Picture Puzzles

ROD MATS

BROWN JOINED WITH BLACK IS WHOLE (Fifteenths)

Picture Puzzles

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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 brown joined with black.

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1. A rod mat starts with a whole.

2. Let's choose brown joined with black.
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 brown joined with black.
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 Brown joined with Black now.

...

Then check on the next slide.

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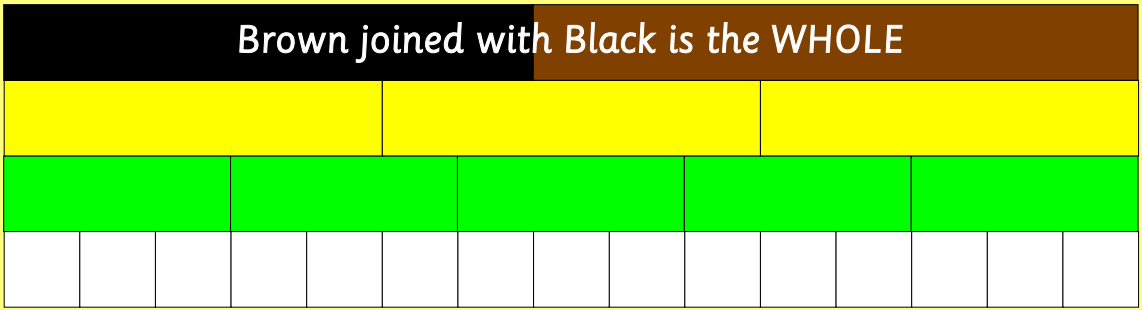

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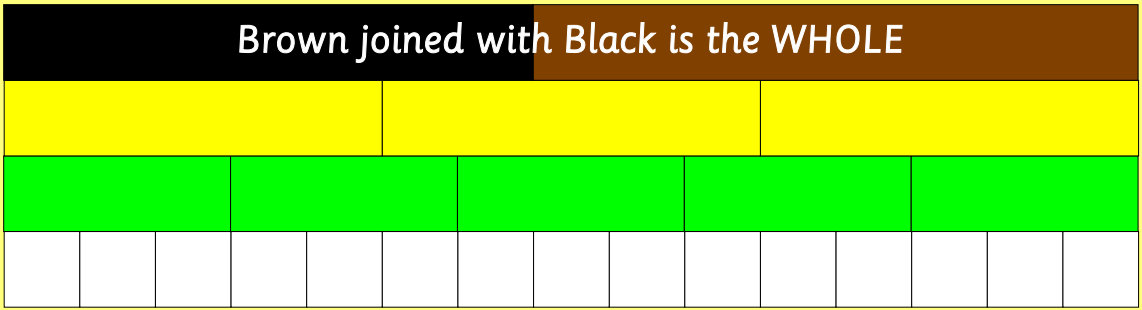

Brown joined with Black is the whole.
Each rod row shows the whole split into equal parts.
Equal parts of a whole are called Fractions.

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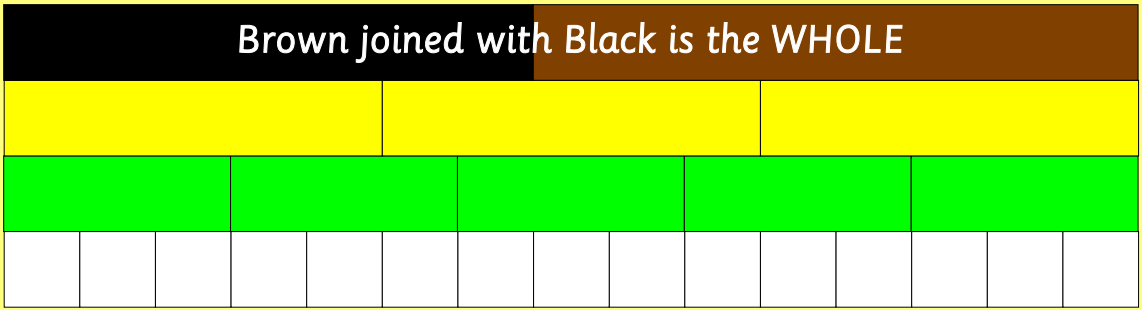

Brown joined with Black is the whole.
Each rod row shows the whole split into equal parts.
Equal parts of a whole are called Fractions.

