Picture Puzzles

ROD MATS

ORANGE IS WHOLE
(Tenths)

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

Picture Puzzles

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

Picture Puzzles

1. A rod mat starts with a whole.

Picture Puzzles

Picture Puzzles

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

Picture Puzzles

Picture Puzzles

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

Orange is the WHOLE

Picture Puzzles

Picture Puzzles

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

Orange is the WHOLE

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

Picture Puzzles

Picture Puzzles

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

Orange 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

Picture Puzzles

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

Orange 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*.

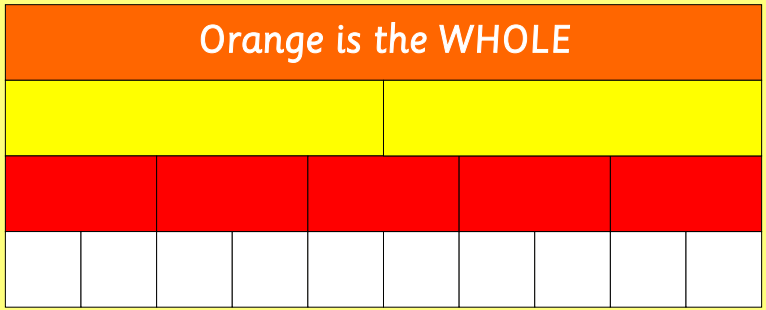
Make the rod mat for Orange now.

...

Then check on the next slide.

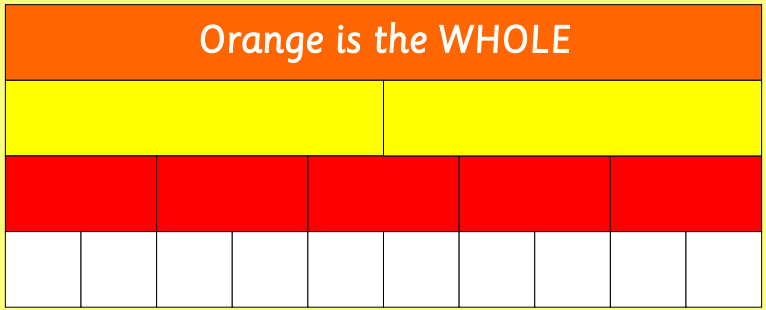
Picture Puzzles

Picture Puzzles



Picture Puzzles

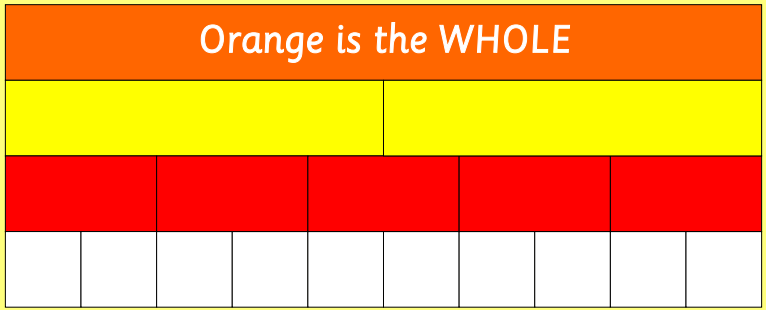
Picture Puzzles



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

Picture Puzzles

Picture Puzzles



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

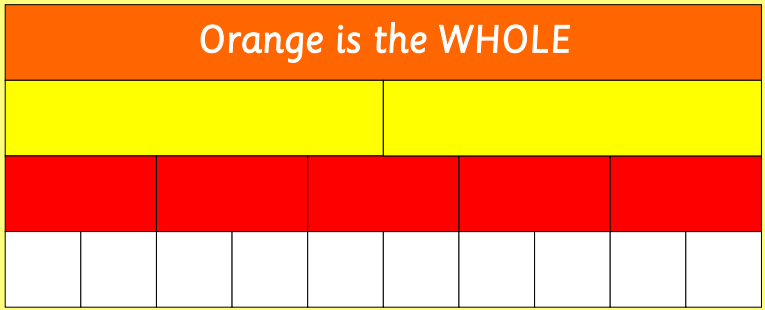
Choose one rod of each colour.
Tell each other its fraction name.
Tell each other how you know.
Then check with the next slides.

Picture Puzzles

Picture Puzzles

Grant said:

Yellow is one half.



