Picture Puzzles

ROD MATS

ORANGE JOINED WITH BROWN IS WHOLE
(Eighteenths)

Picture Puzzles

Picture Puzzles

Creator ... Doug. Williams
Publisher ... Mathematics Centre

This Picture Puzzle is based on
... Task 202, Rod Mats
Teaching Notes
... mathematicscentre.com/picturepuzzles/teachingnotes.htm

Picture Puzzles

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To Do

1. Make a Rod Mat from a whole.
2. Name the parts of the whole shown by the mat.
3. Find more than one name for some parts.
4. Create and record equations using your names.

You Need

- A set of coloured rods called Cuisenaire Rods

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1. A rod mat starts with a whole.

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2. Let's choose orange joined with brown.

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3. To make the mat, build rows below the whole.

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1. A rod mat starts with a whole.

2. Let's choose orange joined with brown.
3. To make the mat, build rows below the whole.
   - Each row is the *same length* as the whole.
   - Rods in each row are the *same colour*.

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1. A rod mat starts with a whole.

2. Let's choose orange joined with brown.
3. To make the mat, build rows below the whole.
   - Each row is the *same length* as the whole.
   - Rods in each row are the *same colour*.

Make the rod mat for Orange joined with Brown now.

...

Then check on the next slide.

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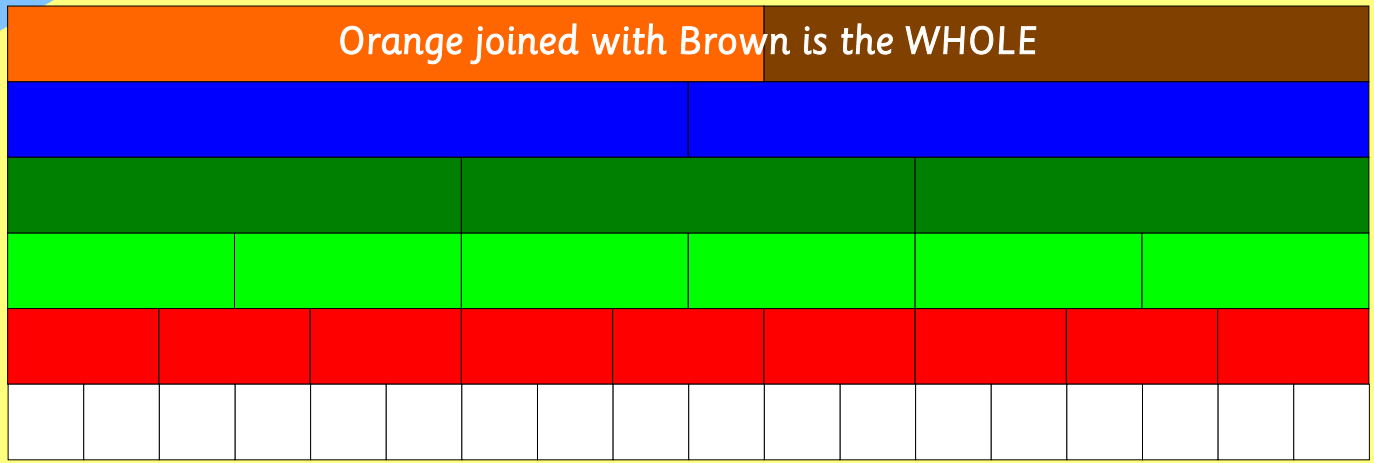

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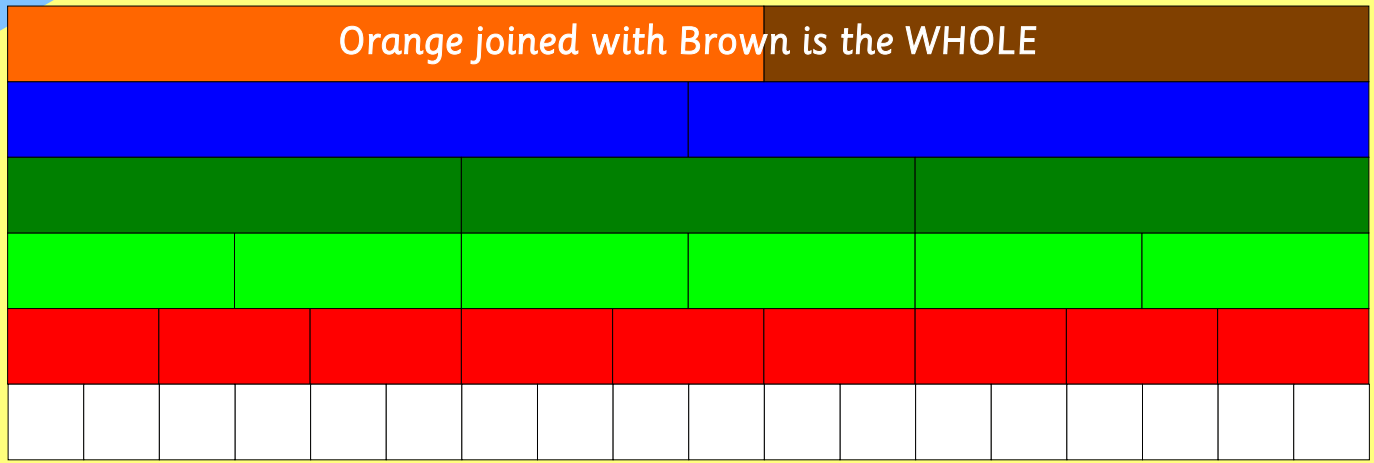

Orange joined with Brown is the whole.
Each rod row shows the whole split into equal parts.
Equal parts of a whole are called Fractions.

