Picture Puzzles

ROD MATS

BLUE IS WHOLE
(Ninths)

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.

Picture Puzzles

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

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

Blue is the WHOLE

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

Blue 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 blue.

Blue 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*.

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

Blue 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 Blue now.

...

Then check on the next slide.

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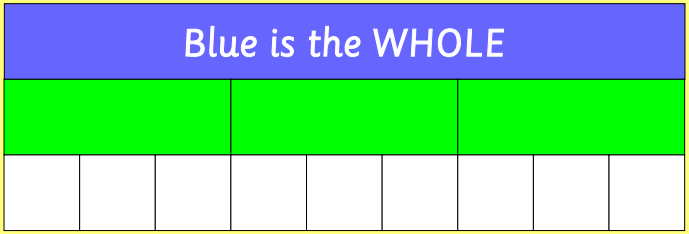

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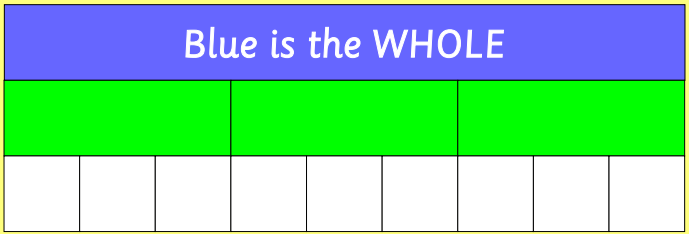

Blue is the whole.
Each rod row shows the whole split into equal parts.
Equal parts of a whole are called Fractions.

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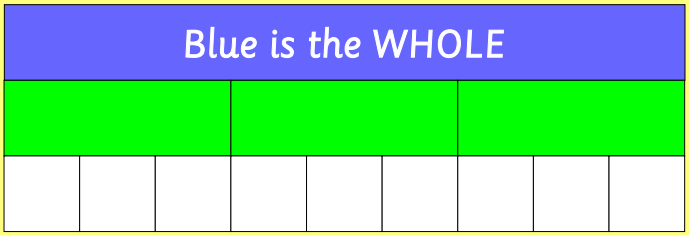

Blue is the whole.
Each rod row shows the whole split into equal parts.
Equal parts of a whole are called Fractions.

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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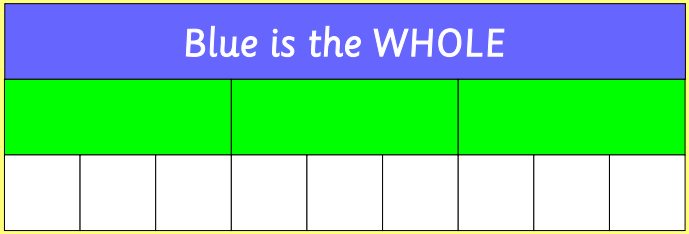
Zhu said:

Light green is one third.



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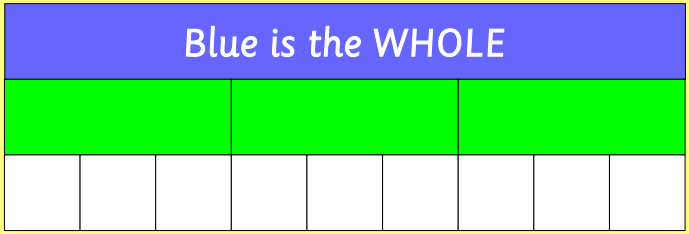
Zhu said:

Light green is one third.

Aran said:

How do you know?



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Zhu said:

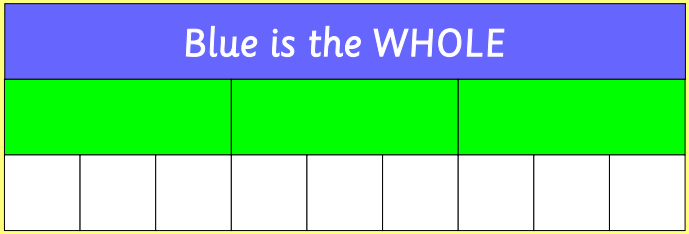
Light green is one third.

Aran said:

How do you know?

Zhu answered:

I know what the whole is…



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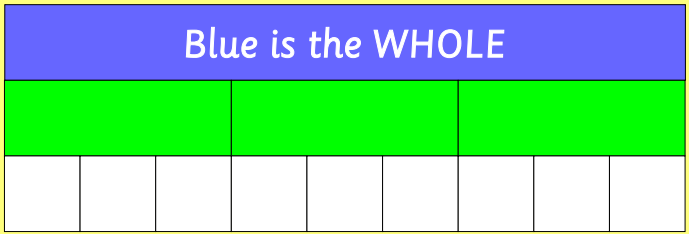
Zhu said:

Light green is one third.



Aran said:

How do you know?

Zhu answered:

I know what the whole is.

Light green splits the whole into equal parts...

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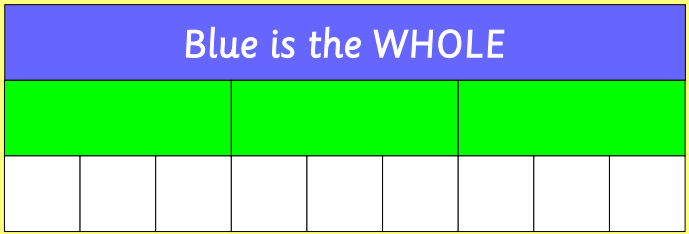
Zhu said:

Light green is one third.



