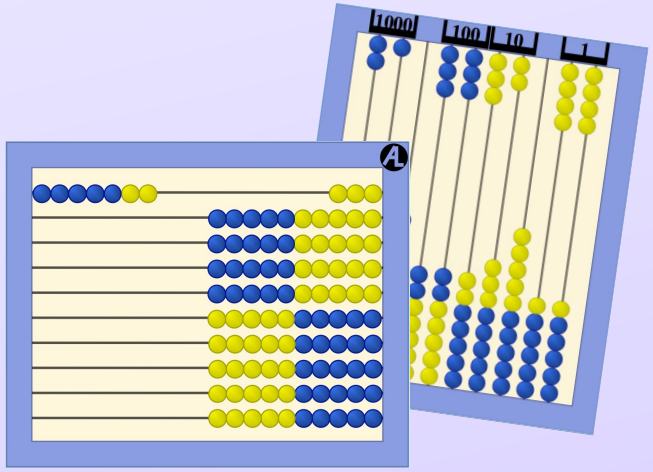
Multiplication without Flashcards or Timed Tests? Thanks, RightStart!



info@RightStartMath.com

Multiplication and Division

- Multiplication and division is often the mathematical downfall for so many children.
- Attempts have been made to solve this by focusing on sheer memorization.
- They struggle to apply the knowledge to new situations and are frequently overwhelmed.
- This results in frustration, confusion, and an aversion to math.

Multiplication and Division

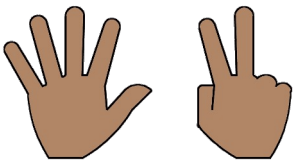
- We know that a deep understanding of concepts removes anxiety.
- Understanding lessens the burden of memorizing.
- Understanding makes advanced math easier to grasp.
- Math becomes more enjoyable!
- We need to focus on understanding!

Solution for Success

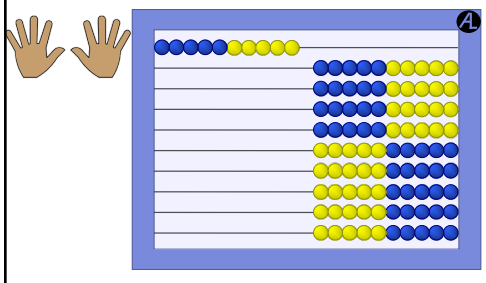
- Foundation of subitizing
- Strategies to visualize the facts
- Practice and apply with games

Subitizing

- Subitizing is quick recognition of quantity without counting.



Subitizing

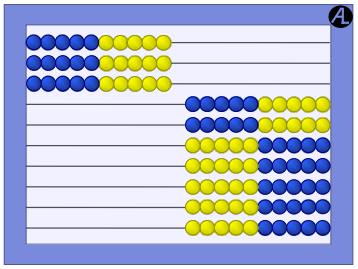


Subitizing

- Subitizing is quick recognition of quantity without counting.
- Subitizing allows quantities over five to be seen in groups of fives.
- Subitizing beyond ten is also done by grouping.
- Subitizing eliminates counting!

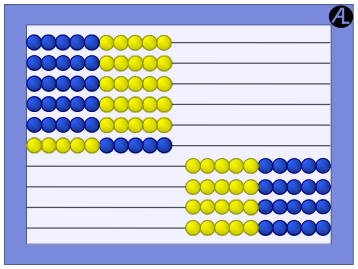
Subitizing Tens

3-ten



Subitizing Tens

6-ten



Strategies

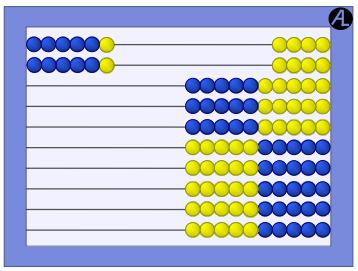
- A strategy is a way to learn a new fact or recall a forgotten fact.
- A visual representation is a powerful strategy.