Picture Puzzles

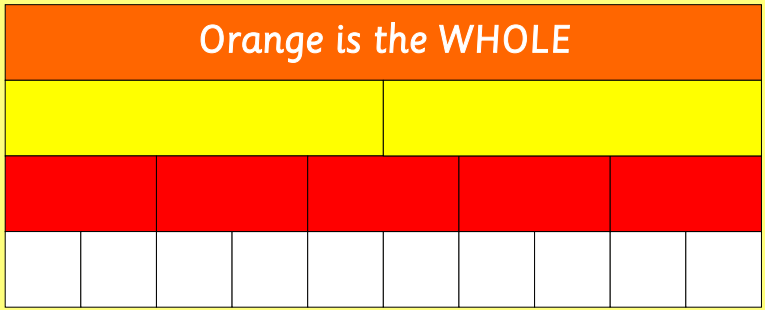
Picture Puzzles

Grant said:

Yellow is one half.

Yoko said:

How do you know?



Picture Puzzles

Picture Puzzles

Grant said:

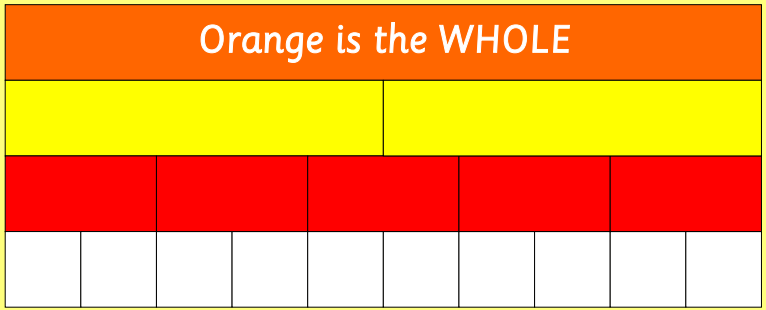
Yellow is one half.

Yoko said:

How do you know?

Grant answered:

I know what the whole is...



Picture Puzzles

Picture Puzzles

Grant said:

Yellow is one half.

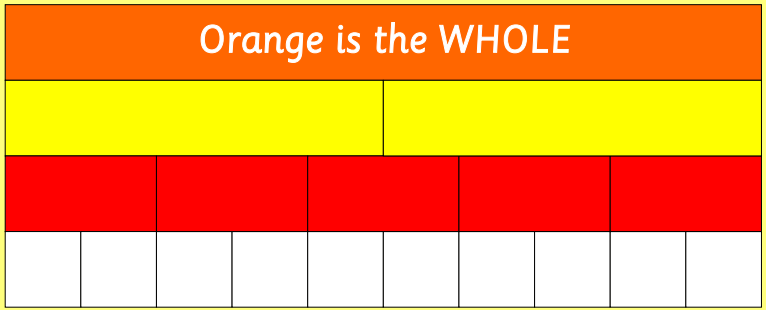
Yoko said:

How do you know?

Grant answered:

I know what the whole is.

Yellow splits the whole into equal parts...



Picture Puzzles

Picture Puzzles

Grant said:

Yellow is one half.

Yoko said:

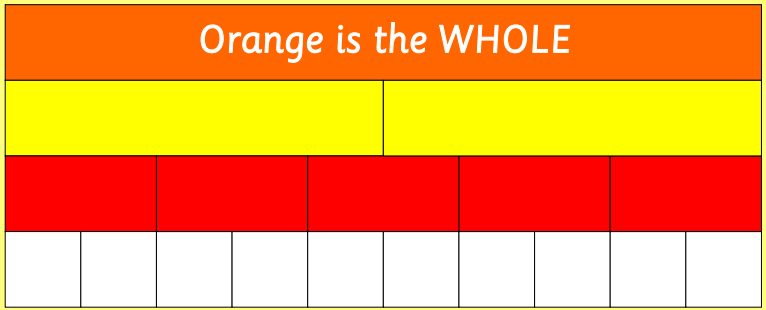
How do you know?

Grant answered:

I know what the whole is.

Yellow splits the whole into equal parts.

There are two parts so I can say half...



Picture Puzzles

Picture Puzzles

Grant said:

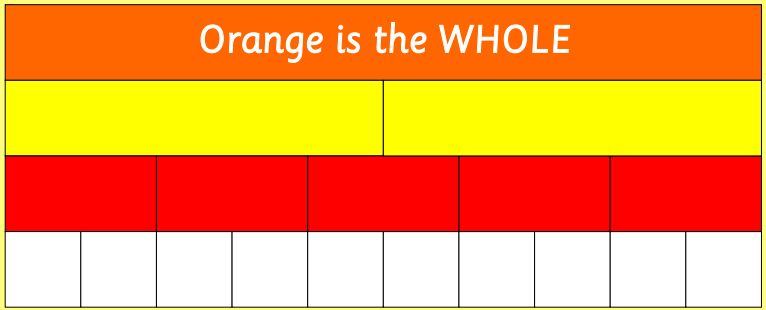
Yellow is one half.

