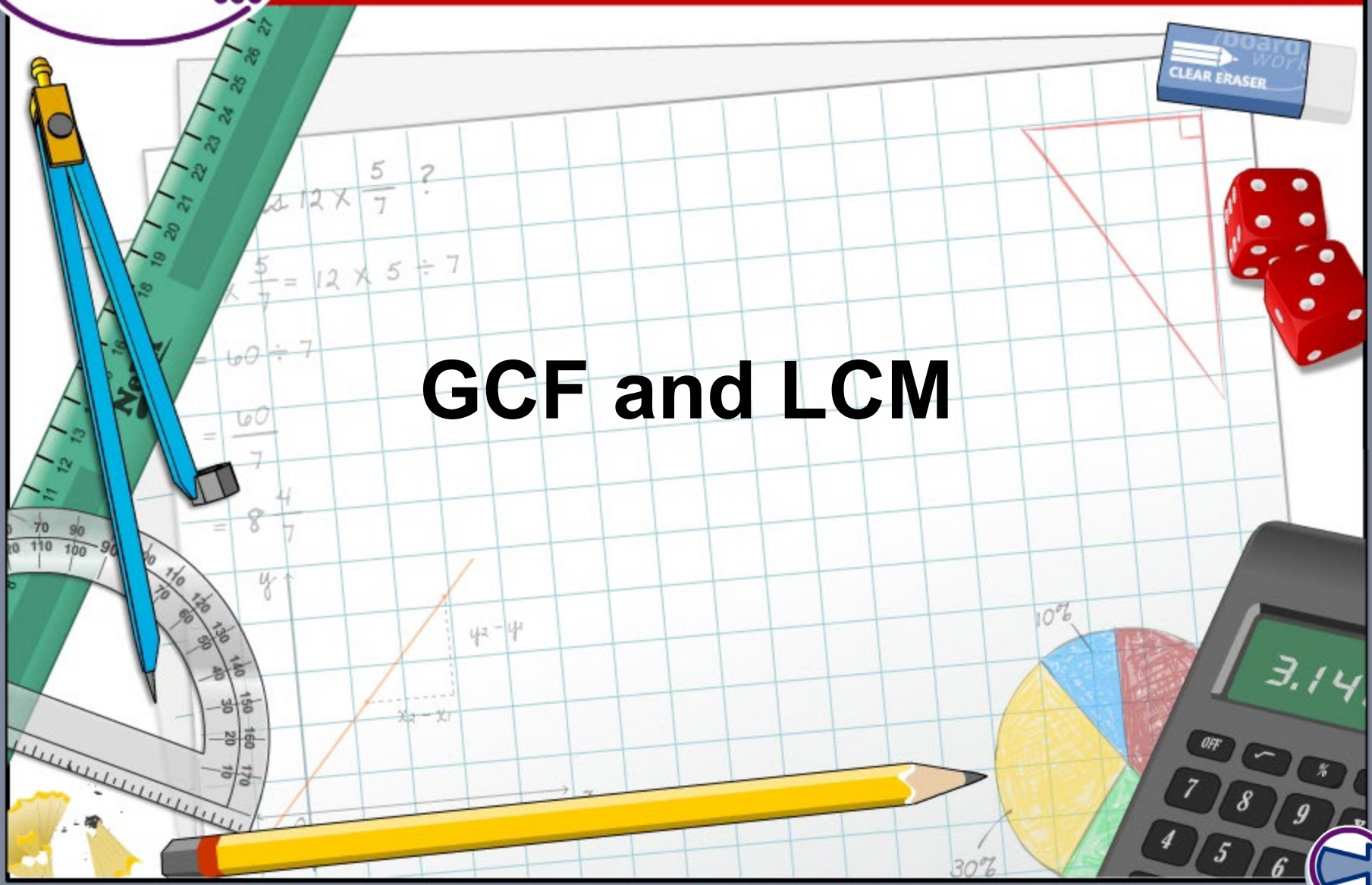


GCF and LCM

Information

Common core icons

This icon indicates a slide where the Standards for Mathematical Practice are being developed. Details of these are given in the Notes field.