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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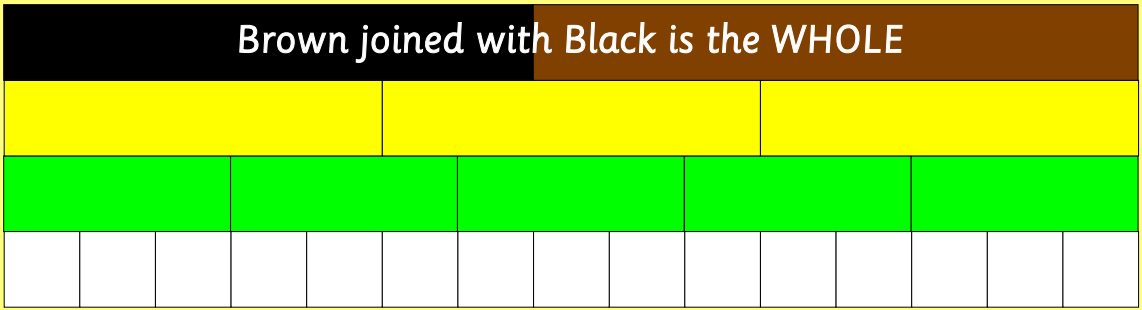

Filomena said:

Light green is one fifth.

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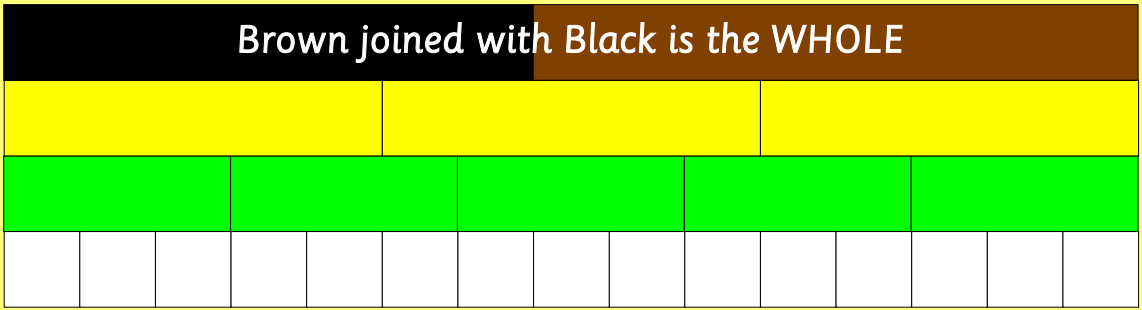

Filomena said:

Light green is one fifth.

Macario said:

How do you know?

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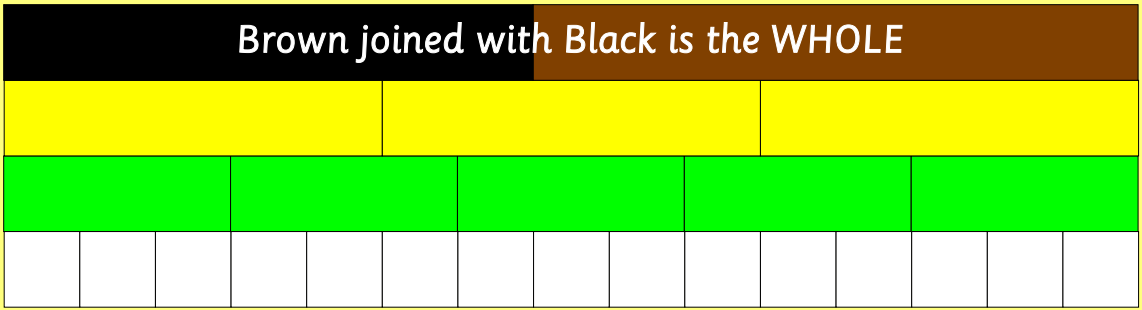

Filomena said:

Light green is one fifth.