Yoko said:

How do you know?

Grant answered:

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

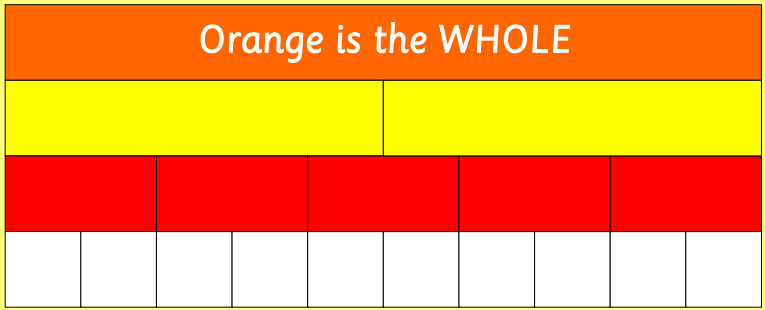


Picture Puzzles

Picture Puzzles

Yoko said:

Red is one fifth.



Picture Puzzles

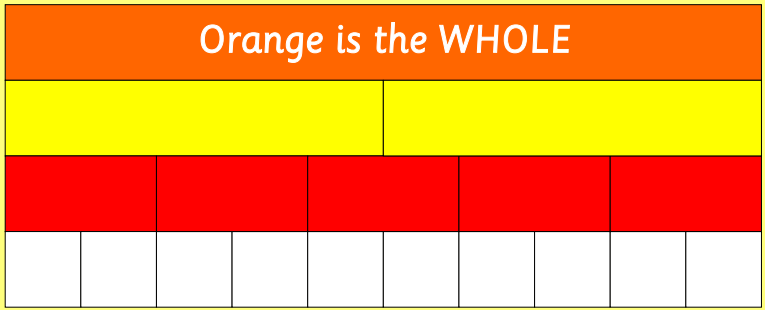
Picture Puzzles

Yoko said:

Red is one fifth.

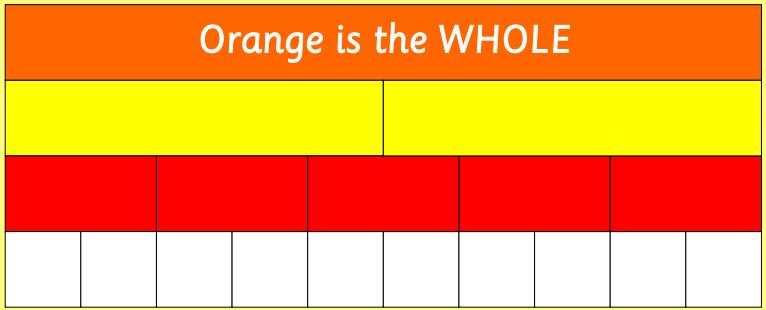
Grant said:

How do you know?



Picture Puzzles

Picture Puzzles



Yoko said:

Red is one fifth.

Grant said:

How do you know?

Yoko answered:

I know what the whole is.
Red splits the whole into equal parts.
There are five parts so I can say fifth.
So one red is one fifth.

Picture Puzzles

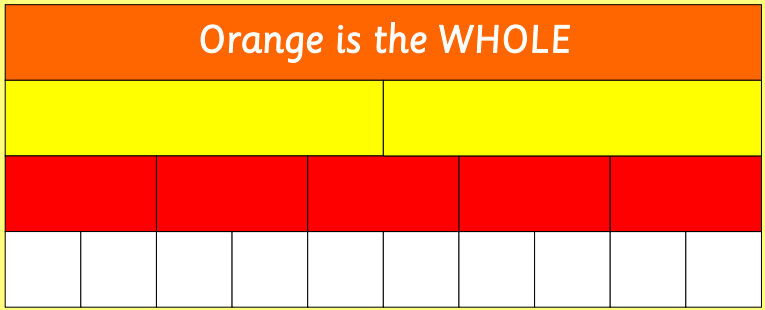
Picture Puzzles

In your journal
write what Yoko and Grant
said about white.