Visualizing

- It is well known that most of us learn best with visualizable images.
  - visual: seen with our eyes.
  - visualizable: seen in our mind's eye.
- Important part of math is visualizing – seeing it in your mind.

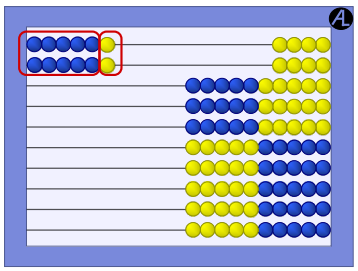
Multiples of Two

$6 \times 2 =$



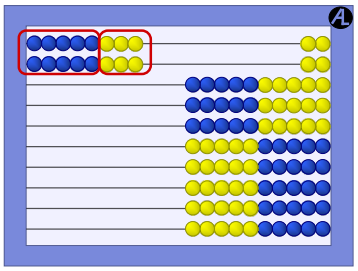
Multiples of Two

$6 \times 2 = 12$



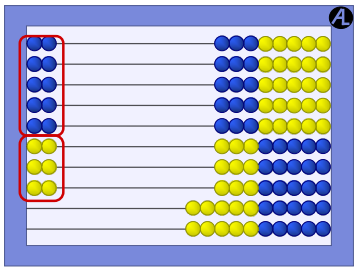
Multiples of Two

$8 \times 2 = 16$



Multiples of Two

$2 \times 8 = 16$



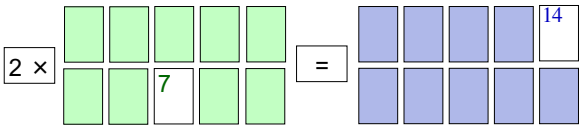
Multiplication Memory Game

Objective: To help the players master the multiplication facts.

Play: Turn over a basic card, state the fact, then try to find the matching product card.

Goal: To collect the most cards by matching the multiplier with the product.

Multiplication Memory Game



Why Games

$$\frac{\text{Games}}{\text{Math}} = \frac{\text{Books}}{\text{Reading}}$$

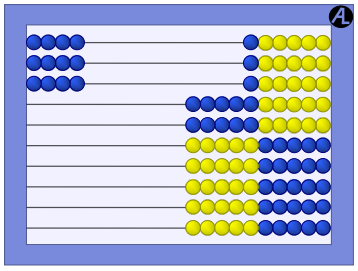
Games provide interesting repetition needed for automatic responses.

Games are worksheets, albeit with cards.

Most importantly, games provide an application for the new information!

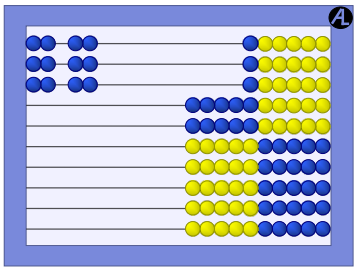
Multiples of Four

4×3



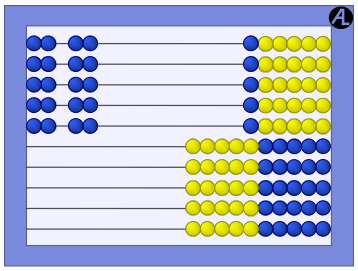
Multiples of Four

$4 \times 3 = 2 \times 3 \times 2$

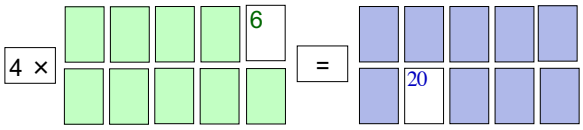


Multiples of Four

$4 \times 5 = 2 \times 5 \times 2$

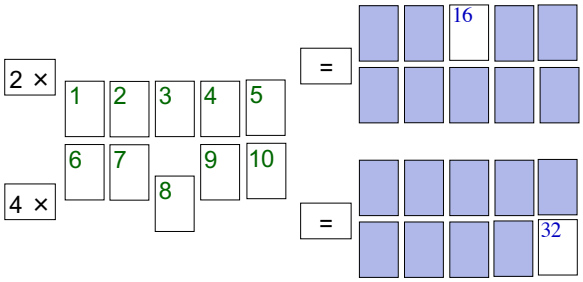


Multiplication Memory Game



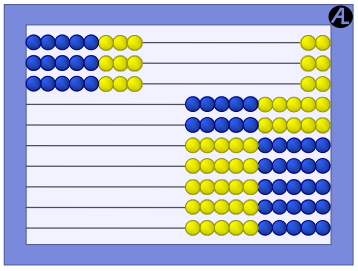
It's a worksheet!