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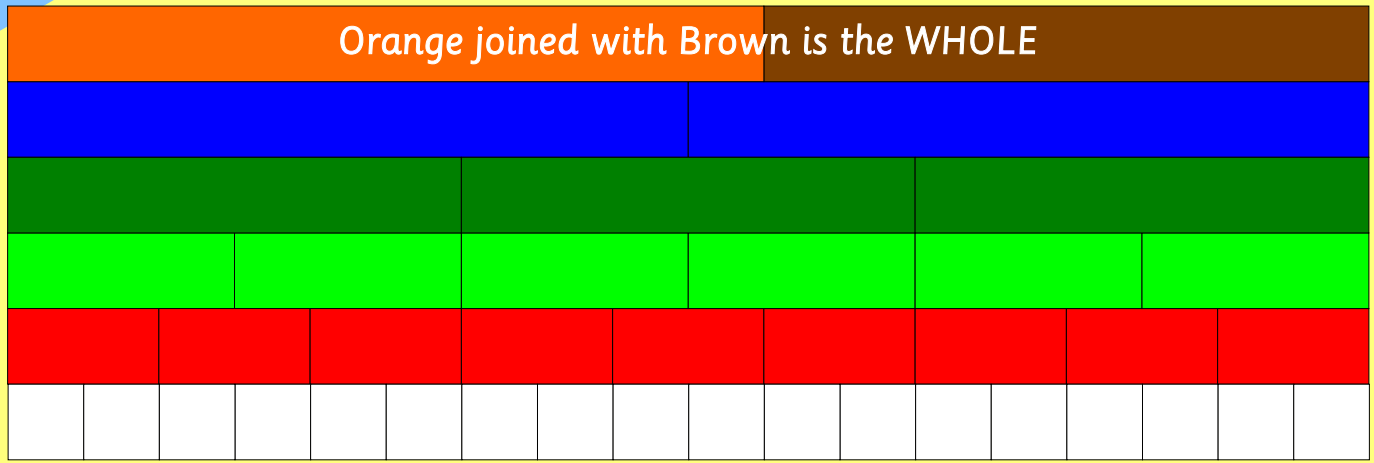

Orange joined with Brown is the whole.
Each rod row shows the whole split into equal parts.
Equal parts of a whole are called Fractions.

Choose one rod of each colour.
Tell each other its fraction name.
Tell each other how you know.
Then check with the next slides.

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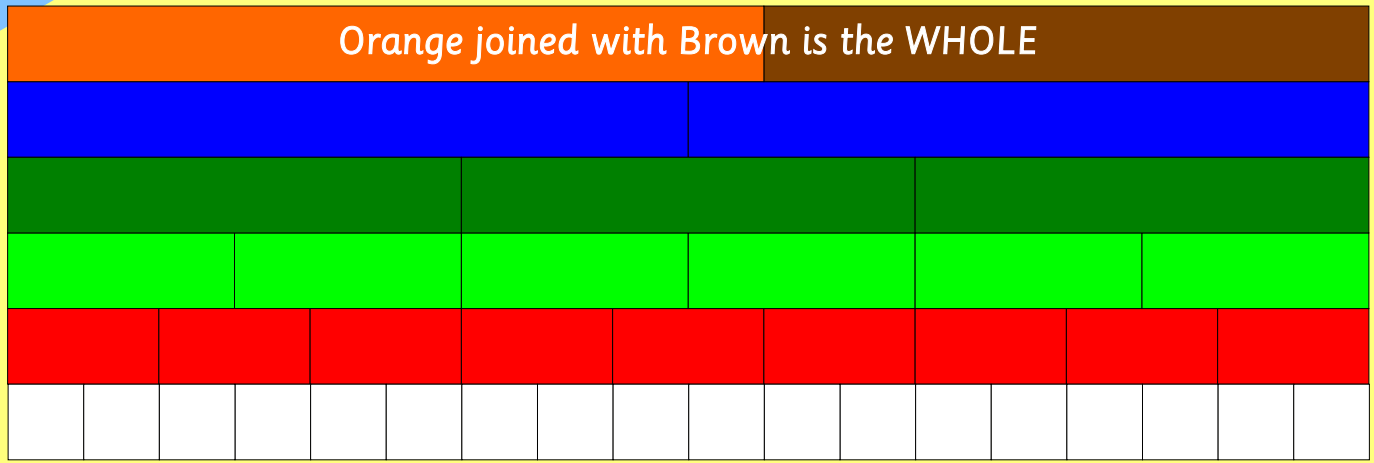

Pietro said:

Dark green is one third.

