A close-up, shallow depth-of-field photograph of a computer keyboard. The central focus is on a single key marked with a white 'x', a vertical slash, and a horizontal dash, representing the 'x/-' function. Surrounding keys, including those with blue backlighting and a '+' key, are blurred in the background and foreground.

Algebra - quadratics

Solving with rearranging

Blue Zone



Going slow

E.g. sad, sick, tired,
bored

Green Zone



Good to go

E.g. happy, calm,
focused, ok

Yellow Zone



Caution

Starting to lose control

E.g. worried, excited,
annoyed

Red Zone



Stop!

Out of control

E.g. angry, terrified,
elated

Can you still....

$$5x + 2y = 19$$

$$2x + 2y = 10$$

$x =$

$y =$

Linear Simultaneous Equations



$$\textcircled{1} \quad 3y + x = 7$$

$$\textcircled{2} \quad 2y - x = 8$$

$$\textcircled{2} + \textcircled{1}$$

$$5y = 15$$

$$y = 15 \div 5$$

Substitute y into equation 1

$$3 \times 3 + x = 7$$

$$x = 7 - 9$$

SSS

"If the Signs are the Same, you Subtract"

So what should we do here?

$$\begin{array}{rcl} 3x & + & y = 19 \quad \dots (1) \\ x & - & y = 1 \quad \dots (2) \end{array}$$

$$4x = 20$$

$$x = 5$$

$$1 \times 5 - y = 1$$

$$5 - y = 1$$

$$y = 4$$

Number
the Equations

Add
(to get rid of a
letter)

Divide
(to find x)

Substitute
in (2)
(to find y)

$$\begin{array}{rcl} 7x + 2y & = & 32 \quad \dots (1) \\ 3x - 2y & = & 8 \quad \dots (2) \end{array}$$

$$10x = 40$$

$$x = 4$$

$$3 \times 4 - 2y = 8$$

$$12 - 2y = 8$$

$$2y = 4$$

$$y = 2$$

Number
the Equations

Add
(to get rid of a
letter)

Divide
(to find x)

Substitute
in (2)
(to find y)

$$\begin{array}{c} 7x \\ 3x \end{array} + y = \begin{array}{c} 43 \\ 23 \end{array} \quad \dots (1)$$

$$\begin{array}{c} 7x \\ 3x \end{array} + y = \begin{array}{c} 43 \\ 23 \end{array} \quad \dots (2)$$

$$4x = 20$$

$$x = 5$$

$$3 \times 5 + y = 23$$

$$15 + y = 23$$

$$y = 8$$

Number
the Equations

Subtract (to get rid
of a letter)

Divide
(to find x)

Substitute
in (2)
(to find y)

$$\begin{array}{rclcl} 9x & + & 4y & = & 82 & \dots (1) \\ 3x & - & 4y & = & -10 & \dots (2) \end{array}$$

$$12x = 72$$

$$x = 6$$

$$3 \times 6 - 4y = -10$$

$$18 - 4y = -10$$

$$4y = 28$$

$$y = 7$$

Number
the Equations

Add
(to get rid of a
letter)

Divide
(to find x)

Substitute
in (2)
(to find y)

Simultaneous Questions!



Calculate the answers to each pair of simultaneous equations, choosing your starting point depending on how confident you feel.

Super

1. $3x + y = 28$
 $2x + y = 20$

2. $x + 4y = 13$
 $x + 3y = 10$

3. $y + x = 7$
 $y - x = 3$

Stretching

4. $4x + y = 21$
 $2x + y = 11$

5. $2x + 5y = 43$
 $2x + 2y = 22$

6. $6y + 3x = 12$
 $2y - 3x = 12$

Stellar

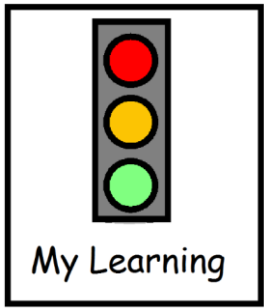
7. $4x + 2y = -8$
 $x + 2y = 1$

8. $8x + 6y = -29$
 $5x - 6y = -23$

9. $3y - 5x = -1$
 $7y - 5x = -5$

Extension: Can you work out what you might need to do to solve these?

$$\begin{array}{l} 5x + 2y = \\ 19 \\ 4x + y = 14 \end{array}$$



Traffic light your work today.

Thumbs down- I don't understand it

Thumbs across- I understand some of it

Thumbs up- I understand all of it

A further task will be on the website for you to complete later today – one merit for all who do

