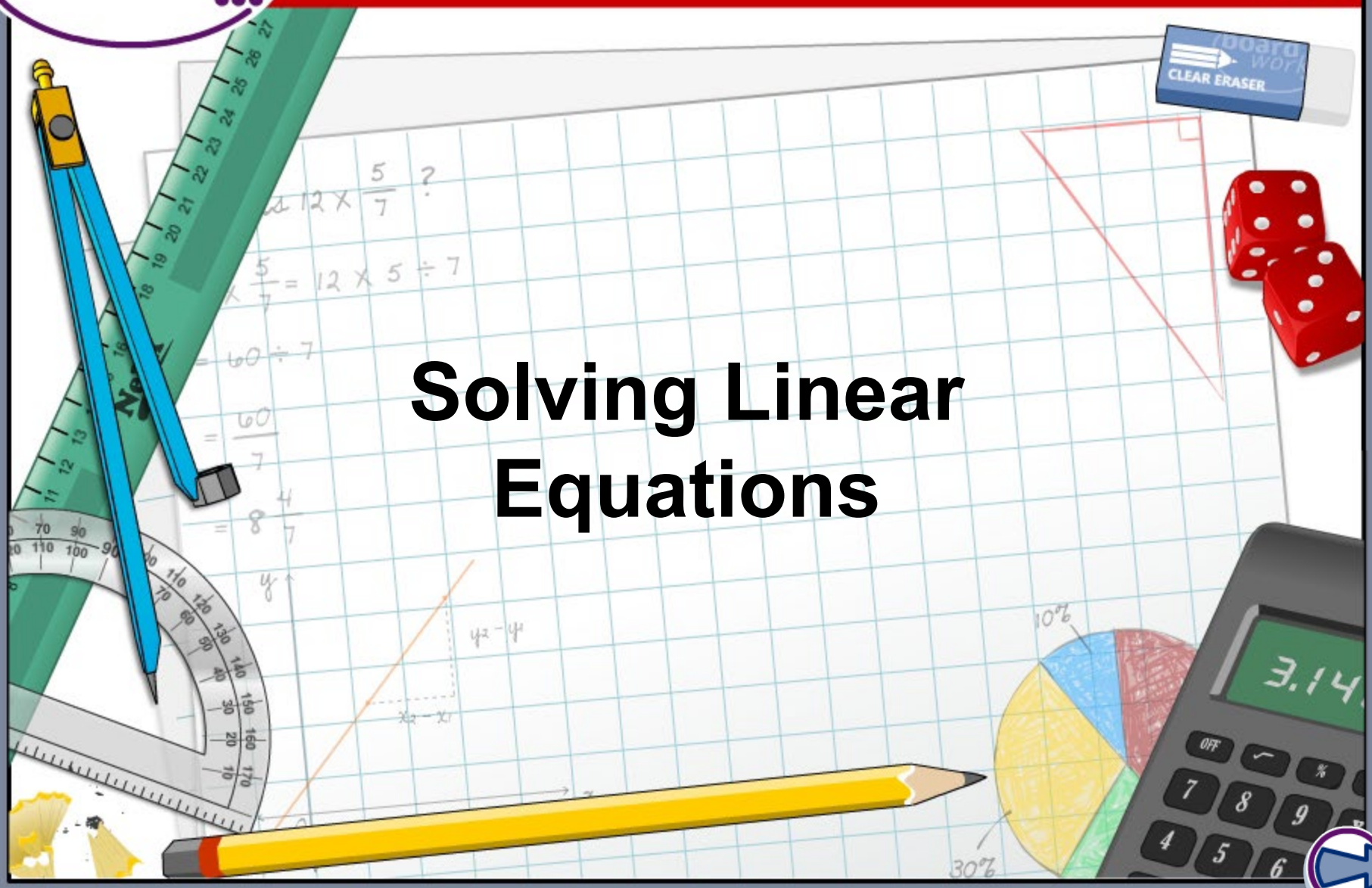


Solving Linear Equations

Information

Common core icons

This icon indicates a slide where the Standards for Mathematical Practice are being developed. Details of these are given in the Notes field.

Slides containing examples of mathematical modeling are marked with this stamp.

This icon indicates an opportunity for discussion or group work.

The **Standards for Mathematical Practice** outlined in the Common Core State Standards for Mathematics describe varieties of expertise that mathematics educators at all levels should seek to develop in their students.

These are:

1) Make sense of problems and persevere in solving them.

2) Reason abstractly and quantitatively.

3) Construct viable arguments and critique the reasoning of others.