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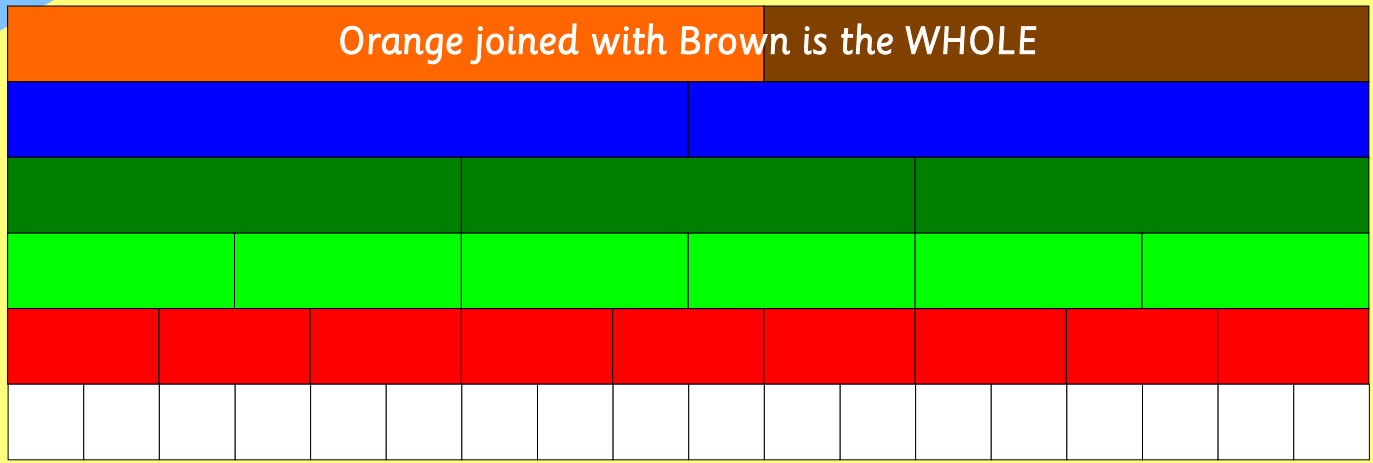

Pietro said:

Dark green is one third.

Bronwyn said:

How do you know?

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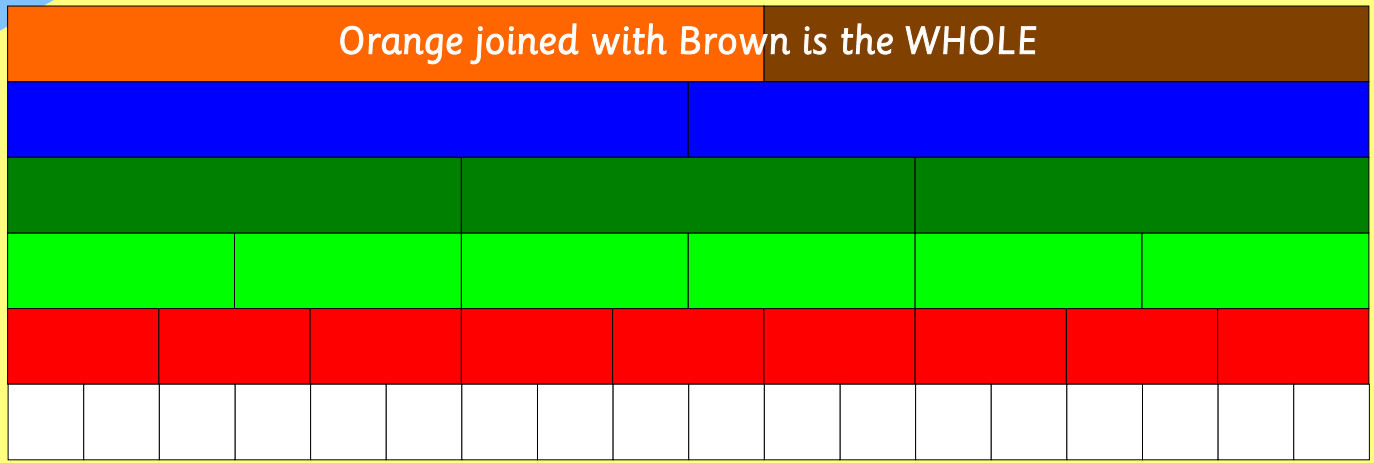

Pietro said:

Dark green is one third.

Bronwyn said:

How do you know?

Pietro answered:

I know what the whole is...