Slides containing examples of mathematical modeling are marked with this stamp.

This icon indicates an opportunity for discussion or group work.

The **Standards for Mathematical Practice** outlined in the Common Core State Standards for Mathematics describe varieties of expertise that mathematics educators at all levels should seek to develop in their students.

These are:

1) Make sense of problems and persevere in solving them.

2) Reason abstractly and quantitatively.

3) Construct viable arguments and critique the reasoning of others.

4) Model with mathematics.

5) Use appropriate tools strategically.

6) Attend to precision.

7) Look for and make use of structure.

8) Look for and express regularity in repeated reasoning.

This icon indicates that the slide contains activities created in Flash. These activities are not editable.

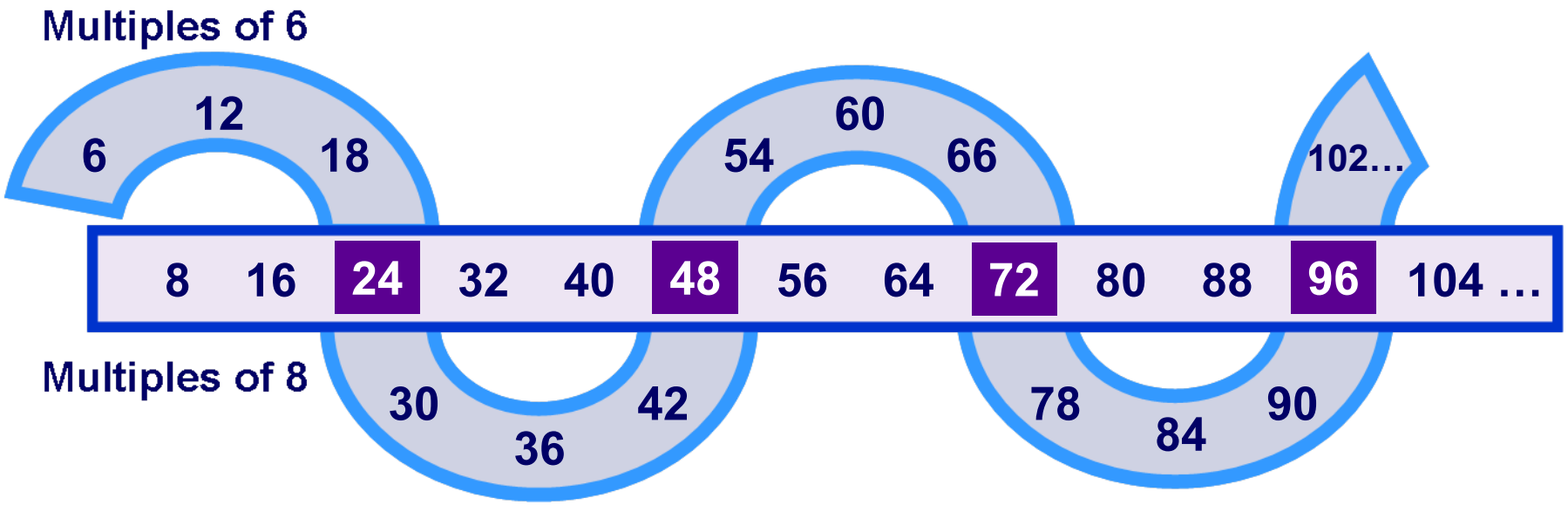
This icon indicates teacher's notes in the Notes field.

Common multiples

What is a multiple?

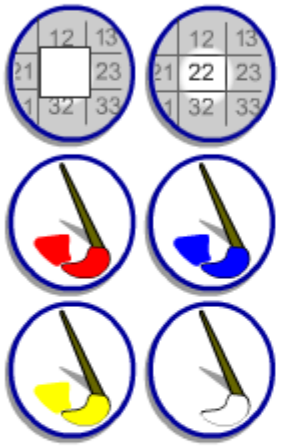
A **multiple** of a number is the product of the number and any nonzero whole number.

Can you list the multiples of 8 and 6?