4) Model with mathematics.

5) Use appropriate tools strategically.

6) Attend to precision.

7) Look for and make use of structure.

8) Look for and express regularity in repeated reasoning.

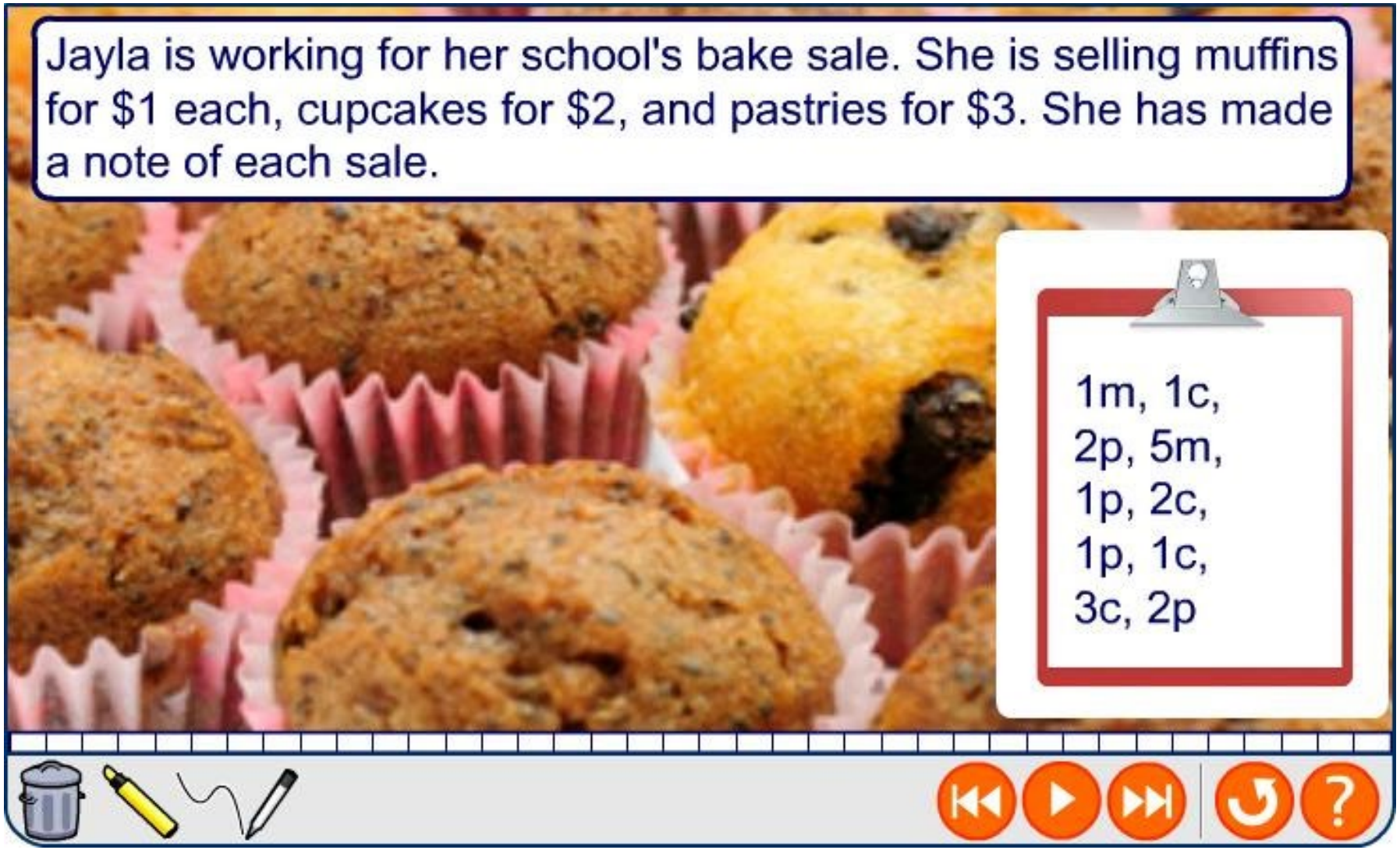
This icon indicates that the slide contains activities created in Flash. These activities are not editable.

This icon indicates teacher's notes in the Notes field.

Combining like terms

MODELING

Jayla is working for her school's bake sale. She is selling muffins for $1 each, cupcakes for $2, and pastries for $3. She has made a note of each sale.



