SUPER 12s

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

2 ALGEBRA
2.8 REARRANGING EQUATIONS
2.8 LEVEL 1

NAME : _____

Skill description: Rearranging equations that involve the multiplication and division of variables.

Essential Revision: Solve for the unknown.

1. $x + 11 = 18$

2. $5x = 35$

3. $y - 4 = 12$

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

5. $p + 9 = 19$

6. $4y = 16$

7.

$m - 4 = 7$

8.

$\frac{y}{4} = 6$

9.

$x + 2 = 31$

10.

$3p = 15$

11.

$r + 9 = 17$

12.

$\frac{p}{3} = 5$

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
$A = bh$	Area of a parallelogram.
$V = Ah$	Volume of a prism.
$s = \frac{d}{t}$	Linear motion – speed.
$Q = mL$	Physics heating process – change of phase.
$I = \frac{q}{t}$	Electrical circuits – current.
$V = \frac{W}{q}$	Electrical circuits – voltage.
$V = IR$	Electrical circuits – voltage.
$F = ma$	Newton's second law of motion.
$p = mv$	Linear motion – momentum.
$W = Fs$	Linear motion – work.
$v = f\lambda$	Wave theory – velocity.
$f = \frac{1}{T}$	Wave theory – frequency.
$\lambda = \frac{h}{p}$	Quantum theory – wavelength.
$d = \frac{m}{v}$	Chemistry – density.

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 b the subject.

$$A = bh$$

Step 1

Our goal is to isolate the variable b. The variable h is mathematically connected to b by multiplication. To isolate b we need to take the variable h and apply the inverse operation $(\div)$ both sides of the equation.

$$A = bh$$

$$\div h = \div h$$

$$\frac{A}{h} = b$$

Example 2

Rearrange the equation to make t the subject.

$$s = \frac{d}{t}$$

Step 1

To remove t from being the denominator of the fraction, multiply both sides by t.

$$s = \frac{d}{t}$$

$$\times t = \times t$$

$$st = d$$

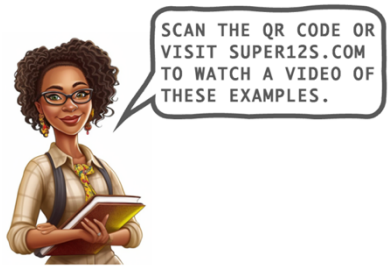
Step 2

The variable s is mathematically connected to t by multiplication. To isolate t we need to take the variable s and apply the inverse operation $(\div)$ to both sides of the equation.

$$st = d$$

$$\div s = \div s$$

$$t = \frac{d}{s}$$



QUESTIONS

1. Rearrange the equation to make A the subject.

$$V = Ah$$

2. Rearrange the equation to make L the subject.

$$Q = mL$$

3. Rearrange the equation to make t the subject.

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

4. Rearrange the equation to make W the subject.

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

5. Rearrange the equation to make I the subject.

$$V = IR$$

6. Rearrange the equation to make a the subject.

$$F = ma$$

7. Rearrange the equation to make m the subject.

$$p = mv$$

8. Rearrange the equation to make s the subject.

$$W = Fs$$

9. Rearrange the equation to make f the subject.

$$v = f\lambda$$

10. Rearrange the equation to make T the subject.

$$f = \frac{1}{T}$$

11. Rearrange the equation to make h the subject.

$$\lambda = \frac{h}{p}$$

12. Rearrange the equation to make v the subject.

$$d = \frac{m}{v}$$

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. $x = 7$
3. $y = 16$	4. $x = 42$
5. $p = 10$	6. $y = 4$
7. $m = 11$	8. $y = 24$
9. $x = 29$	10. $p = 5$
11. $r = 8$	12. $p = 15$

Solutions to Questions

1. $A = \frac{V}{h}$	2. $L = \frac{Q}{m}$
3. $t = \frac{q}{I}$	4. $W = Vq$
5. $I = \frac{V}{R}$	6. $a = \frac{F}{m}$
7. $m = \frac{p}{v}$	8. $s = \frac{W}{F}$
9. $f = \frac{v}{\lambda}$	10. $T = \frac{1}{f}$
11. $h = \lambda p$	12. $v = \frac{m}{d}$