Aran said:

How do you know?

Zhu answered:

I know what the whole is.

Light green splits the whole into equal parts.

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

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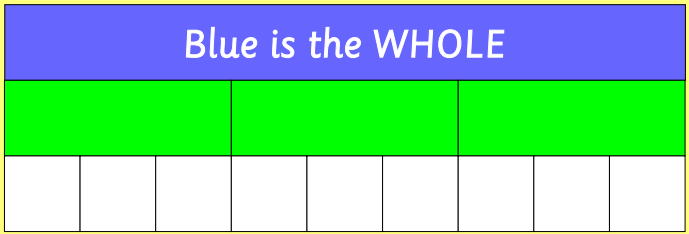

Zhu said:

Light green is one third.

Aran said:

How do you know?

Zhu answered:

I know what the whole is.

Light green splits the whole into equal parts.

There are three parts so I can say third.

So one light green is one third.

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In your journal
write what Zhu and Aran
said about white.

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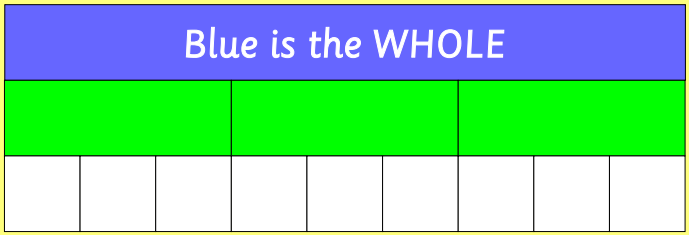
In your journal explain how to find another fraction name for:



(a) one third
(b) 2 thirds
(c) three thirds
(d) 1 ninth + 5 ninths
(e) 1 third + 3 ninths
(f) two thirds + 4 ninths - 1 whole
(g) 9 x one ninth
(h) two thirds + $^{4}/_{9}$
(I) half of $^{2}/_{3}$

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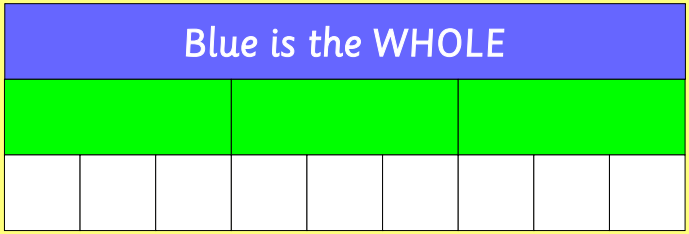
Find the simplest fraction that completes the whole and write an equation in your journal. Example:

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

(a) Start with $^{1}/_{3}$
(b) Start with $^{2}/_{9}$
(c) Start with $^{3}/_{9}$
(d) Start with $^{4}/_{9}$
(e) Start with $^{8}/_{9}$
(f) Start with $^{6}/_{9}$



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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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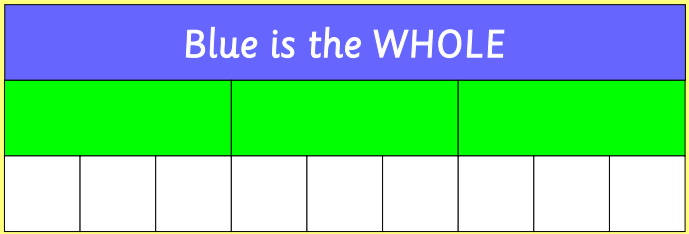
Choose any *three rods* from the mat.



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 third + one third - one ninth = 5 ninths

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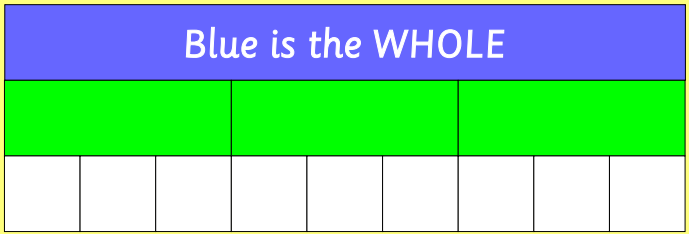
Choose any *four rods* from the mat.



Find at least one more fraction name for them.

Record your rods and an equation in your journal.

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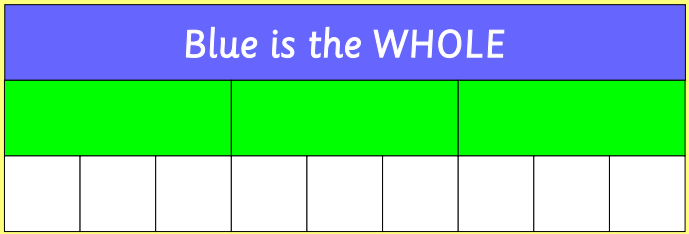
Go Crazy

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.

$^{1}/_{2} - {}^{1}/_{6} =$

What would you choose as your whole?

Explain why.

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THE END...

...OR IS IT?

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