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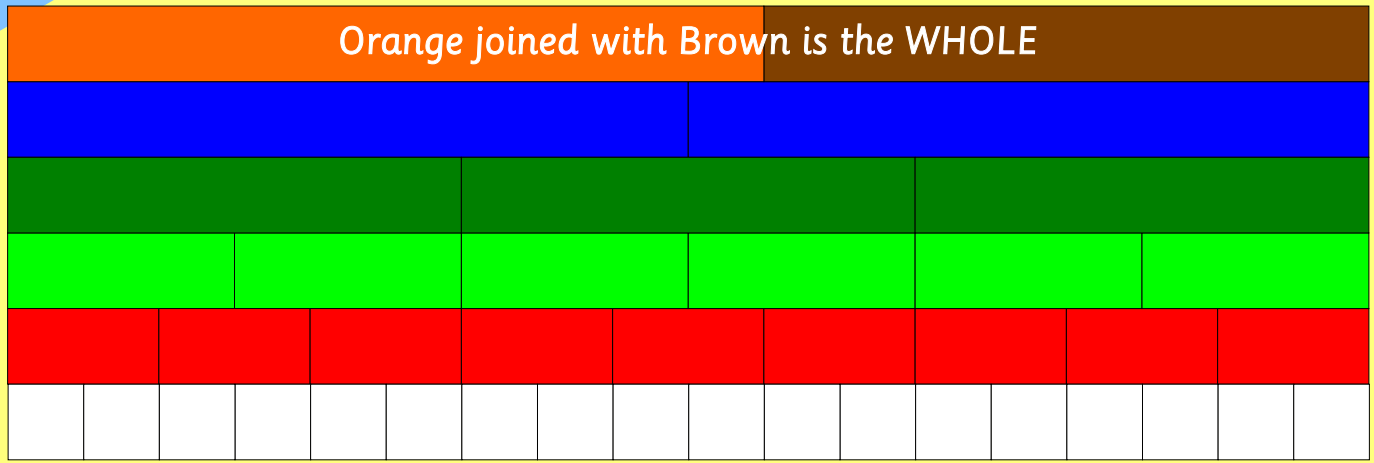

Pietro said:

Dark green is one third.

Bronwyn said:

How do you know?

Pietro answered:

I know what the whole is.

Dark green splits the whole into equal parts...

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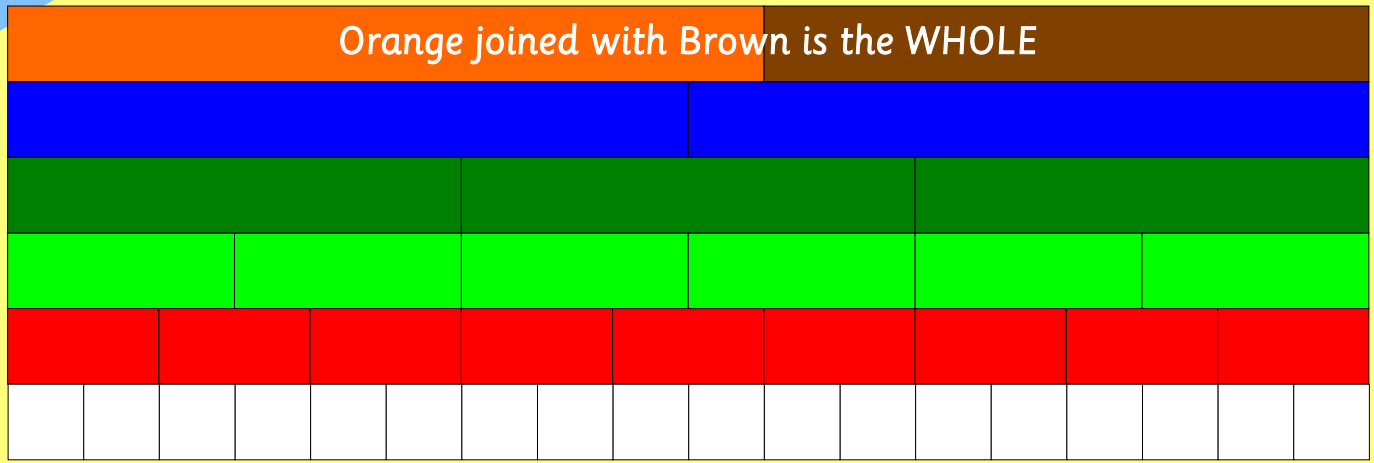

Pietro said:

Dark green is one third.

Bronwyn said:

How do you know?

Pietro answered:

I know what the whole is.

Dark green splits the whole into equal parts.

There are three parts so I can say third...

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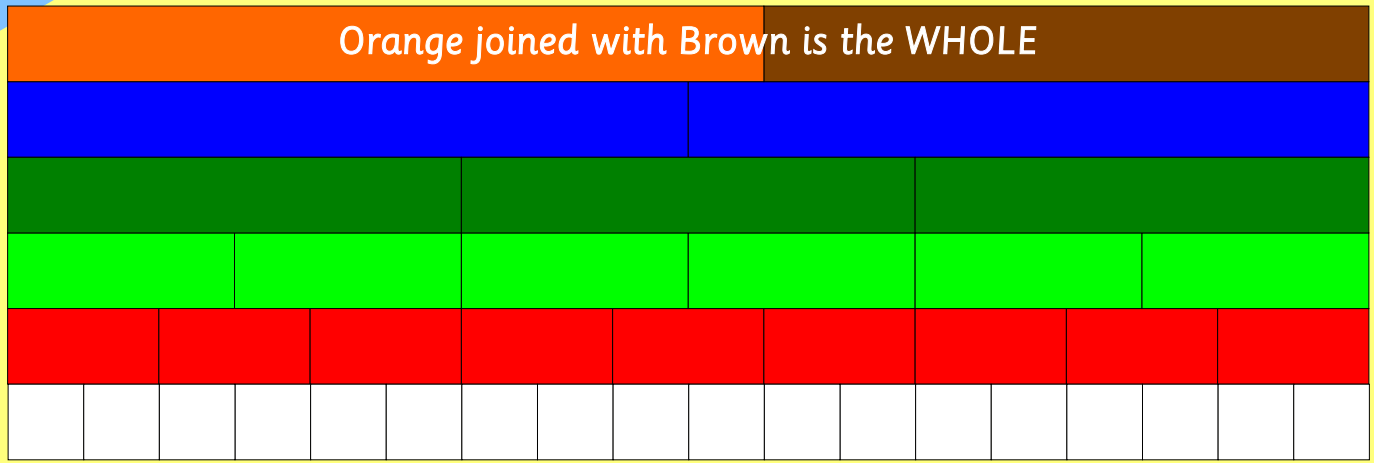