Multiplication Memory: Level Up



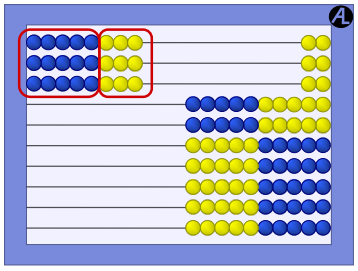
Multiples of Eight

8×3



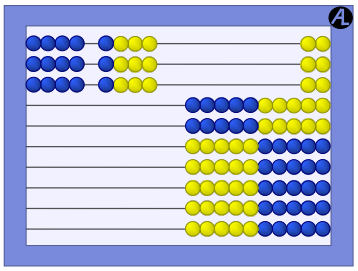
Multiples of Eight

$8 \times 3 = 15 + 9 = 24$



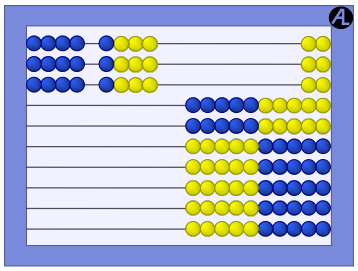
Multiples of Eight

$8 \times 3 = 4 \times 3 \times 2$



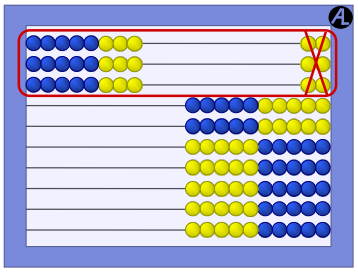
Multiples of Eight

$8 \times 3 = 12 \times 2 = 24$



Multiples of Eight

$8 \times 3 = 30 - 6 = 24$



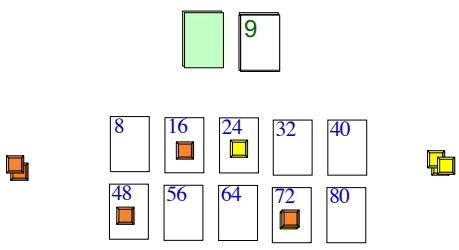
Eights on Top Game

Objective: To help the players associate the correct multiplier and product.

Play: Turn over a multiplier card, state the fact, then mark the matching product card.
If another's marker is already there, put the marker on top of the previous marker.

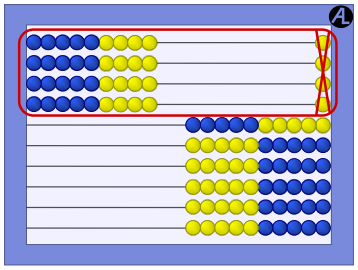
Goal: To have the most markers on top.

Eights on Top Game



Multiples of Nine

$9 \times 4 = 40 - 4 = 36$



Multiples of Nine

$9 \times 1 = \mathbf{9}$ $9 \times 2 = \mathbf{18}$ $9 \times 3 = \mathbf{27}$ $9 \times 4 = \mathbf{36}$ $9 \times 5 = \mathbf{45}$
$9 \times 6 = \mathbf{54}$ $9 \times 7 = \mathbf{63}$ $9 \times 8 = \mathbf{72}$ $9 \times 9 = \mathbf{81}$ $9 \times 10 = \mathbf{90}$

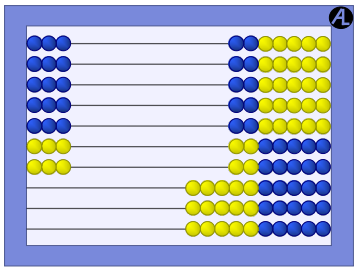
- A pattern: look at the **digits** of the **products**. They all add up to **9.**

