Lesson 20. Classwork

NEW MATERIAL

Division is splitting into equal parts or groups. It is the result of "fair sharing".

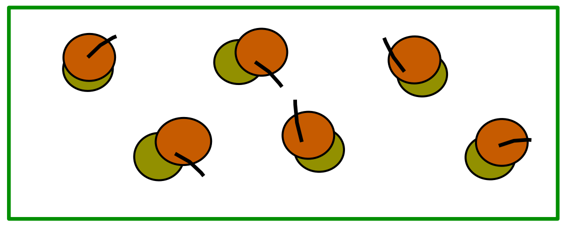
We use the ÷ symbol, or sometimes the / symbol to mean divide:

$12 \div 3 = 4$ or $12 / 3 = 4$

- Dividend: the number being divided – in our case – 12
- Divisor or factor: a number that will divide the dividend – 3
- Quotient: the result of the division – 4

Division vs. multiplication.

a) Write down a product based on the drawing:



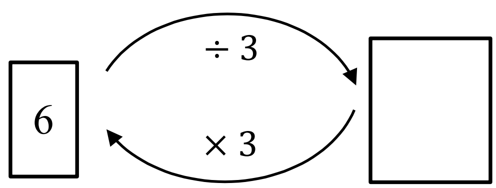
___ × ___ = ___

b) If 6 acorns are divided into 3 equal groups, how many acorns are in each group?

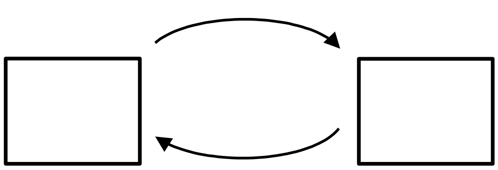
6 ÷ 3 = ___

c) Write down the equalities based on the scheme:

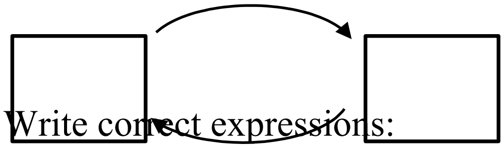
6 ÷ 3 = ___; ___ × ___ = ___



1. The balls were split into groups of 3. Complete the scheme and write the equalities.



___ ÷ ___ = ___



___ ÷ ___ = ___

___ × ___ = ___

2. Write correct expressions:

K increased 5- fold _______________

K increased by 5 ___________________

K decreased 5-fold _________________

K decreased by 5 ___________________

B decreased by 7 ____________

B increased 7-fold _____________

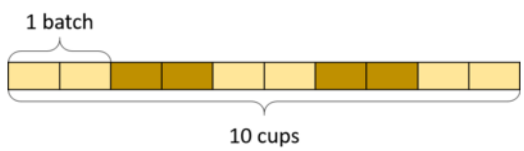
B increased by 7 _______________

B decreased 7-fold ______________

3. For each question draw a diagram, write an expression with division and compute it:

Example: 10 cups of flour make 5 batches of cookies. How many cups of flour in one batch? Here are a diagram and an expression with division that represents this situation:

10÷5=2



a) 6 cups of flour make 3 batches of cupcakes. How many cups of flour in one batch? ____

b) 14 cups of flour make 7 of a batch of bread. How many cups of flour in one batch? ____

4. Dan and Karen are trying to figure out which number could be placed in the box to make this equation true.

$$2 = \square \div 6$$

Dan insists that 12 is the only number that makes the equation true.

