2 The property of ratios

Review

1.What's the value of the following ratios：

(1) $\frac{9}{7} : \frac{3}{5} =$ _____

(2) 5 feet : 15 inches=_____

Review

2.Operation: $0.4 \div 0.25$

$$0.4 \div 0.25 = (0.4 \times 4) \div (0.25 \times 4) = 1.6 \div 1 = 1.6$$

3.Fill in the brackets:

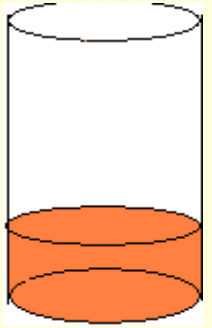
$$(1)\ \frac{2}{3} = \frac{2 \times 5}{3 \times (\quad)} = \frac{10}{(\quad)} \qquad (2)\ \frac{21}{28} = \frac{21 \div (\quad)}{28 \div 7} = \frac{(\quad)}{4}$$

4.What's the relationship between ratio , fractions and division?

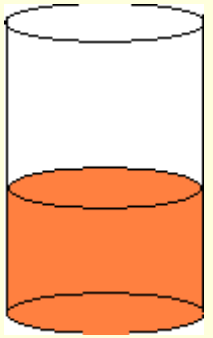
$$a : b = \frac{a}{b} = a \div b$$

Thinking:

Poppy mixed 10g of concentrated fruit juice powder with 100g of water



Amelia dissolved 20g of the same concentrated fruit juice powder with 200g of water



Do the two fruit drinks taste the same?

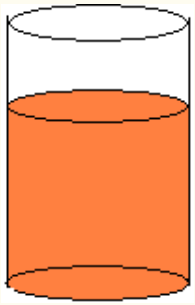
Why?

Thinking

Since

$10:100=10\div100=0.1$

$20:200=20\div200=0.1$



40g powder
400g water?

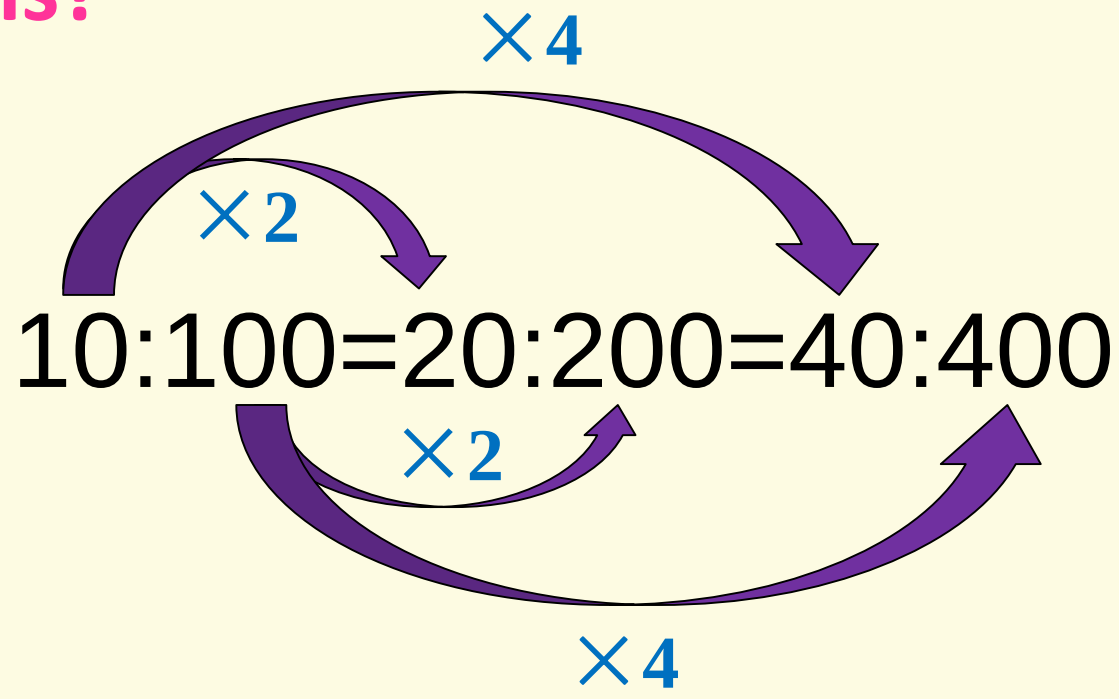
then

$10:100=20:200$

Their preceding and latter items are different, but they are equivalent ratios.

