Picture Puzzles

ROD MATS

BROWN IS WHOLE
(Eighths)

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

Picture Puzzles

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1. A rod mat starts with a whole.

Picture Puzzles

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1. A rod mat starts with a whole.
2. Let's choose brown.

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Brown is the WHOLE

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2. Let's choose brown.

Brown is the WHOLE

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

Picture Puzzles

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1. A rod mat starts with a whole.
2. Let's choose brown.

Brown is the WHOLE

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*.

Picture Puzzles

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1. A rod mat starts with a whole.
2. Let's choose brown.

Brown is the WHOLE

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 now.

...

Then check on the next slide.

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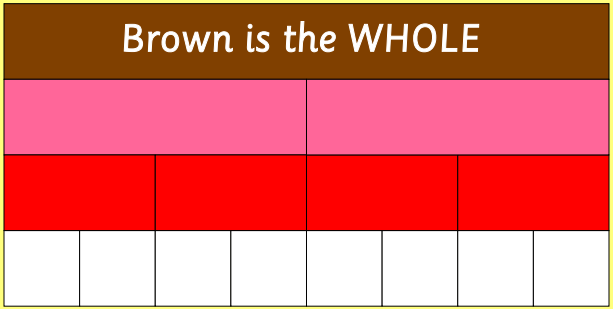

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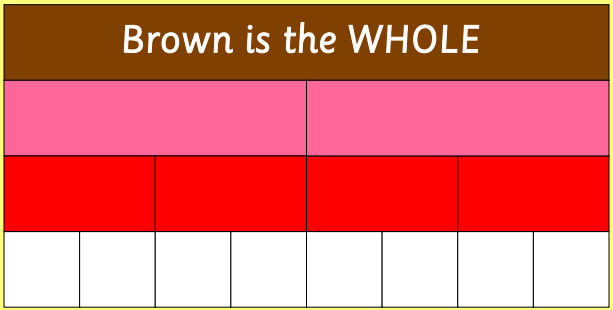

Brown is the whole.
Each rod row shows the whole split into equal parts.
Equal parts of a whole are called Fractions.

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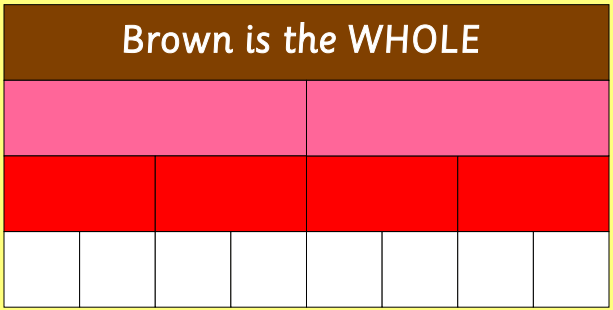

Brown is the whole.
Each rod row shows the whole split into equal parts.
Equal parts of a whole are called Fractions.

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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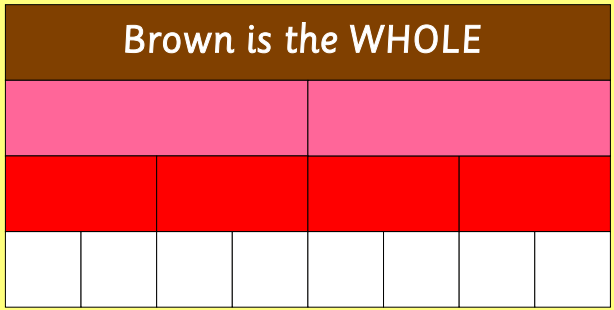
Len said:

Pink is one half.



