$a + b + c + d = T$	When adding the times of team members in a relay race to calculate the total time of the team.
$n = p + r$	When balancing equations. 
$f + v - e = 2$	Euler's Formula that links faces, edges and vertices. 

STRATEGIES TO SOLVE THE PROBLEMS

When rearranging equations, the goal is to:

Isolate the desired variable (unknown)
to one side of the equal sign.

We will see over the next few levels that we follow the order:

- **First:** isolate the term that contains the desired variable (unknown).
- **Second:** isolate the desired variable (unknown).

Example 1

Rearrange the equation to make R the subject.

$$P = R - L$$

Step 1

Our goal is to isolate the variable R. The variable L is mathematically connected to R by subtraction. To isolate R we need to take the variable L and apply the inverse operation $(+)$ to both sides of the equation.

$$P = R - L$$

$$+L = +L$$

$$P + L = R$$

Example 2

Rearrange the equation to make L the subject.

$$P = R - L$$

Step 1

To isolate the variable L, begin by subtracting R on both sides of the equation.

$$P = R - L$$

$$-R = -R$$

$$P - R = -L$$

Step 2

To isolate the variable L and remove the negative, we need to multiply both sides of the equation by (-1).

$$P - R = -L$$

$$\times(-1) = \times(-1)$$

$$-1(P - R) = L$$

$$-P + R = L$$

Example 3

Rearrange the equation to make b the subject.

$$d = 2b - f$$

Step 1

To isolate the variable b, begin by adding f to both sides of the equation.

$$d = 2b - f$$

$$+f = +f$$

$$d + f = 2b$$

Step 2

To isolate the variable b we need to divide both sides of the equation by 2.

$$d + f = 2b$$

$$\div 2 = \div 2$$

$$\frac{d+f}{2} = b$$

QUESTIONS

1. Rearrange the equation to make L the subject.

$$P = 2L + 2W$$

2. Rearrange the equation to make x the subject.

$$2x + a = b$$

3. Rearrange the equation to make x the subject.

$$x + y = z$$

4. Rearrange the equation to make a the subject.

$$a + b + c + d = T$$

5. Rearrange the equation to make p the subject.

$$n = p + r$$

6. Rearrange the equation to make W the subject.

$$P = 2L + 2W$$

7. Rearrange the equation to make f the subject.

$$f + v - e = 2$$

8. Rearrange the equation to make y the subject.

$$x + y = z$$

9. Rearrange the equation to make b the subject.

$$a + b + c + d = T$$

10. Rearrange the equation to make r the subject.

$$n = p + r$$

11. Rearrange the equation to make v the subject.

$$f + v - e = 2$$

12. Rearrange the equation to make a the subject.

$$2x + a = b$$

SOLUTIONS CAN BE FOUND AT THE END OF THE BOOKLET.

score $\frac{\quad}{12}$

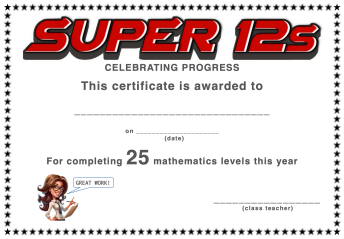
MASTERY TEST

Teacher's signature

I'VE COMPLETED

_____

LEVELS THIS YEAR



Solutions to Essential Revision

1. $x = 7$	2. $A = \frac{V}{h}$
3. $x = 7$	4. $L = \frac{Q}{m}$
5. $y = 16$	6. $t = \frac{q}{I}$
7. $x = 42$	8. $W = Vq$
9. $p = 10$	10. $I = \frac{V}{R}$
11. $y = 16$	12. $a = \frac{F}{m}$

Solutions to Questions

1. $L = \frac{P}{2} - W$	2. $x = \frac{b-a}{2}$
3. $x = z - y$	4. $a = T - b - c - d$
5. $p = n - r$	6. $W = \frac{P}{2} - L$
7. $f = 2 - v + e$	8. $y = z - x$
9. $b = T - a - c - d$	10. $r = n - p$
11. $v = 2 - f + e$	12. $a = b - 2x$