Macario said:

How do you know?

Filomena answered:

I know what the whole is...

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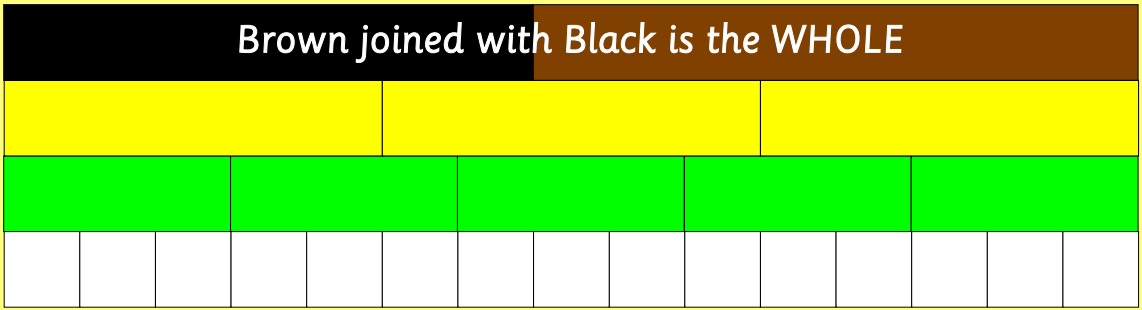

Filomena said:

Light green is one fifth.

Macario said:

How do you know?

Filomena answered:

I know what the whole is.

Light green splits the whole into equal parts...

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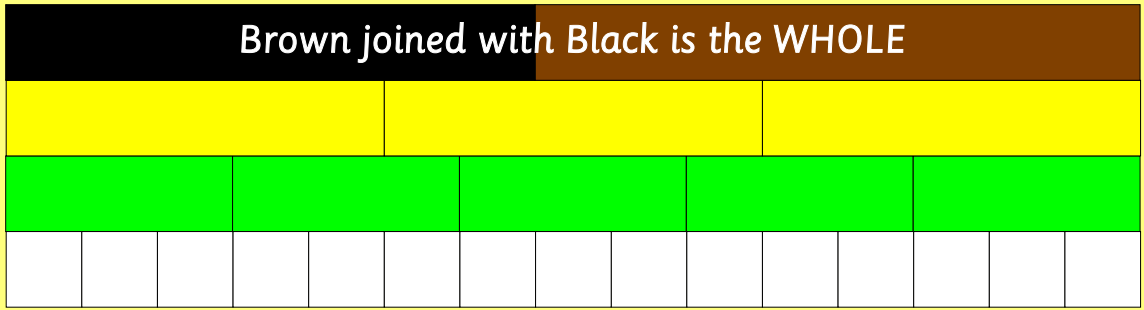

Filomena said:

Light green is one fifth.

Macario said:

How do you know?

Filomena answered:

I know what the whole is.

Light green splits the whole into equal parts.

There are five parts so I can say fifth...

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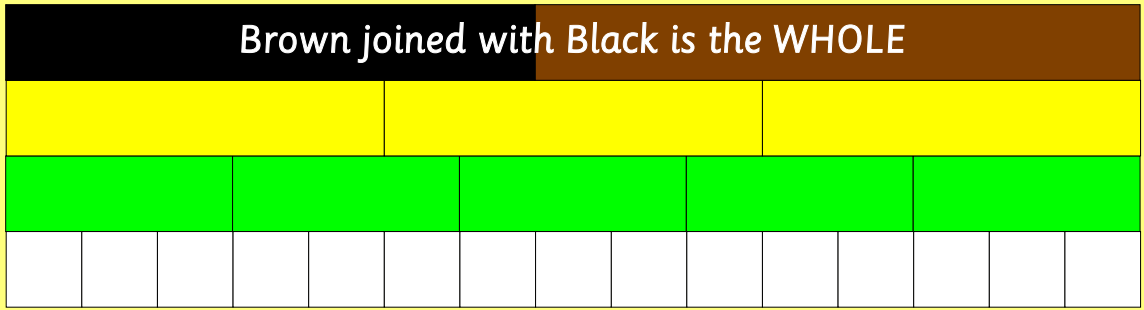

Filomena said:

Light green is one fifth.

