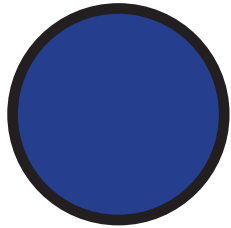


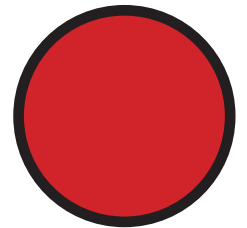
Sense of Number Visual Calculations Policy



Basic Edition for
Lacewood Primary School
March 2014
by Dave Godfrey & Anthony Reddy

For sole use within Lacewood Primary School.

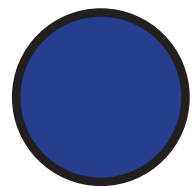
'A picture is worth 1000 words!'
www.senseofnumber.co.uk



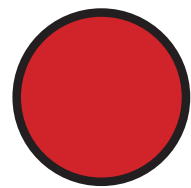
Lacewood Primary School

Lacewood Primary School Basic Edition Visual Calculations Policy © Sense of Number 2014
For sole use by purchasing school. Bespoke Graphic Design by Dave Godfrey - www.senseofnumber.co.uk





Guide to using a



Visual Calculations Policy

The Sense of Number Visual Calculations Policy provides an visual representation of it's written and mental calculation policy.

Typical uses:

Classroom: The slides are printed out (e.g. A4) and the appropriate slides are displayed within each classroom for continual reference or on a working wall.

Teacher Reference: The slides are printed out (e.g. 9 slides per A4 page) and inserted in the teacher's planning folder.

Parents: The slides are used to communicate to parents the methods being taught and used within school.

Website: Slides from the VCP are inserted on a schools' maths webpages.
(Please note: the VCP should not be made available for download)



KC1: Key Concepts!

Addition



$$8 + 2 = 10$$

“What is 8 add 2?”
Answer: 10

Subtraction



$$8 - 2 = 6$$

“What is 8 take away 2?”
Answer: 6
“The difference between 8
and 2 is 6”



KC2: Key Concepts!

Multiplication

x

$$8 \times 2 = 16$$

“8 multiplied by 2” means
“8, 2 times” or
“2 lots of 8”

Division

÷

$$8 \div 2 = 4$$

“8 divided by 2” means “How
many 2s are there in 8?”
Answer: 4

(“8 shared into 2 sets is 4”)