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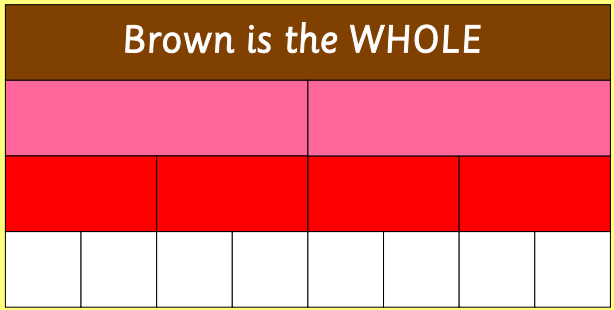
Len said:

Pink is one half.

Natalia said:

How do you know?



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Len said:

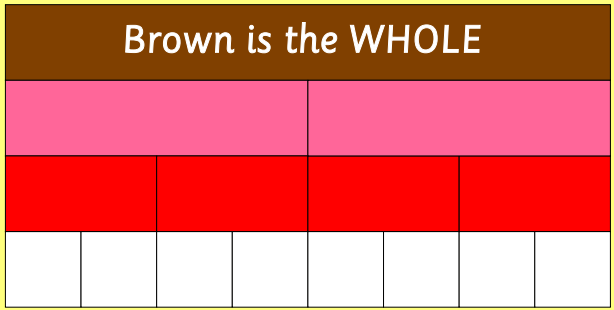
Pink is one half.

Natalia said:

How do you know?

Len answered:

I know what the whole is...



Picture Puzzles

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Len said:

Pink is one half.

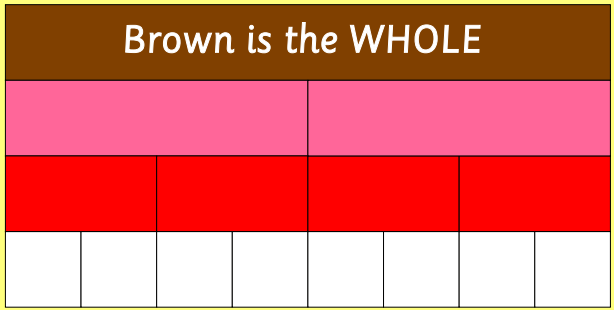
Natalia said:

How do you know?

Len answered:

I know what the whole is.

Pink splits the whole into equal parts...



Picture Puzzles

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Len said:

Pink is one half.

Natalia said:

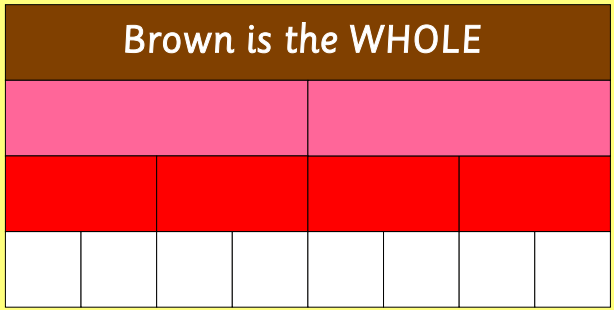
How do you know?

Len answered:

I know what the whole is.

Pink splits the whole into equal parts.

There are two parts so I can say half…



Picture Puzzles

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Len said:

Pink is one half.

Natalia said:

How do you know?

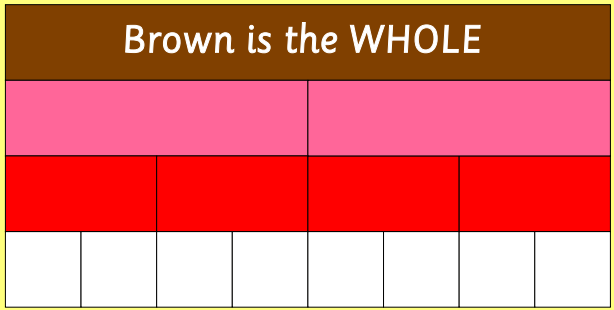
Len answered:

I know what the whole is.

Pink splits the whole into equal parts.

There are two parts so I can say half.

So one pink is one half.