Multiples on a hundred square

Press to highlight the numbers on the hundred square.



Find and select:

multiples of

0

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

The least common multiple

The **least common multiple** (or **LCM**) of two numbers is the smallest number that is a multiple of both the numbers.

We can find this by writing down the first few multiples for both numbers until we find a number that is in both lists.

For example:

Multiples of 4 are : 4, 8, 12, 16, 20, 24, . . .

Multiples of 6 are : 6, 12, 18, 24, 30, . . .

The LCM of 4 and 6 is **12**.

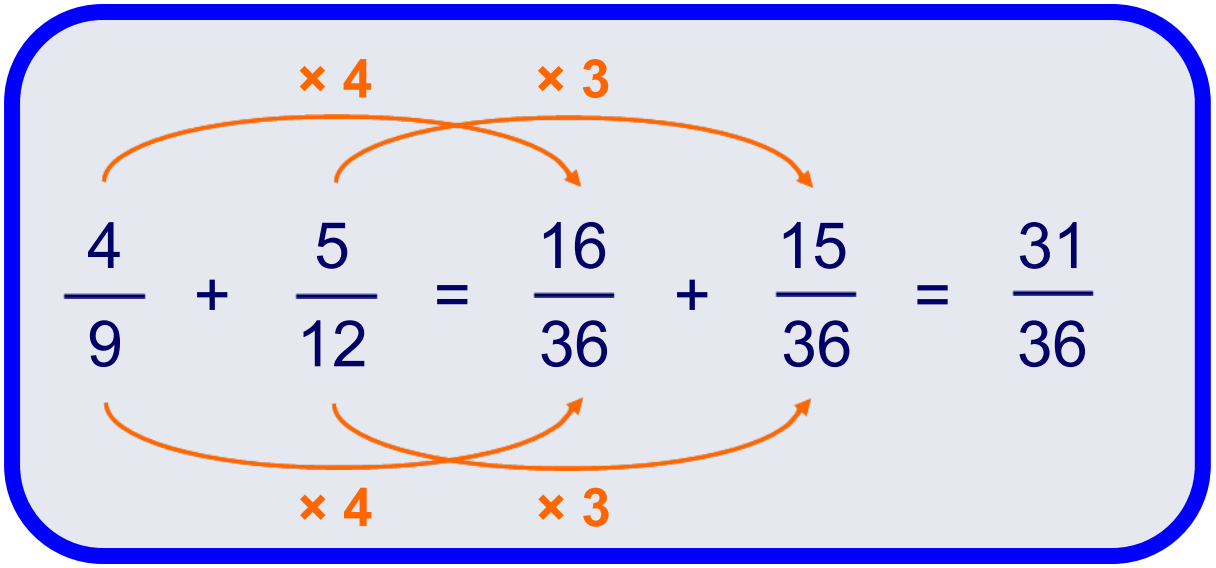
The least common multiple

What sort of calculation requires us to use the LCM?

We use the least common multiple to find a common denominator when adding and subtracting fractions.

Add together $\frac{4}{9}$ and $\frac{5}{12}$.

The LCM of 9 and 12 is 36.



Using LCM in context

MODELING

Mr. Vasquez is buying snacks for his class's field trip. Fruit snacks come in packs of 6 and granola bars come in packs of 5. He wants to have an equal number of granola bars and fruit snacks, with no food left over. How many packs of each should he buy?

How many packs of fruit snacks does Mr. Vasquez need?

6: 6, 12, 18, 24, 30

5 packs

How many packs of granola bars does he need?

5: 5, 10, 15, 20, 25, 30

6 packs

Common factors

What is a factor?

A **factor** is a number that is multiplied by another number to get a product.

Can you list the factors of 24 and 30?

Factors of 24 are : 1, 2, 3, 4, 6, 8, 12, 24.