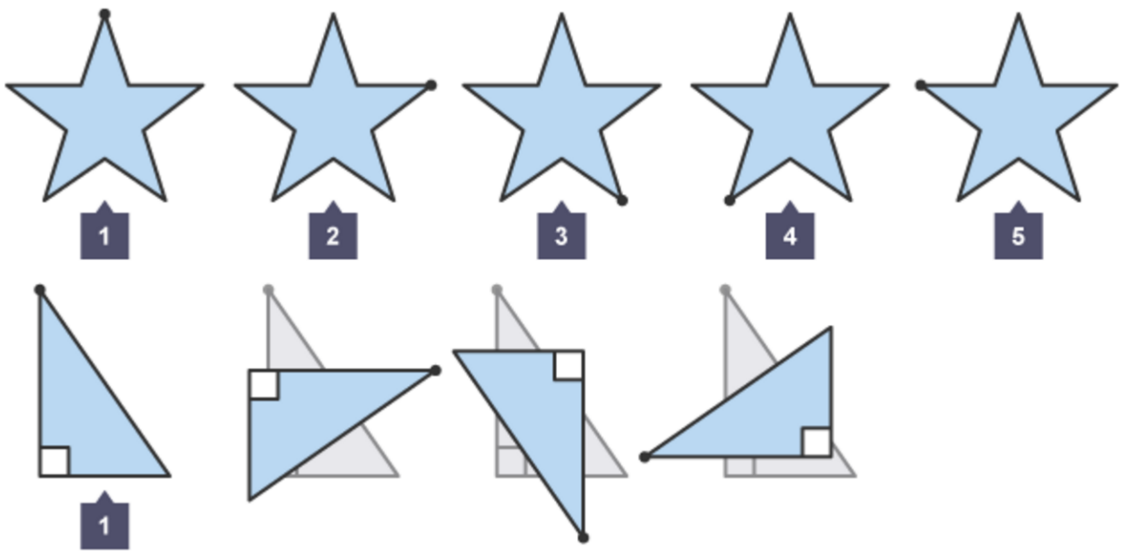
Karen insists that 3 is the only number that makes the equation true.

Who is right? Why? Draw a picture to support your idea.

Rotation Symmetry

If rotating a shape around a central point by some angle doesn't change the shape, we say that this shape has a **Rotational Symmetry**.

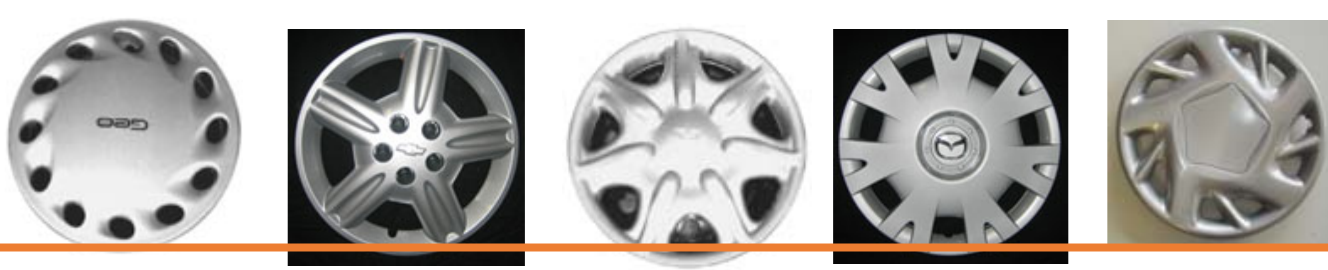
The **order of symmetry** is the number of times an object or shape can be rotated and still look like it did before rotation began.



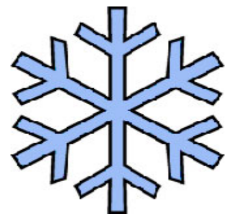
Examples: a) Road signs may possess rotational symmetry:

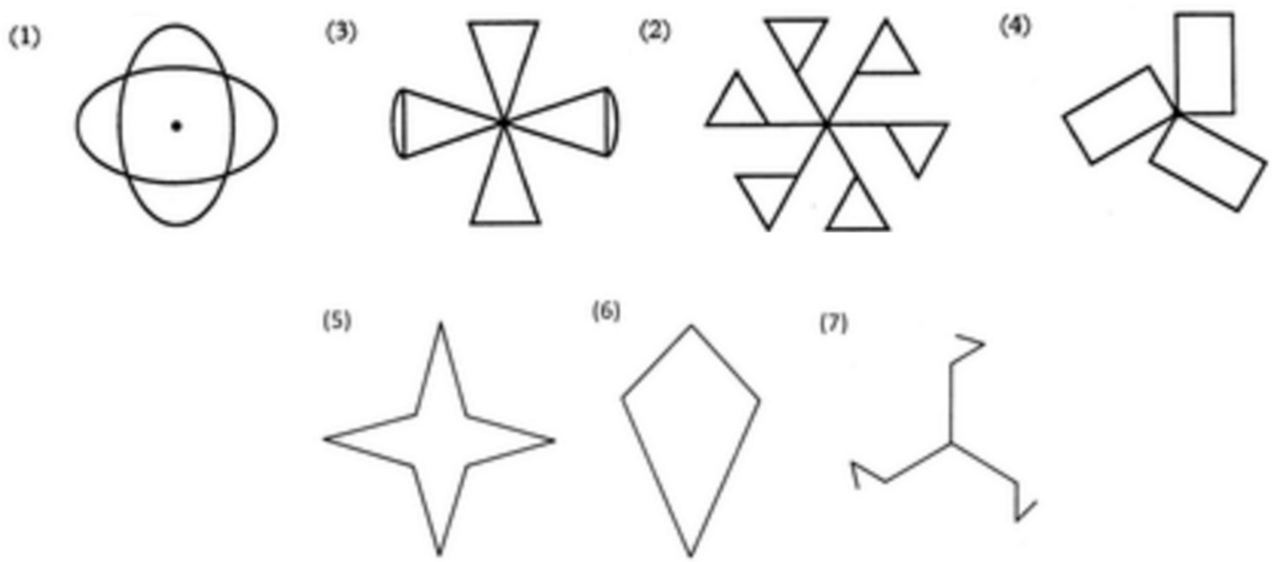
Order 4 Order 2 Order 3 Order1 (No rotational symmetry)

b) Hubcaps may possess rotational symmetry (disregarding the center logo).



5. What is the order of rotational symmetry of the shapes below?





REVI EW

Why do we need parentheses?

When you have a math problem that involves more than one operation—for example, addition and subtraction, or subtraction and multiplication—which operation do you perform first?

<u>Example</u>: $6 - 3\times 2 = ?$

- Do you start with the subtraction $(6 - 3 = 3)$ and then do the multiplication $(3\times 2 = 6)$?

Or you start with the multiplication $(3\times 2 = 6)$ and then subtract $(6 - 3 = 0)$?

How do we work with parentheses?

The part between two parentheses is treated like a SINGLE number.

Removing parentheses.

$$a + (b - c) = a + b - c$$

$$a - (b - c) = a - b + c$$

6. Simplify and solve for x:

x – 6 + 1 = 4

x = ______________________

x = _______

____

x + 11 – (2 + 6) = 14

x= ______________________

x = ______

____

x + 14 – (9 + 2)= 12

x = ______________________

x = _______

____

x – 6 + 8 – 4 + 12 = 20

x = ______________________

x = _______

____

Did you know …

Origins of Parentheses

The symbols themselves first showed up in the late 14th century, with scribes using *virgulae convexae* (also called *half moons*) for a variety of purposes.

By the end of the 16th century, the *parentheses* (from the Latin "insert beside") had begun to assume their modern role.

Early occurrence of parentheses in math are found in the manuscript edition of R. Bombelli's Algebra (about 1550)


Leonhard Euler (1707-1783)

Leonard Euler contributed vastly toward accustoming mathematicians to use parentheses. Euler was one of the most eminent mathematicians of the 18th century, and is held to be one of the greatest in history. He is also widely considered to be the most prolific mathematician of all time. He wrote more than 500 books and papers during his lifetime, more than anybody in the field. He spent most of his adult life in St. Petersburg, Russia, and in Berlin, then the capital of Prussia.