$9 \times 1 = \mathbf{9}$ $9 \times 2 = \mathbf{18}$ $9 \times 3 = \mathbf{27}$ $9 \times 4 = \mathbf{36}$ $9 \times 5 = \mathbf{45}$
$9 \times 10 = \mathbf{90}$ $9 \times 9 = \mathbf{81}$ $9 \times 8 = \mathbf{72}$ $9 \times 7 = \mathbf{63}$ $9 \times 6 = \mathbf{54}$

- Another pattern: The digits of the product are **reversed** using this layout.

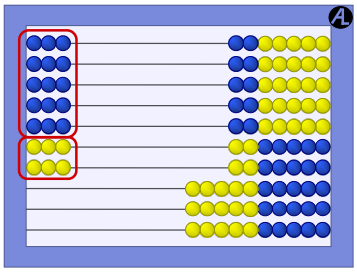
Multiples of Three

3×7



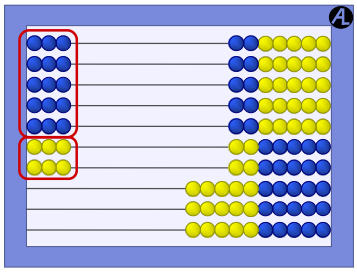
Multiples of Three

$3 \times 7 = 3 \times 5 + 3 \times 2$



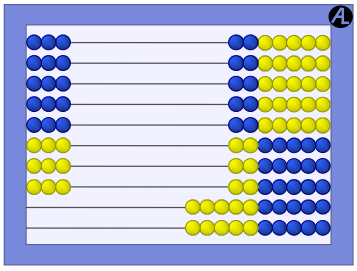
Multiples of Three

$3 \times 7 = 15 + 6 = 21$



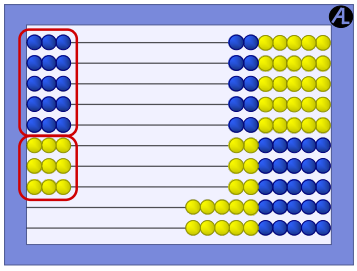
Multiples of Three

3×8



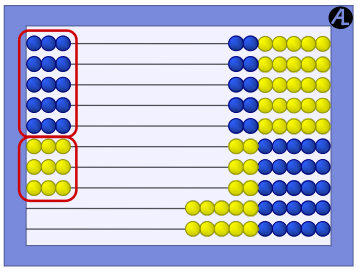
Multiples of Three

$3 \times 8 = 3 \times 5 + 3 \times 3$

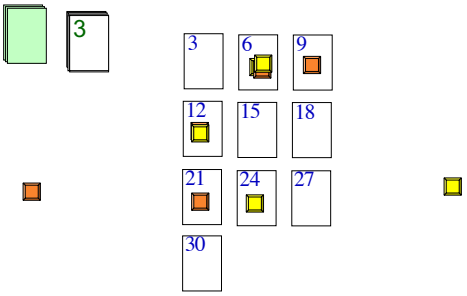


Multiples of Three

$3 \times 8 = 15 + 9 = 24$

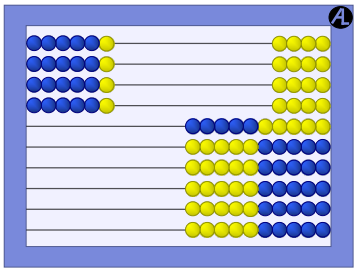


Threes on Top Game



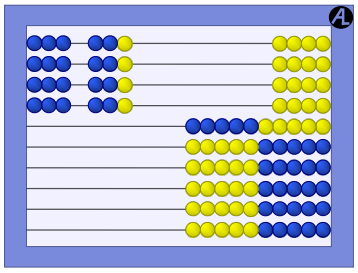
Multiples of Six

6×4



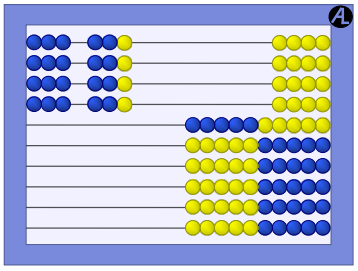
Multiples of Six