Pietro said:

Dark green is one third.

Bronwyn said:

How do you know?

Pietro answered:

I know what the whole is.

Dark green splits the whole into equal parts.

There are three parts so I can say third.

So one dark green is one third.

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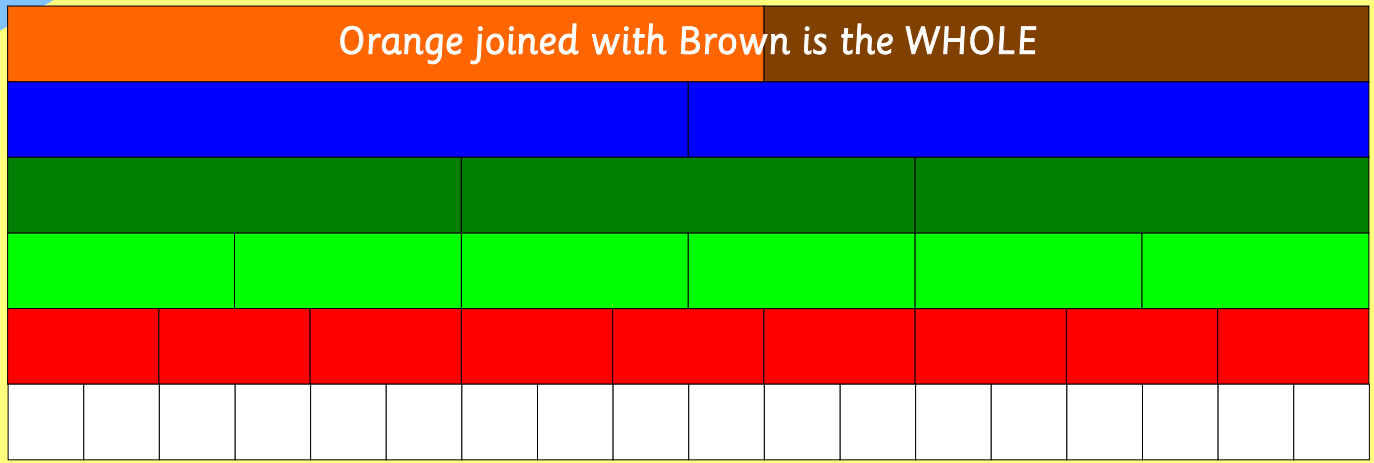

Bronwyn said:

Light green is one sixth.

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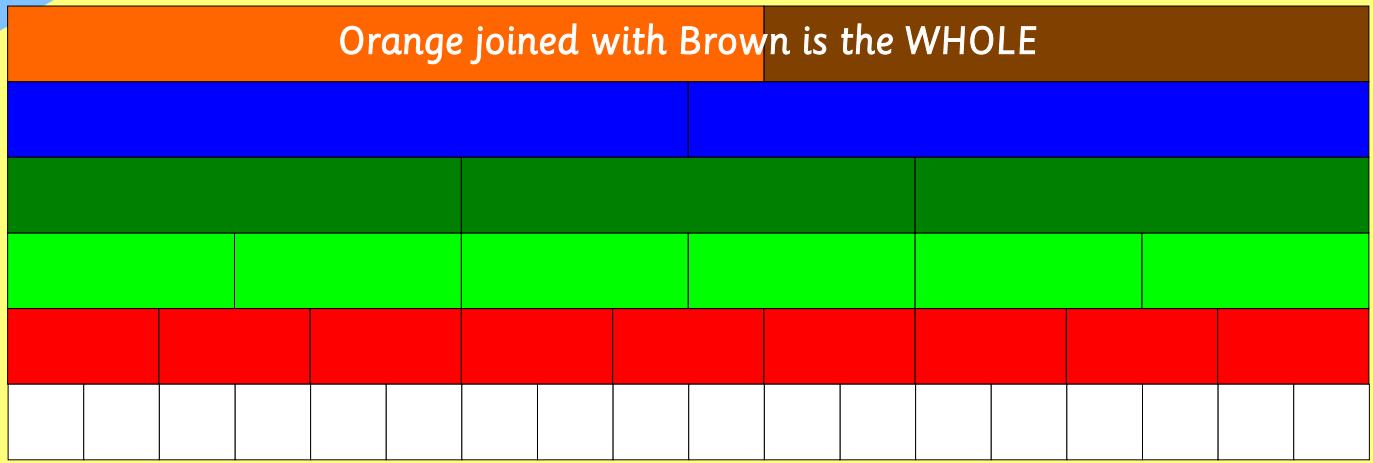

Bronwyn said:

Light green is one sixth.