Macario said:

How do you know?

Filomena answered:

I know what the whole is.

Light green splits the whole into equal parts.

There are five parts so I can say fifth.

So one light green is one fifth.

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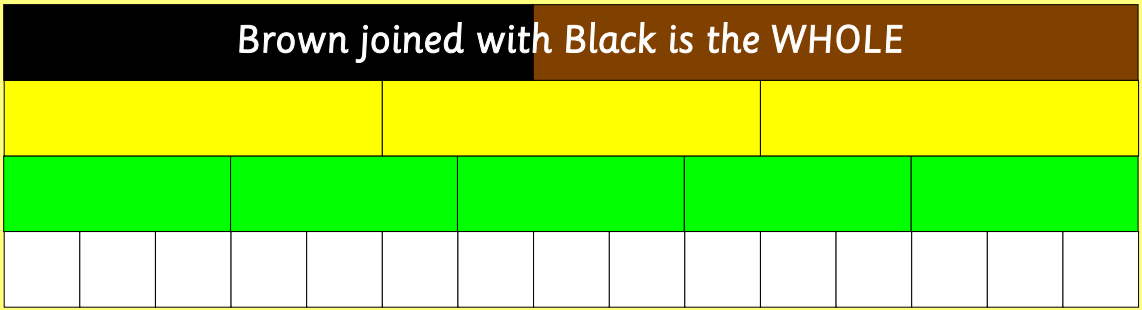

Macario said:

Yellow is one third.

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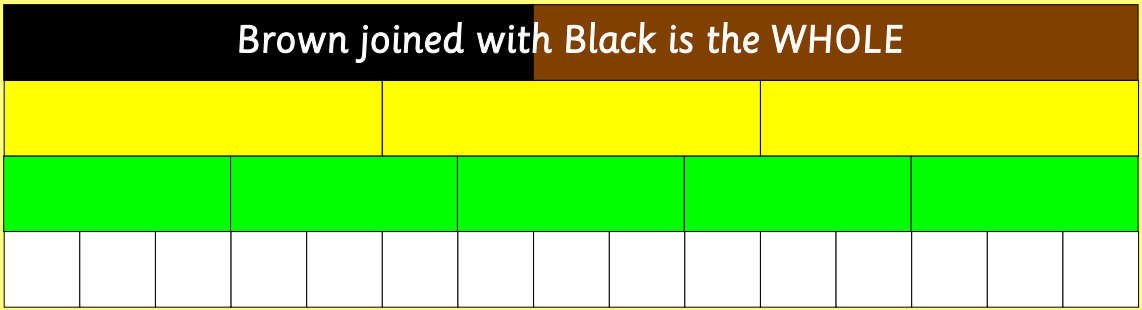

Macario said:

Yellow is one third.

Filomena said:

How do you know?

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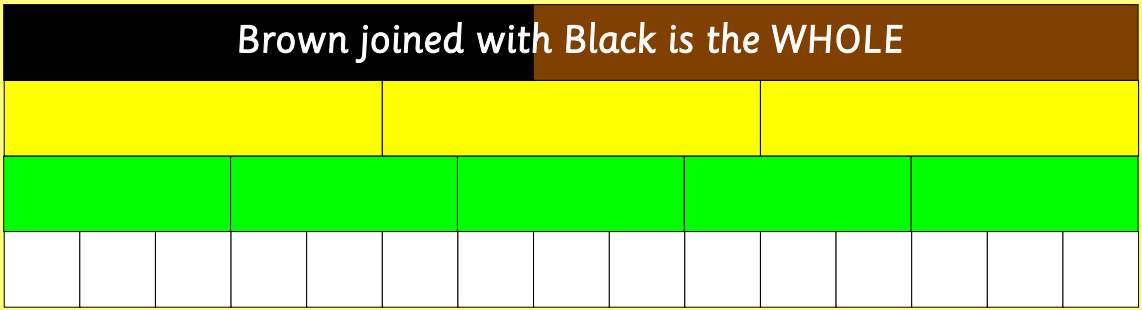

Macario said:

Yellow is one third.