$6 \times 4 = 3 \times 4 \times 2$



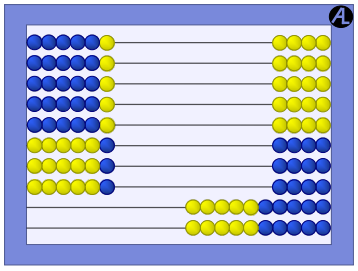
Multiples of Six

$6 \times 4 = 12 \times 2 = 24$



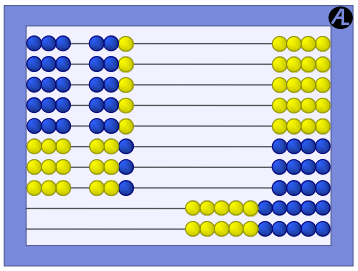
Multiples of Six

6×8



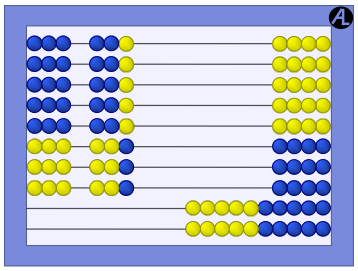
Multiples of Six

$$6 \times 8 = 3 \times 8 \times 2$$



Multiples of Six

$$6 \times 8 = 24 \times 2 = 48$$



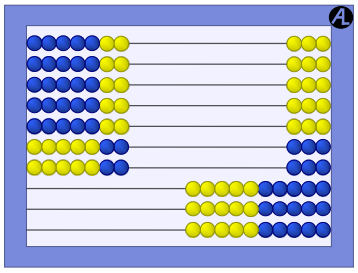
Multiplication Chart

7s

1	2	3	4	5	6	7	8	9	10
2	4	6	8	10	12	14	16	18	20
3	6	9	12	15	18	21	24	27	30
4	8	12	16	20	24	28	32	36	40
5	10	15	20	25	30	35	40	45	50
6	12	18	24	30	36	42	48	54	60
7	14	21	28	35	42	49	56	63	70
8	16	24	32	40	48	56	64	72	80
9	18	27	36	45	54	63	72	81	90
10	20	30	40	50	60	70	80	90	100

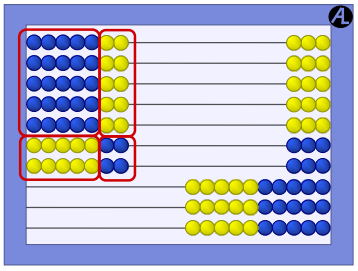
Multiples of Seven

$$7 \times 7$$



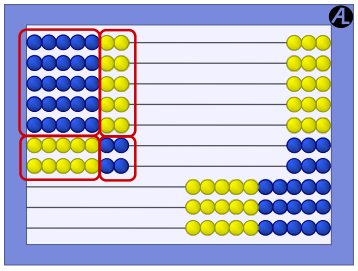
Multiples of Seven

$$7 \times 7 = 25 + 10 + 10 + 4$$



Multiples of Seven

$$7 \times 7 = 49$$



Multiples Solitaire

Rules:

Choose four sets of multiples. Shuffle together.

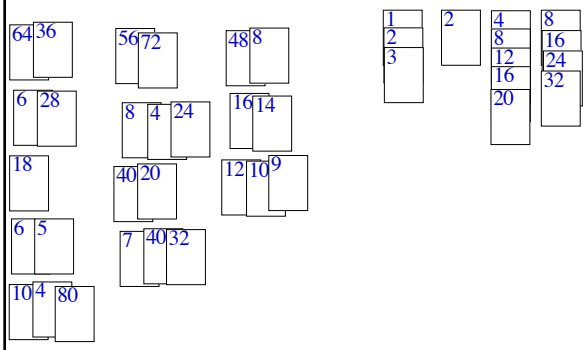
Only the top card of a fan may be played.