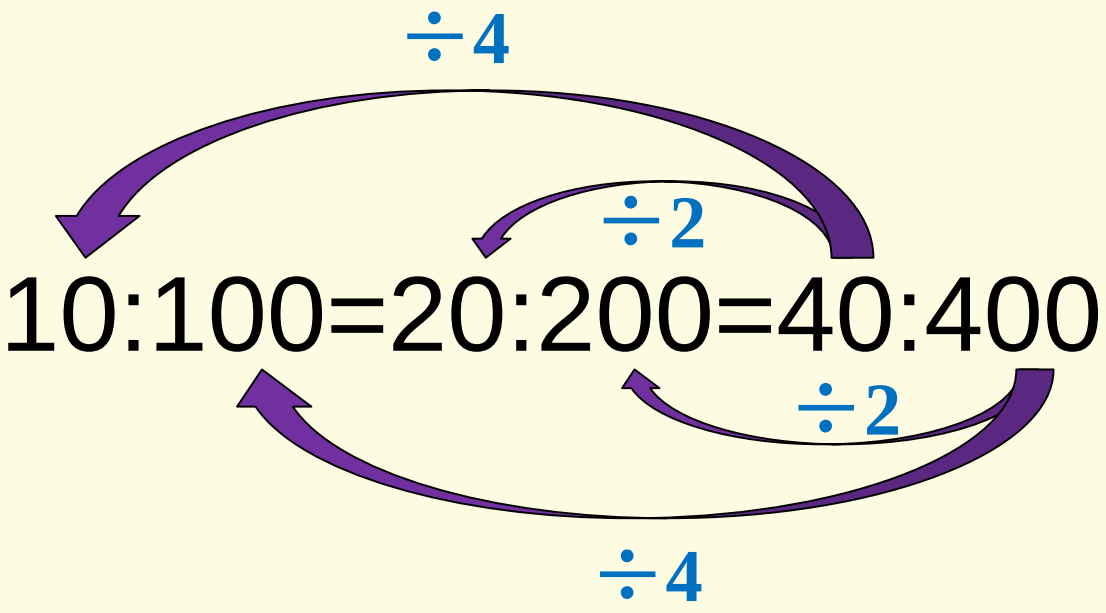
Thinking

From left to right, can you describe any patterns?



Thinking

From right to left, can you describe any regular patterns ?



The basic property of ratios

If you multiply or divide both the preceding item and the latter item of a ratio by the same number(except 0),the ratio remains the same.

$$a:b=ak:bk=\frac{a}{k}:\frac{b}{k}(k\neq 0)$$

True or False

（1）2 : 3=6 : 4

（2）2 : 3=6 : 3

(3) $\frac{2}{3} = \frac{2+3}{3+3} = \frac{5}{6}$

(4) $\frac{15}{27} = \frac{15 \div 3}{27 \div 3} = \frac{5}{9}$

Write down the correct number

（1）12 : 15=36 : _____

（2）36 : 24= _____ : 2

（3）3 : 4= _____ : 100

（4）16 : 500= _____ : 100

What's the effect of the property?

36 : 24=3 : 2

We can simplify ratios into integer values in their lowest terms.

The simplest integer ratio means that both the preceding item and the latter item of the ratio are integers and co-prime.

Example 1

Find the simplest integer ratios

(1) 3 : 4 (2) 18 : 27 (3) 0.75 : 2 (4) $\frac{12}{27}$

Ex1：

Simplify these ratios

(1) 48:12 (2) 0.45:0.25 （3） $\frac{88}{132}$

Example 2

Simplify the ratio

$$2\frac{1}{4}:0.5$$

EX2: (1) $1\frac{1}{5}:\frac{3}{4}$ (2) $2\frac{3}{5}:3.9$

Example 3

1.25h:1h25min

EX3: **(1) 0.4h:1h12min**

(2) 625grams:1.75kilograms

Application

In the ratio 8:9, if the preceding term is increased by 16, then in order to make the ratio unchanged, the latter term should be( )

A. increased by 16

B. multiplied by 3

C. unchanged

D. uncertain

Similar triangles

Summary

What have we learned today?

(1)The basic property of ratio

(2)How to simplify the ratio to the simplest form.