Filomena said:

How do you know?

Macario answered:

I know what the whole is.
Yellow splits the whole into equal parts.
There are three parts so I can say third.
So one yellow is one third.

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In your journal
write what Macario and Filomena
said about white.

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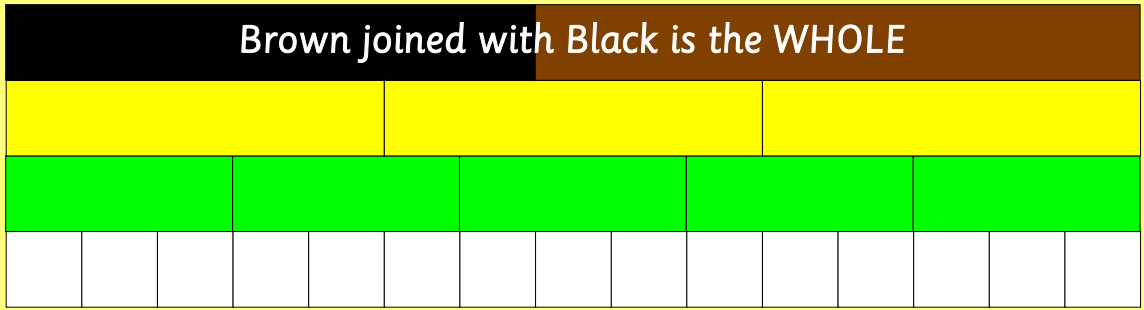

In your journal explain how to find another fraction name for:

(a) one third
(b) 3 fifths
(c) twelve fifteenths
(d) 1 fifth + 2 fifths
(e) 1 fifth + 1 third
(f) one fifteenth + 1 third - 1 fifth
(g) (2 x one third) + $^{2}/_{5}$
(h) $^{1}/_{2}$ of $^{2}/_{3}$

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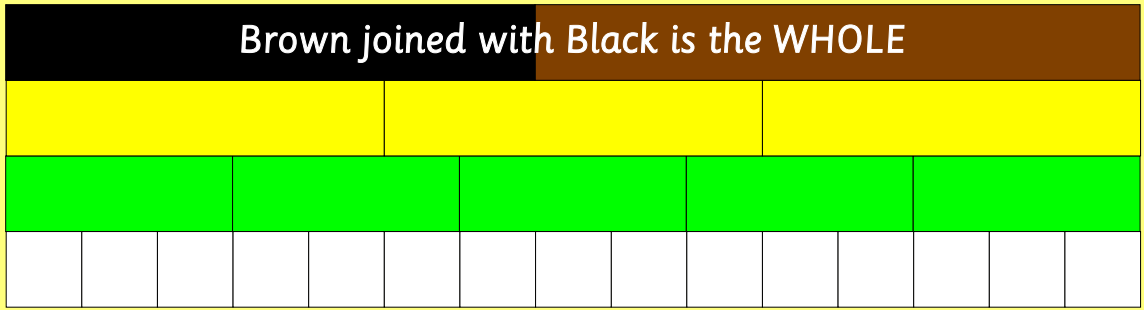

Find the simplest fraction that completes the whole and write an equation in your journal. Example:

Start with $^{2}/_{3}$. Complete with $^{1}/_{3}$.