Columns start with lowest number of a set.

Cards in a fan can be moved to another location if they immediately precede the card in a set that they are being moved to.

This example game: sets of 1s, 2s, 4s, and 8s.

Multiples Solitaire



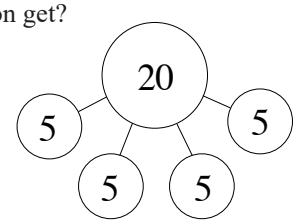
Introducing Division

Maria picks 20 oranges with three friends. If the four friends share the oranges equally, how many oranges does each person get?

$$\underline{5} \times 4 = 20$$

Introducing Division

Maria picks 20 oranges with three friends. If the four friends share the oranges equally, how many oranges does each person get?



Introducing Division

Maria picks 20 oranges with three friends. If the four friends share the oranges equally, how many oranges does each person get?

$$20 \div 4 = \underline{5}$$

Find the Quotient

Objective: To see the relationship between multiplication and division.

Play: Pick up the top card, determine how many times the divisor is in that number, then place the card below that number in the row.

Goal: To match all the cards.

Find the Quotient

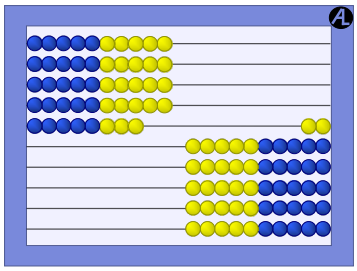
20	35	10	45	30	25	5	40	15	50

÷ 5 =

7	5	3

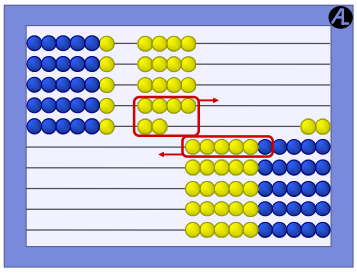
Division Strategies

48 ÷ 6



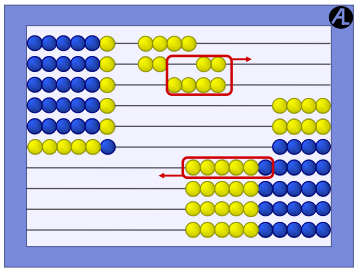
Division Strategies

48 ÷ 6



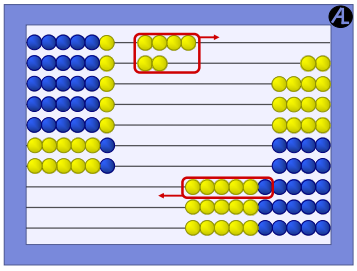
Division Strategies

48 ÷ 6



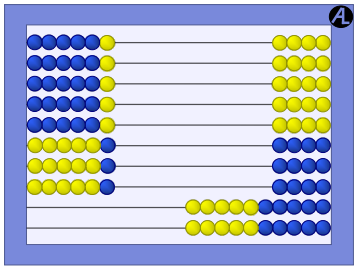
Division Strategies

48 ÷ 6



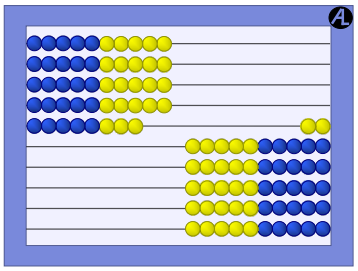
Division Strategies

48 ÷ 6 = 8 groups



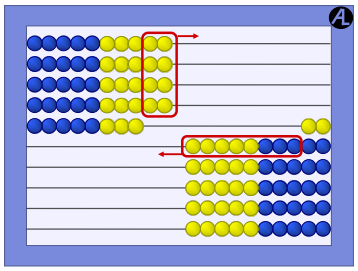
Division Strategies

48 ÷ 6



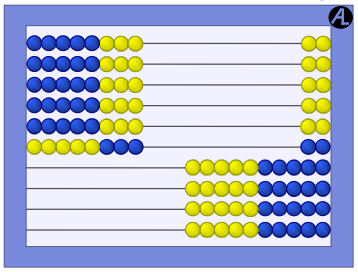
Division Strategies

48 ÷ 6



Division Strategies

48 ÷ 6 = 8 in each group



Find the Quotient – Level Up

Objective: To practice division facts.

