Algorithm – a set of step-by-step directions for carrying out computation, such as addition, subtraction, multiplication, and division

Example 348 + 177 = ?

	100s	10s	1s
	3	4	8
+	1	7	7

		100s	10s	1s
Add the 100s.	300 + 100 →	4	0	0
Add the 10s.	40 + 70 →	1	1	0
Add the 1s.	8 + 7 →		1	5
Add the partial sums.	400 + 110 + 15 →	5	2	5

348 + 177 = 525

Divided by ($\div$) – symbol in a math sentence that means the number that a group of objects or another number needs to be divided by

$$16 \div 2$$

means

to divide 16 into 2 groups

Division – a mathematical operation used to break a number or a number of objects into smaller groups; the opposite of multiplication

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$$16 \div 2$$

means

to divide 16 into 2 groups

X X X X   X X X X

X X X X   X X X X

Fact Family/Number Family – a set of related arithmetic facts linking two inverse operations

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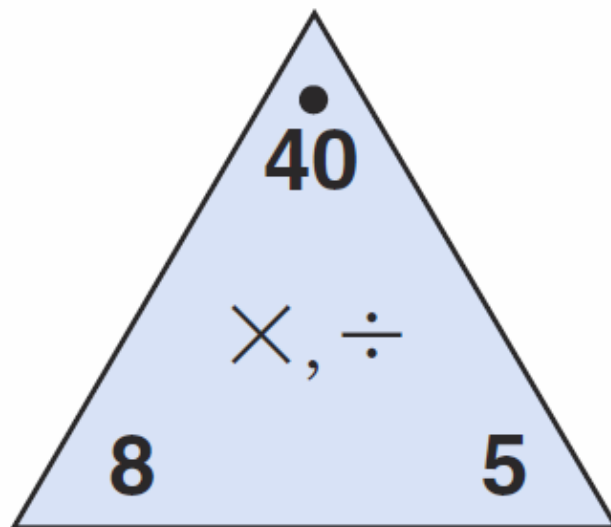
Fact Family

5 x 2 = 10 $10 \div 2 = 5$

2 x 5 = 10 $10 \div 5 = 2$

Factor – each of the two or more numbers in a product; as a verb, it also means to represent a number as a product of factors

factors   product

$$8 * 6 = 48$$

Fact Power – the ability to automatically recall basic arithmetic facts

Per (For Each or In Each) – means "for each" or "in each"

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7 Days *per* week = 7 days in each week

2 slices *per* person = 2 slices for each person

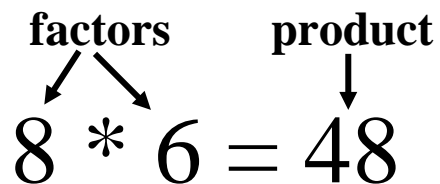**3 balls per package = 3 balls in each package**

Multiplication/Division Diagram – a diagram used to model situations in which a total number is made up of equal-size groups

rows	chairs per row	chairs in all
15	25	?

Multiplication Fact – the product of two 1-digit numbers

$$6 * 7 = 42$$

Product – the result of multiplying two numbers, called factors

factors   product

$$8 * 6 = 48$$

Quotient – the result of dividing one number by another number. The "answer" for division

quotient

quotient

quotient

$$35 / 5 = 7 \qquad 40 \div 8 = 5 \qquad 12 \overline{)\, 36}^{\;3}$$

Remainder – the amount left over when one number is divided by another number.

remainder

remainder

remainder

$$35 / 4 = 8 \text{ R}3 \qquad 40 \div 9 = 6 \text{ R}4 \qquad 10 \overline{)\, 36}^{\;3 \text{ R}6}$$

Rate Multiplication Stories – story problems in which the number of groups and the number of objects in each group are known, and the total number of objects all together needs to be found
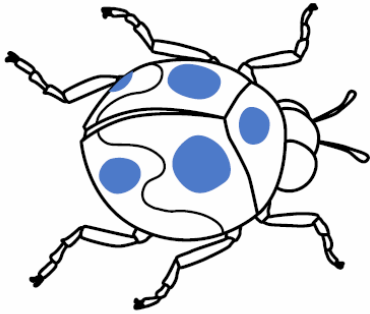
Has 6 legs

Four insects are on a flower. How many legs in all?

Remainder – the amount left over when one number is divided by another number.

remainder

remainder **remainder**

3 R6

$35 / 4 = 8$ R3 $40 \div 9 = 6$ R4 $10 \overline{)\, 36}$

Square (of a number) – a product of two identical factors

| 4 * 4 = 16 | 3 * 3 = 9 | 2 * 2 = 4 |

Trade-First Subtraction – a subtraction algorithm in which all necessary trades between places in the numbers are done before any subtractions are carried out

Example Subtract 275 from 463 using the trade-first method.

100s	10s	1s
4	6	3
− 2	7	5

Look at the 1s place. You cannot remove 5 ones from 3 ones.

100s	10s	1s
	5	13
4	6̸	3̸
− 2	7	5

So trade 1 ten for 10 ones. Now look at the 10s place. You cannot remove 7 tens from 5 tens.

100s	10s	1s
	15	
3	5̸	13
4̸	6̸	3̸
− 2	7	5
1	8	8

So trade 1 hundred for 10 tens. Now subtract in each column.

463 − 275 = 188

Turn-around Rule for Multiplication – a rule for solving a multiplication problem based on the Commutative Property; if you know one multiplication fact, you can figure out the other

If you know 6 x 3 = 18 . . .

then you know 3 x 6 = 18

If you know 6 * 8 = 48 . . .

then you know 8 * 6 = 48