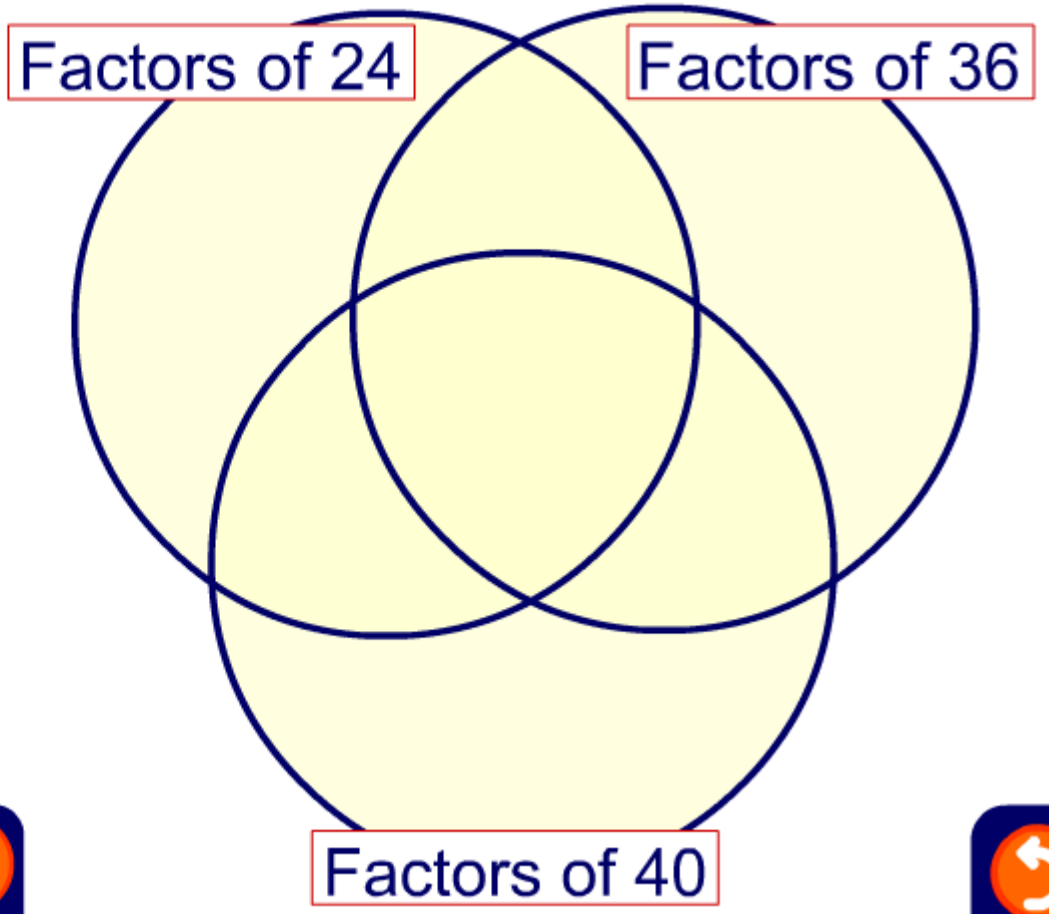
Factors of 30 are : 1, 2, 3, 5, 6, 10, 15, 30.

1, 2, 3 and 6 are all **common factors** of 24 and 30.

Common factor diagram

Drag the numbers into the correct sections.

1	6	11	16
2	7	12	17
3	8	13	18
4	9	14	19
5	10	15	20



The greatest common factor

The **greatest common factor** (or **GCF**) of two numbers is the largest number that is a factor of both numbers.

We can find the greatest common factor of two numbers by writing down all their factors and finding the largest factor in both lists.

For example:

Factors of 36 are : 1, 2, 3, 4, 6, (9), 12, 18, 36.

Factors of 45 are : 1, 3, 5, (9), 15, 45.

The GCF of 36 and 45 is **9**.

The greatest common factor

We can use the **greatest common factor** to simplify fractions.