Play: Play cards so that the multiplication card divided by the first basic number card in the row equals the second basic number card in the row, the quotient.

Play a card that is a factor of the multiplication card. Up to six cards can be played during a turn.

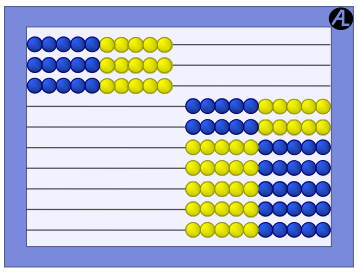
Goal: To collect the most cards.

Find the Quotient – Level Up

	÷		=	
63		9		7
21		3		
8		2		

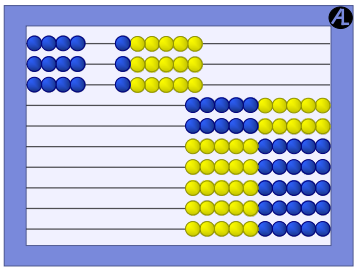
Division and Remainders

30 ÷ 4



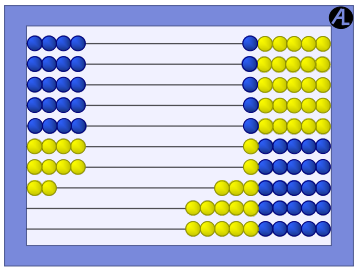
Division and Remainders

30 ÷ 4



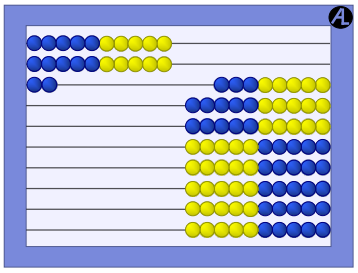
Division and Remainders

30 ÷ 4 = 7 with 2 remaining



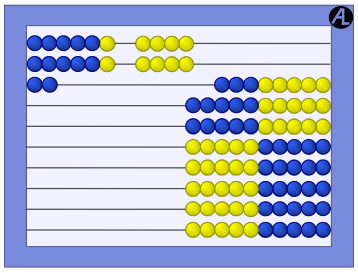
Division and Remainders

22 ÷ 6



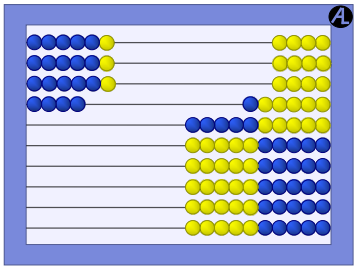
Division and Remainders

22 ÷ 6



Division and Remainders

22 ÷ 6 = 3 with 4 remaining



Find the Quotient and Remainder

	÷		=		r	
48		7		6		6
16		3				1
32		6		5		

Solution for Success

- Foundation of subitizing
- Strategies to visualize the facts
- Practice and apply with games

Multiplication and Division

- We know that a deep understanding of concepts removes anxiety.
- Understanding lessens the burden of memorizing.
- Understanding makes advanced math easier to grasp.
- Math becomes more enjoyable!

In Conclusion …

Math needs to be taught so
95 percent is understood and
only 5 percent memorized.

– Richard Skemp
major pioneer in mathematics education

In Conclusion …

Our goal as a teacher of mathematics
is to help our children transform,
expand, and refine these beginning ideas
into deeper mathematical thinking.

– Dr. Joan A. Cotter

In Conclusion …

If a child can't learn the way we teach,
maybe we should teach the way they learn.

– Ignacio Estrada,
Gordon and Betty Moore Foundation