Picture Puzzles

Picture Puzzles

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



(a) one half
(b) 3 fifths
(c) eight tenths
(d) 1 tenth + 5 tenths
(e) 1 half + 1 fifth
(f) one half + 2 fifths - 3 tenths
(g) 2 x one fifth
(h) three fifths + $^{1}/_{2}$
(I) half of $^{1}/_{5}$

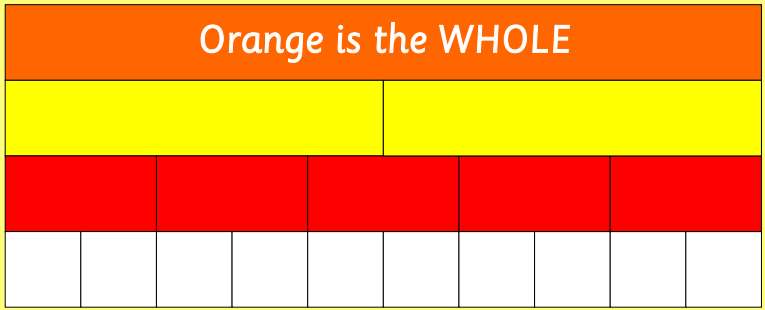
Picture Puzzles

Picture Puzzles

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

Start with $^{2}/_{5}$.
Complete with $^{3}/_{5}$.
$^{2}/_{5} + {}^{3}/_{5} = 1$

(a) Start with $^{1}/_{2}$
(b) Start with $^{1}/_{5}$
(c) Start with $^{1}/_{10}$
(d) Start with $^{7}/_{10}$
(e) Start with $^{3}/_{5}$
(f) Start with $^{4}/_{5}$



Picture Puzzles

Picture Puzzles

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

Picture Puzzles

Picture
Puzzles

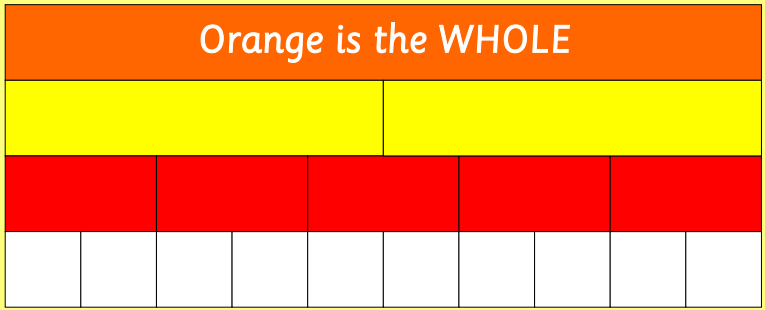
more

Picture
Puzzles

Picture Puzzles

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:

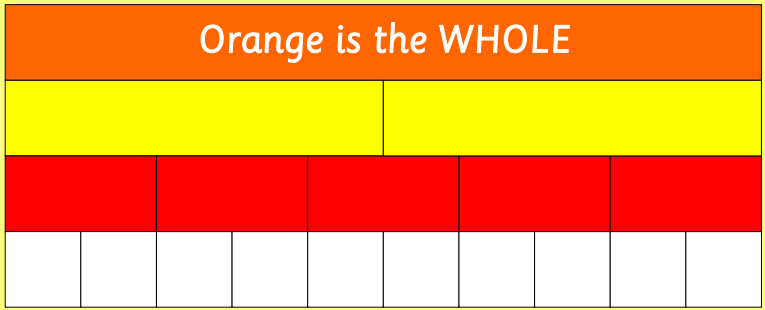
one half + one fifth - one tenth = 3 fifths

Picture Puzzles

Picture Puzzles

Choose any *four rods* from the mat.

Find at least one more fraction name for them.



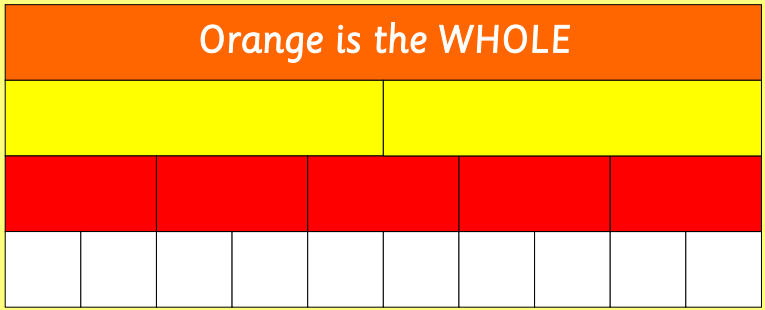
Record your rods and an equation in your journal.

Picture Puzzles

Picture Puzzles

Go Crazy

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



When the time stops check each other's work.

Picture Puzzles

Picture
Puzzles

even more

Picture
Puzzles

Picture Puzzles

Suppose you had to work out this equation.

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

What would you choose as your whole?

Explain why.

Picture Puzzles

Picture
Puzzles

THE END...

...OR IS IT?

Picture
Puzzles