Calculation Vocabulary



1

**Can I do this
in my head?**



2

**Do I need to
use a drawing
or a jotting?**



3

**Do I need an
expanded or a
standard method?**



4

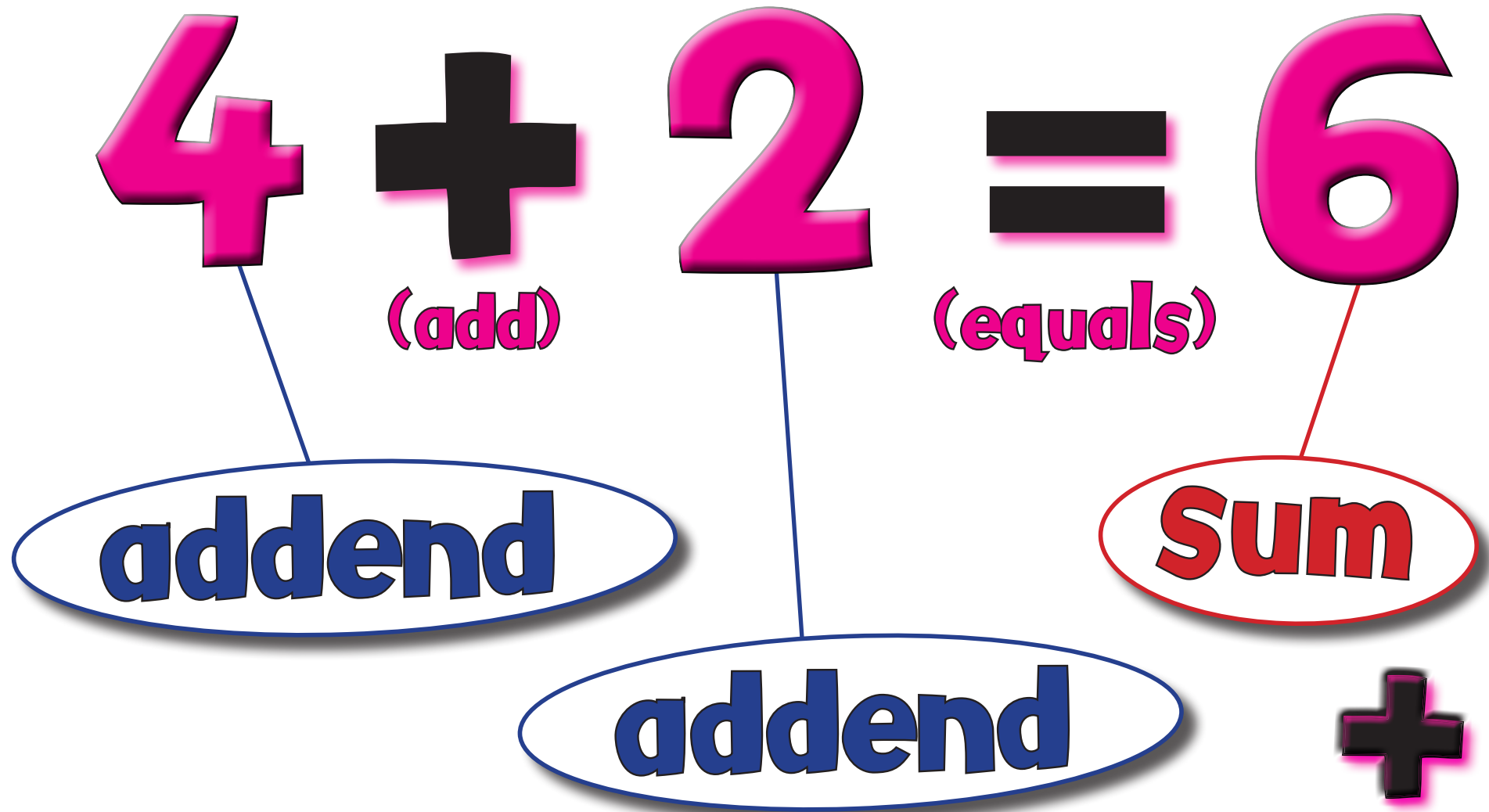
Do I need a
calculator?