Pietro said:

How do you know?

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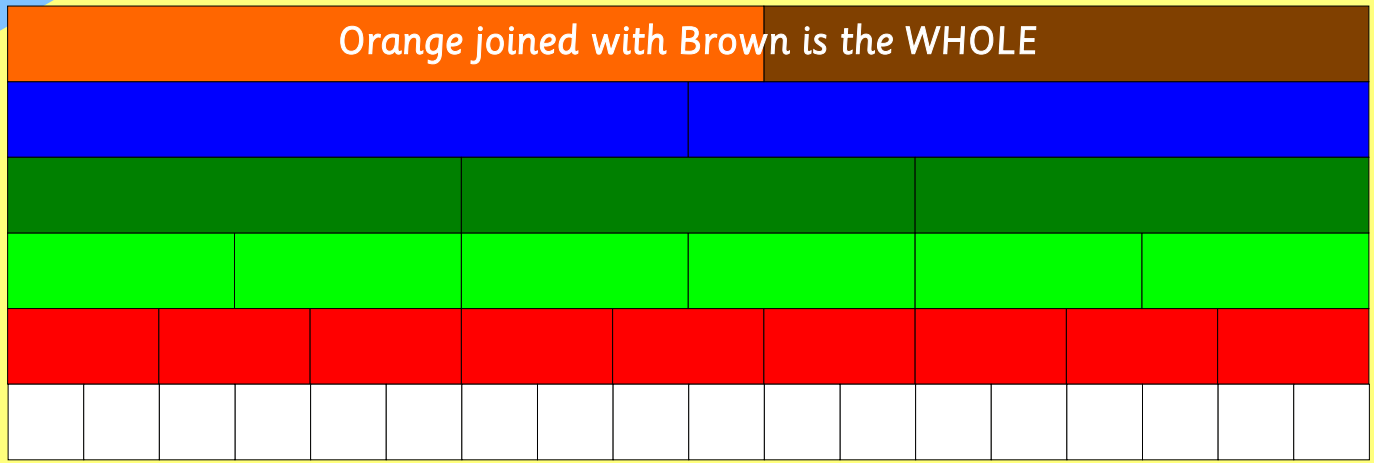

Bronwyn said:

Light green is one sixth.

Pietro said:

How do you know?

Bronwyn answered:

I know what the whole is.

Light green splits the whole into equal parts.

There are six parts so I can say sixth.

So one light green is one sixth.

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In your journal
write what Bronwyn and Pietro
said about blue, red and white.

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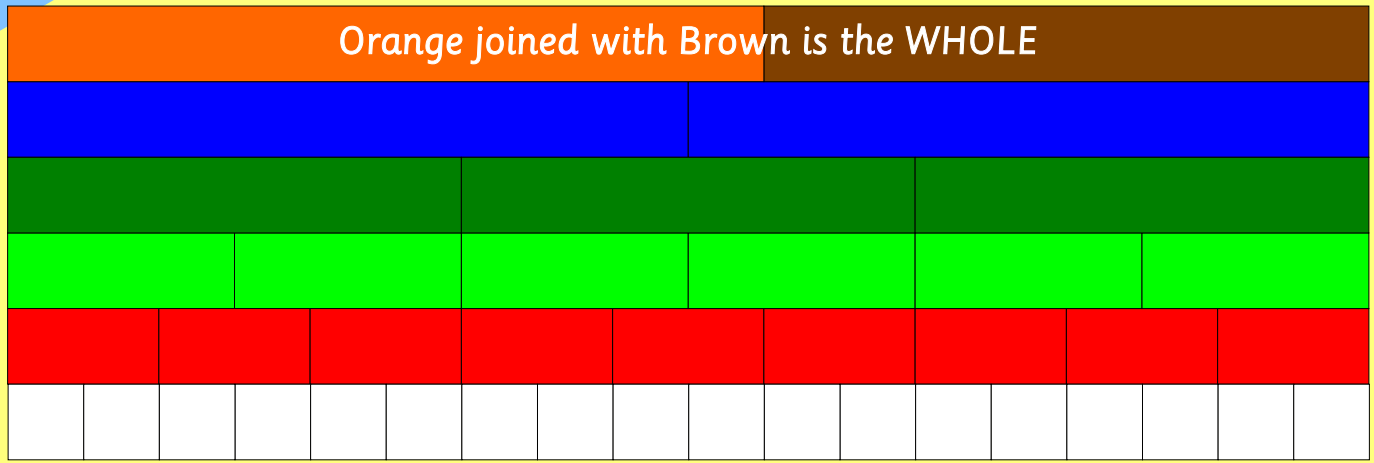

In your journal explain how to find another fraction name for:

(a) one half
(b) 3 ninths
(c) 5 sixths
(d) fourteen eighteenths
(e) 1 half + 1 third
(f) 2 thirds - one ninth
(g) three eighteenths + 1 third - 1 ninth
(g) one half + $^{1}/_{3}$ + $^{1}/_{6}$
(h) ($^{1}/_{2}$ of $^{4}/_{9}$) + ($^{1}/_{3}$ of $^{12}/_{18}$)

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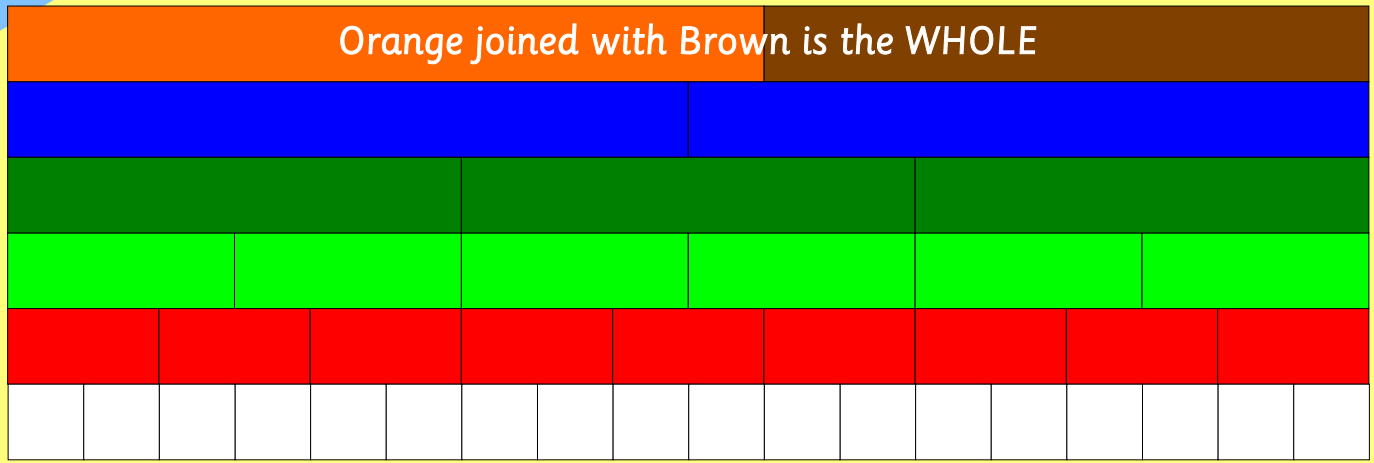

Find the simplest fraction that completes the whole and write an equation in your journal. Example:

Start with $^{2}/_{9}$. Complete with $^{7}/_{9}$.

$^{2}/_{9} + {}^{7}/_{9} = 1$

(a) Start with $^{1}/_{2}$

(b) Start with $^{1}/_{3}$

(c) Start with $^{1}/_{6}$

(d) Start with $^{1}/_{9}$

(e) Start with $^{1}/_{18}$

(f) Start with $^{2}/_{6}$

(g) Start with $^{7}/_{9}$

(h) Start with $^{7}/_{18}$

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The fraction that completes the whole
is called the complement
of the starting fraction.

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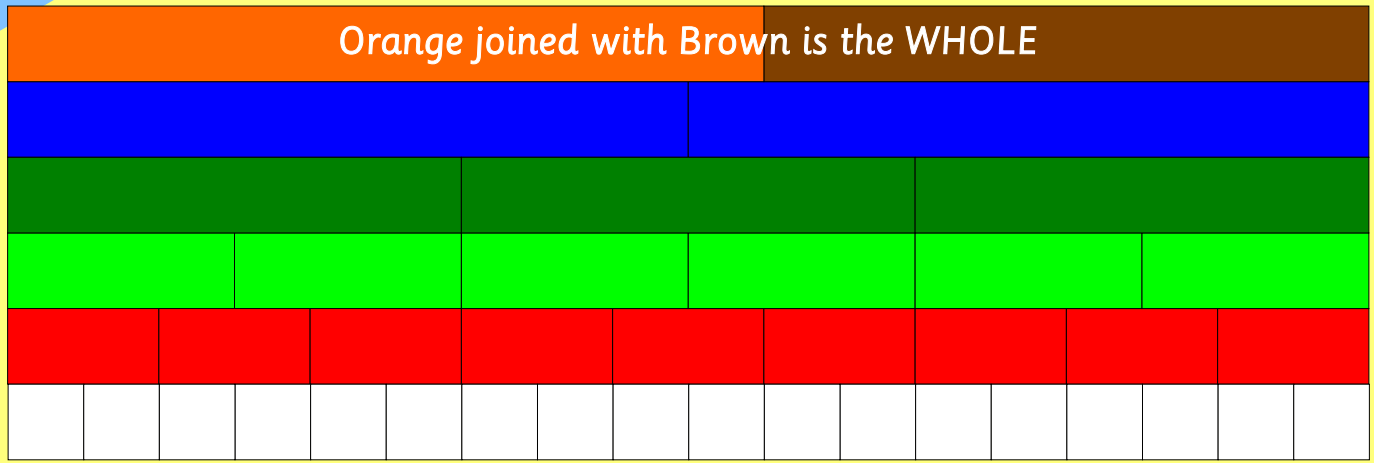

Choose any *three rods* from the mat.