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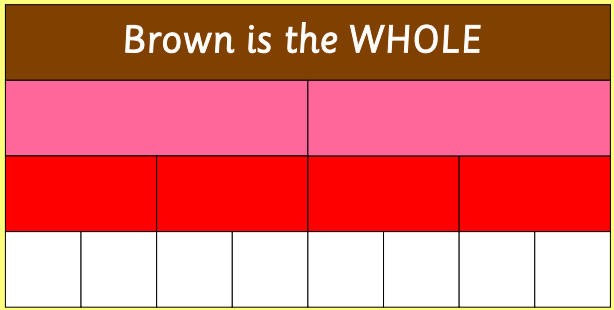
Natalia said:

Red is one quarter.



Picture Puzzles

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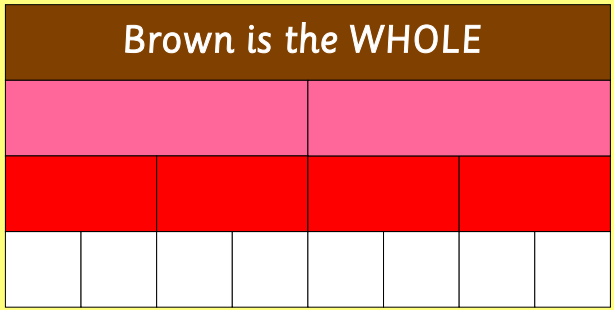
Natalia said:

Red is one quarter.

Len said:

How do you know?



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Natalia said:

Red is one quarter.

Len said:

How do you know?

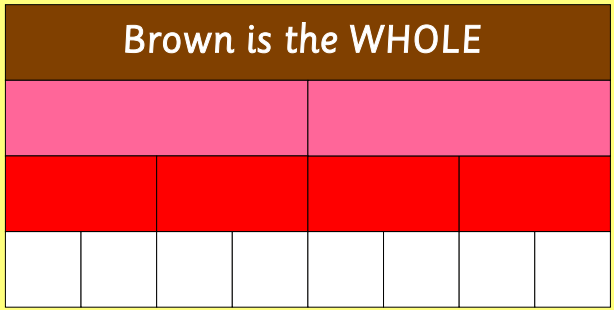
Natalia answered:

I know what the whole is.

Red splits the whole into equal parts.

There are four parts so I can say quarter.

So one red is one quarter.



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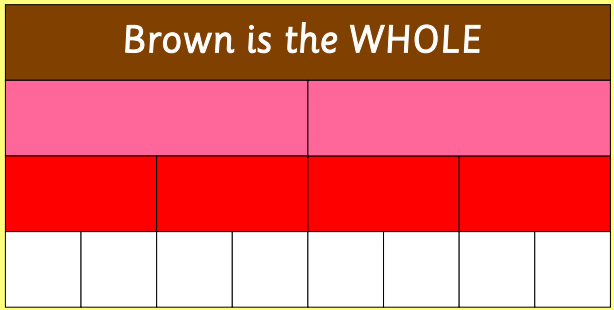

Natalia said:

Red is one quarter.

Len said:

How do you know?

Natalia answered:

I know what the whole is.

Red splits the whole into equal parts.

There are four parts so I can say quarter.

So one red is one quarter.

Natalia also said:

And I can call it one fourth too.

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In your journal
write what Natalia and Len
said about white.

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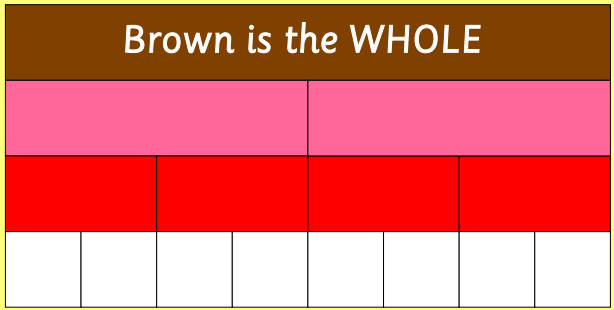
In your journal explain how to find another fraction name for:



(a) one half
(b) 3 quarters
(c) two eighths
(d) 1 eighth + 5 eighths
(e) 1 half + 1 fourth
(f) one half + 1 quarter - 3 eighths
(g) 2 x one fourth
(h) three quarters + $^{1}/_{2}$
(I) half of $^{1}/_{4}$

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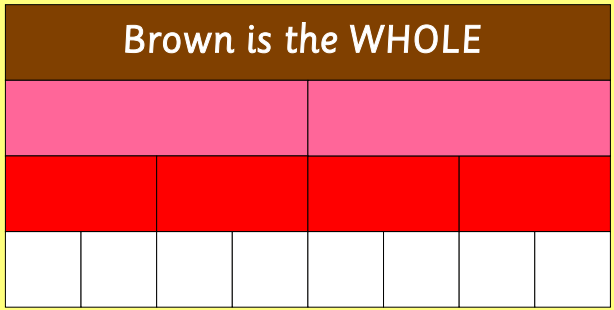
Find the simplest fraction that completes the whole and write an equation in your journal. Example:

Start with $^{3}/_{4}$.
Complete with $^{1}/_{4}$.
$^{3}/_{4} + {}^{1}/_{4} = 1$

(a) Start with $^{1}/_{4}$
(b) Start with $^{1}/_{2}$
(c) Start with $^{1}/_{8}$
(d) Start with $^{3}/_{8}$
(e) Start with $^{2}/_{4}$
(f) Start with $^{7}/_{8}$



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

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more

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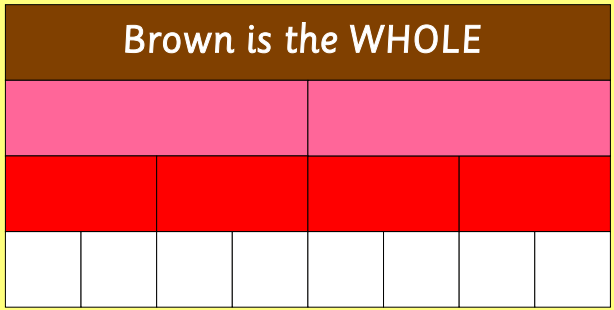
Choose any *three rods* from the mat.

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 eighth + one half - one fourth = 3 eighths

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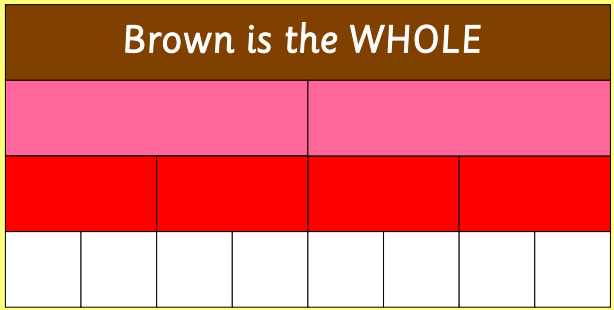
Choose any *four rods* from the mat.

Find at least one more fraction name for them.



Record your rods and an equation in your journal.

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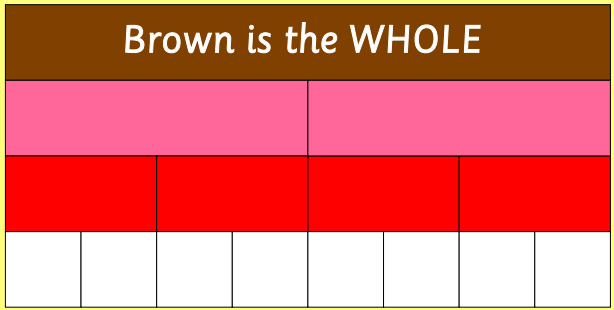
Go Crazy

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



When the time stops check each other's work.

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even more

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Suppose you had to work out this equation.

$^{3}/_{4} - {}^{1}/_{3} =$

What would you choose as your whole?

Explain why.

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THE END...

...OR IS IT?

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