1m, 1c,
2p, 5m,
1p, 2c,
1p, 1c,
3c, 2p

Combining like terms with negatives

How can we combine like terms in this equation?

$$-4x + 2x + x = 50$$

$-4x$ is the same as $- x - x - x - x$

$2x$ is the same as $x + x$

We could write the equation as:

$$- x - x - x - x + x + x = 50$$

Combining like terms with negatives

How can we simplify this?

$$-x-x-x-x+x+x+x = 50$$

$x - x = 0$, so:

$$-x-x-x+x+x = 50$$

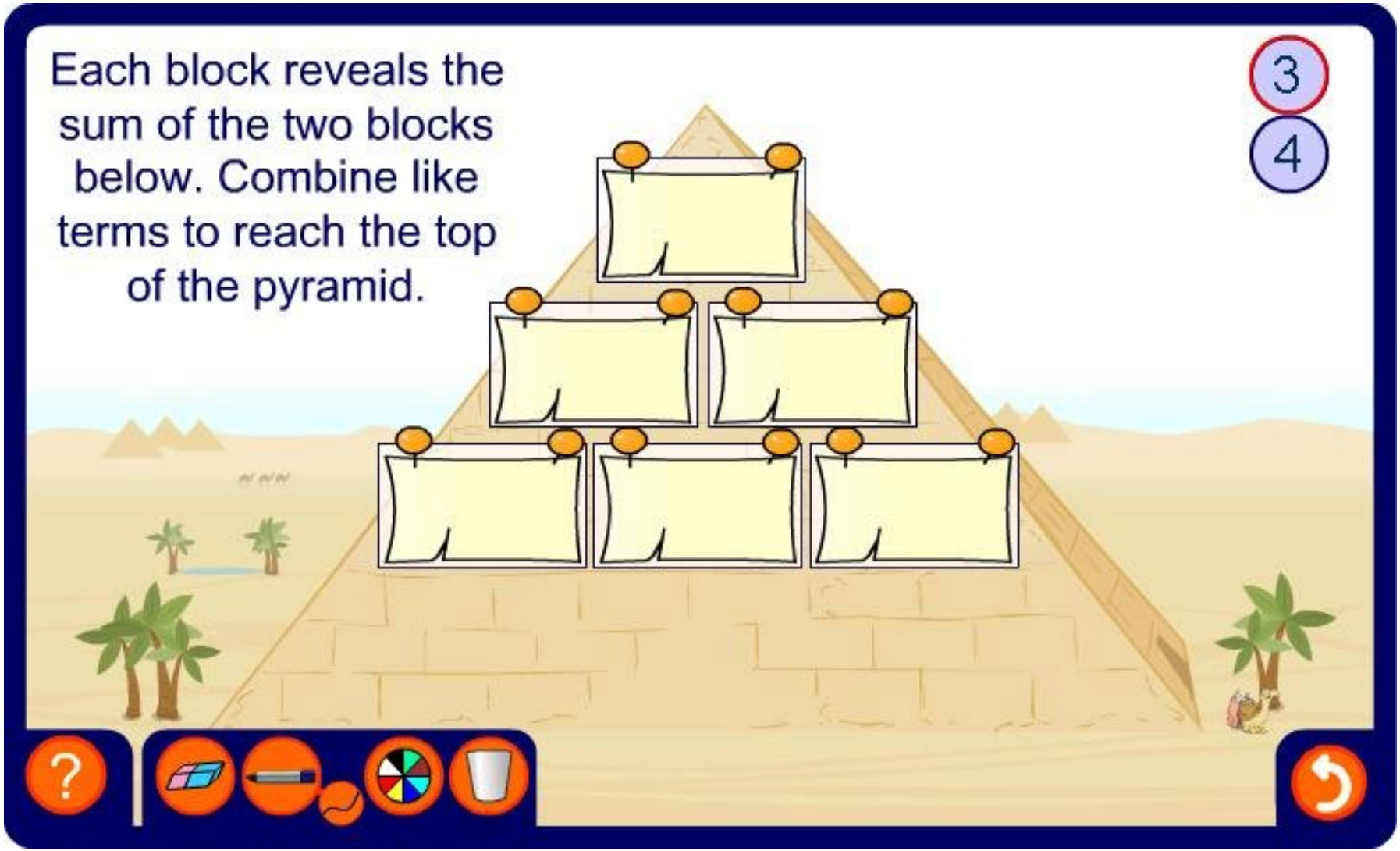
$$-x-x+x = 50$$

$$-x = 50$$

Now we can solve the equation:

$$x = -50$$

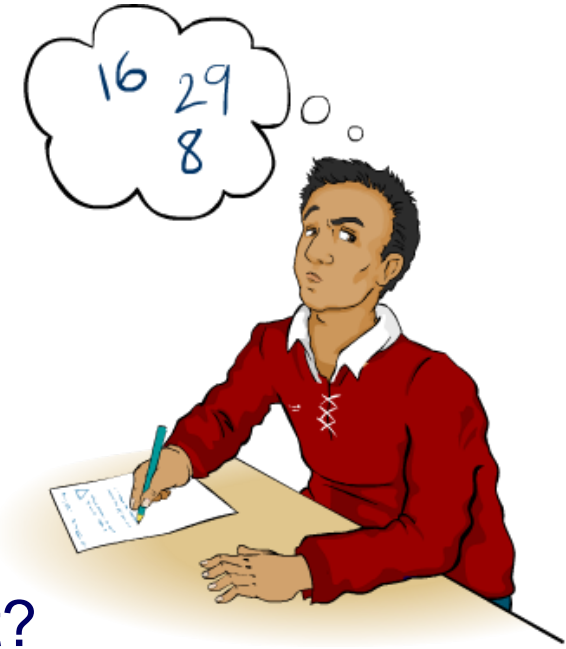
Algebraic pyramids



Exponents

How could we combine like terms in this equation?

$x^2 + 2x + x + 2 + 2x^2 = 25$



Are x and x^2 like terms? Why or why not?

No. $2x$ means $x + x$,

but $2x^2$ means $(x \cdot x) + (x \cdot x)$.

Can we combine x^2 and $2x^2$? Why or why not?

Yes.

$x^2 + 2x^2$ is the same as $(x \cdot x) + (x \cdot x) + (x \cdot x)$, or $3x^2$.

How could we simplify the equation?

$x^2 + 2x + x + 2 + 2x^2 = 25$

Combine like terms.

$x^2 + 2x + x + 2 + 2x^2 = 25$

↓

$3x^2 + 2x + x + 2 = 25$

↓

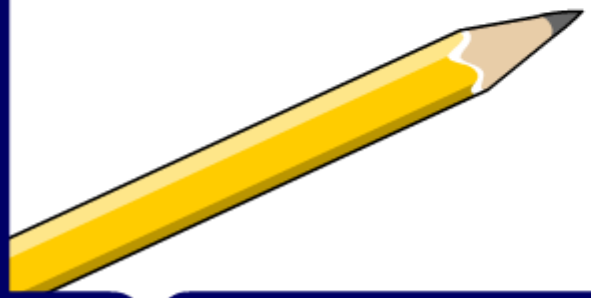
$3x^2 + 3x + 2 = 25$

Subtract 2 from both sides.

$3x^2 + 3x = 23$

Algebraic magic square

In a magic square, each row, column and diagonal has the same sum. Press the boxes to reveal some of the expressions and figure out the ones that are missing.



1
2
3

Commutative Property

The **commutative property** means that when you add or multiply, the order of the numbers does not matter.

For example, with numbers:

$2 + 3 = 3 + 2$ $\quad 5 = 5$

or

$8 \cdot 3 = 3 \cdot 8$ $\quad 24 = 24$

With variables:

$a + b = b + a$

$ab = ba$

Press the "=" button to show an example step by step.

Parentheses in equations

Lucy's cat has just had 4 kittens. Lucy needs to buy each kitten a food bowl (f). There is a sale for $1 off each food bowl. If she spends $6 in total, how much does a food bowl normally cost?

Algebraic multiplication square

Use this table to multiply the algebraic terms.
Press on the empty spaces to reveal the answers.

×	-1	$2b$	-6
$-6a+6b$			
$7a+4b$			
$6-9a$			
$7a-1$			
$-4a-8b$			

Matching equivalent expressions

$8a+12b$	$6(a-2b)$	$12a-4b$	$6a+3b$	$6a+12b$
$4a-4b$	$4(3a-b)$	$2(2a+3b)$	$7(2a+b)$	$6a-12b$
$4(2a+3b)$	$3a+6b$	$6(a+2b)$	$3(a+2b)$	$4(a-b)$
$3(2a+b)$	$14a+7b$	$15a-20b$	$4a+6b$	$5(3a-4b)$

Press to match the equivalent expressions.

1

2

I’m thinking of a number…

Dominic and Madison are playing a game. One of them gives clues about a number, and the other has to guess the number.

How many solutions?

Drag each equation into the correct box.

How many solutions does each equation have?

Press **start** to begin.

start

$2x + 4 =$ $\frac{}{2}$

S C