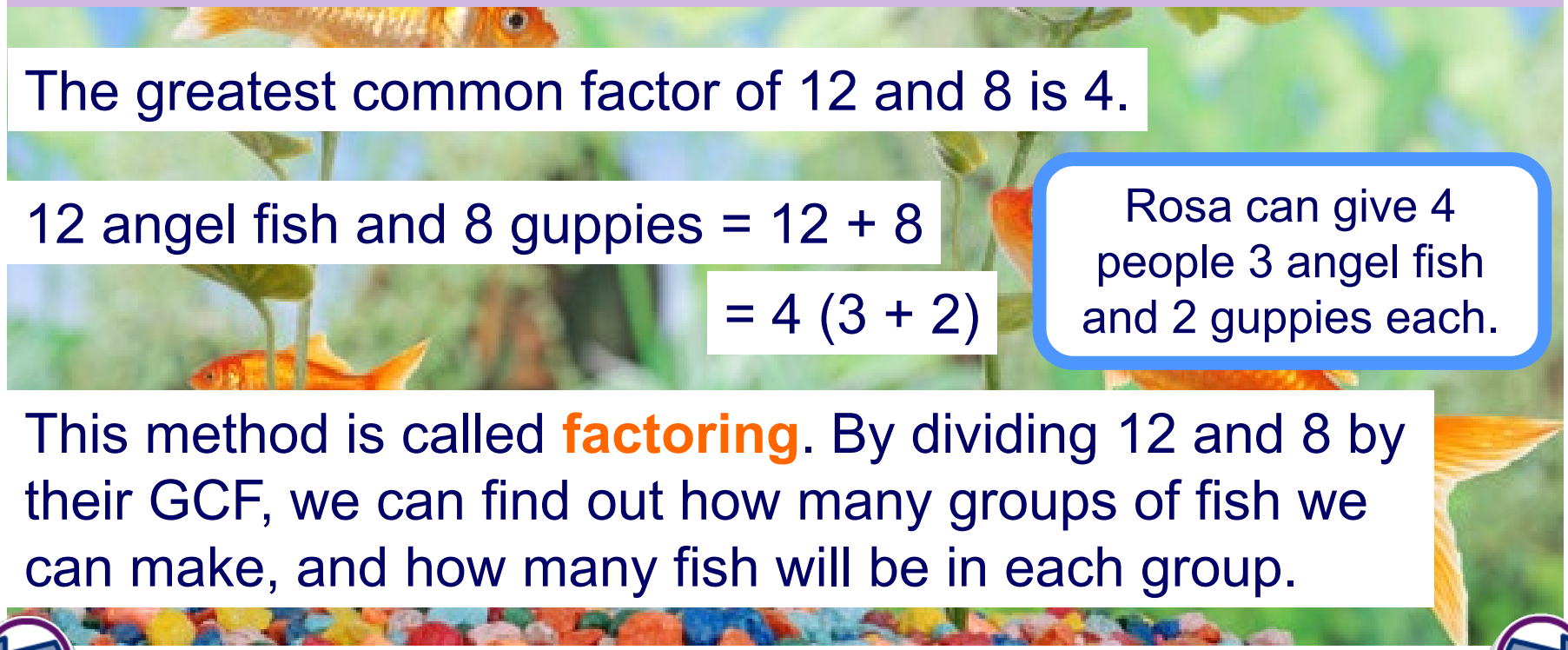
Simplify the fraction $\frac{36}{48}$.

The GCF of 36 and 48 is 12, so we need to divide the numerator and the denominator by 12.

$$\frac{36}{48} \overset{\div 12}{=} \frac{3}{4}$$

Factoring calculations

Rosa is giving away 12 angel fish and 8 guppies. She wants to give each person the same number of angel fish and the same number of guppies. How could Rosa use GCF to figure out how many people she can give her fish to, and how many fish to give each person?



The greatest common factor of 12 and 8 is 4.

12 angel fish and 8 guppies = 12 + 8

= 4 (3 + 2)

Rosa can give 4 people 3 angel fish and 2 guppies each.

This method is called **factoring**. By dividing 12 and 8 by their GCF, we can find out how many groups of fish we can make, and how many fish will be in each group.

GCF or LCM?

Read each word problem and decide whether the question is asking you to find the greatest common factor (GCF) or the least common multiple (LCM).

Press **"start"** to begin.

start

Now find the solution to each question.