$^{2}/_{3} + {}^{1}/_{3} = 1$

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

(b) Start with $^{1}/_{5}$

(c) Start with $^{1}/_{15}$

(d) Start with $^{3}/_{5}$

(e) Start with $^{5}/_{15}$

(f) Start with $^{8}/_{15}$

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

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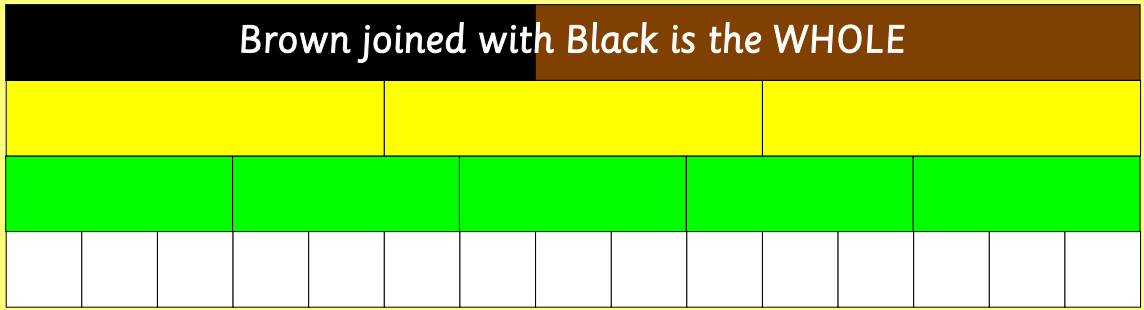

Choose any *three rods* from the mat.

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 fifteenth + one third - one fifth = 1 fifth

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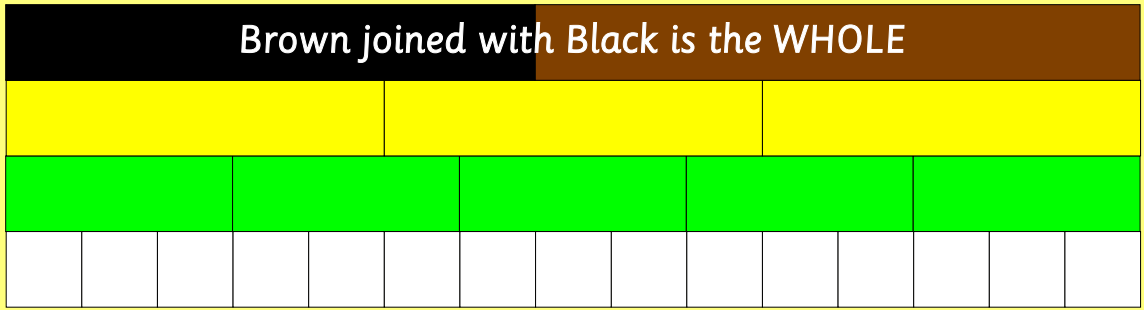

Choose any four rods from the mat.

Find at least one more fraction name for them.

Record your rods and an equation in your journal.

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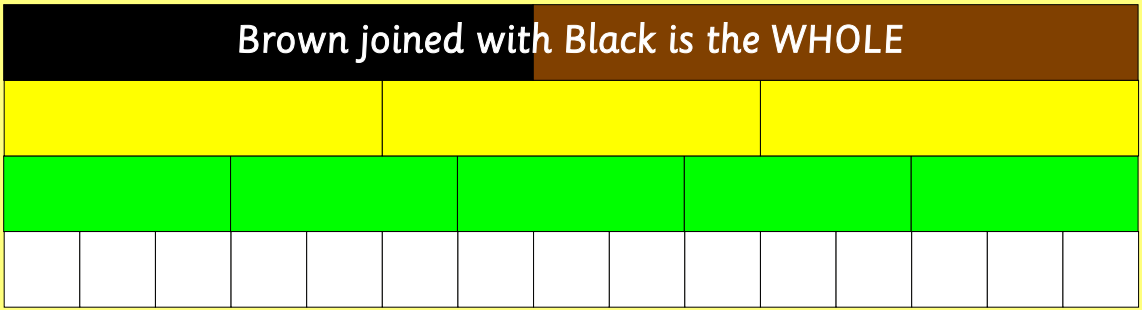

Go Crazy

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.

$^{1}/_{5} + {}^{3}/_{4} =$

What would you choose as your whole?

Explain why.

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THE END...

...OR IS IT?

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