Find at least one more fraction name for them.

Record your rods and an equation in your journal.

This is an example of an equation with three rods:

one sixth + one half + one third = 1 whole

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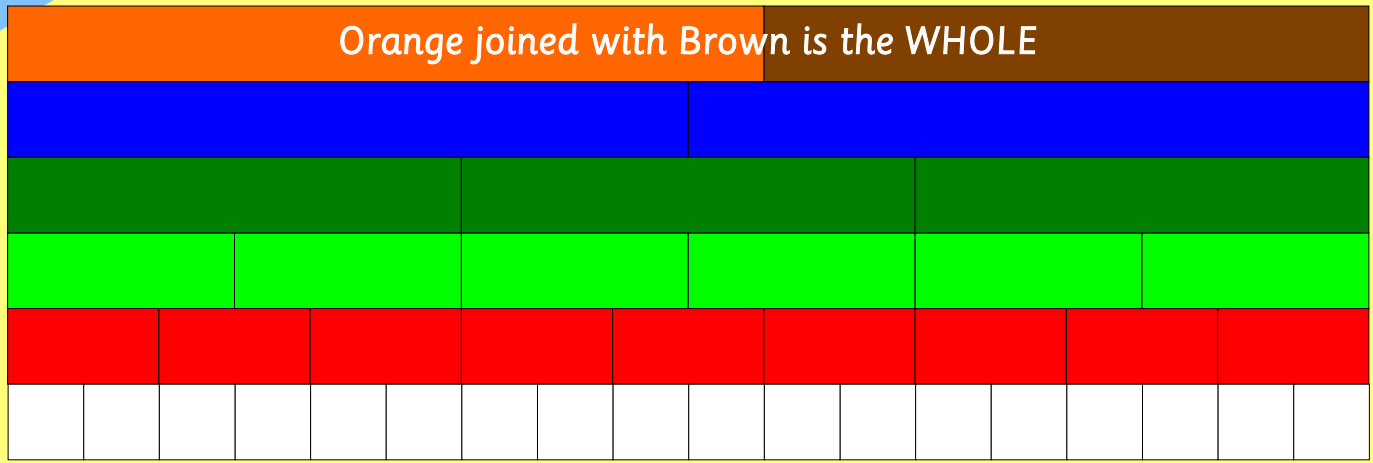

Choose any *four rods* from the mat.

Find at least one more fraction name for them.

Record your rods and an equation in your journal.

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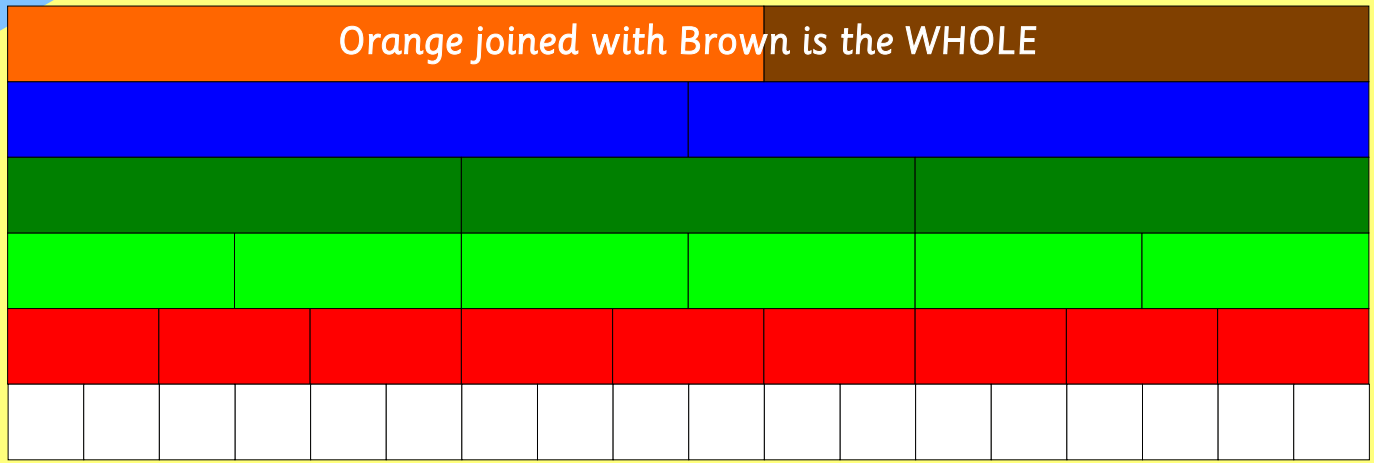

Go Crazy

Set a timer and both write all the equations you can.

When the time stops check each other's work.

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Suppose you had to work out this equation.

$^{3}/_{4} + {}^{2}/_{3} =$

What would you choose as your whole?

Explain why.

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THE END...

...OR IS IT?

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