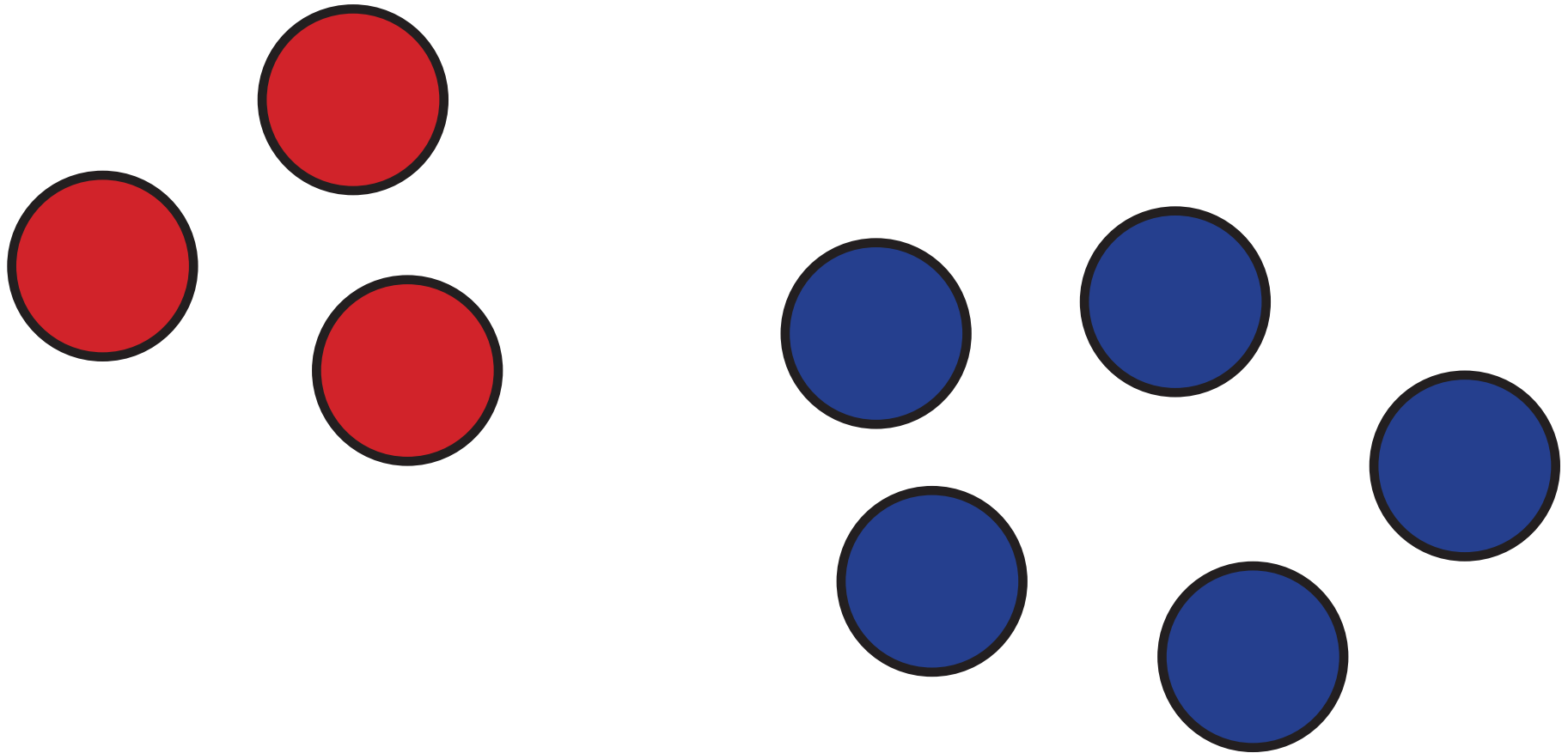
Addition Vocabulary



Addition Calculation



A1: Objects & Pictures

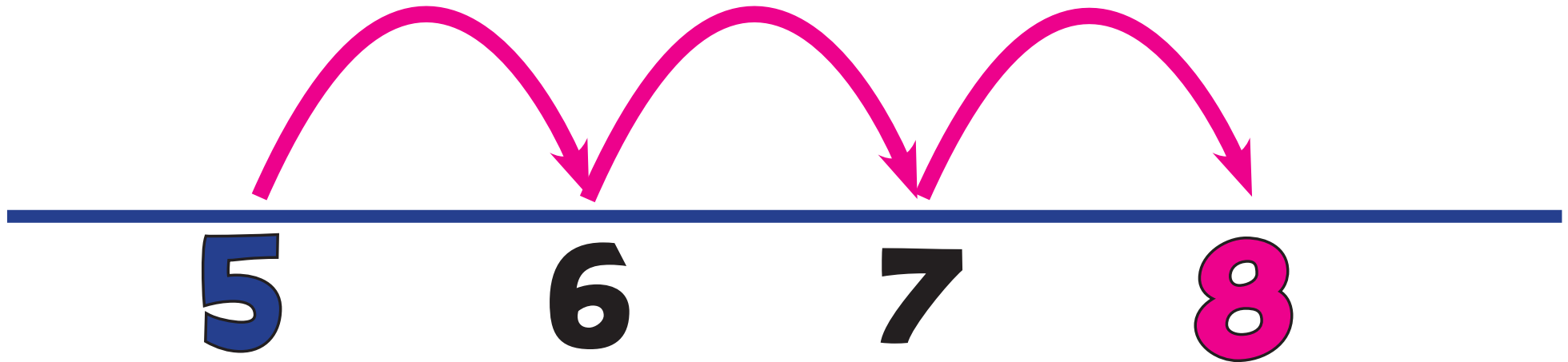


“If I have 3 and then 5 more, how many altogether? Answer: 8”



A2: Counting On

+1 +1 +1

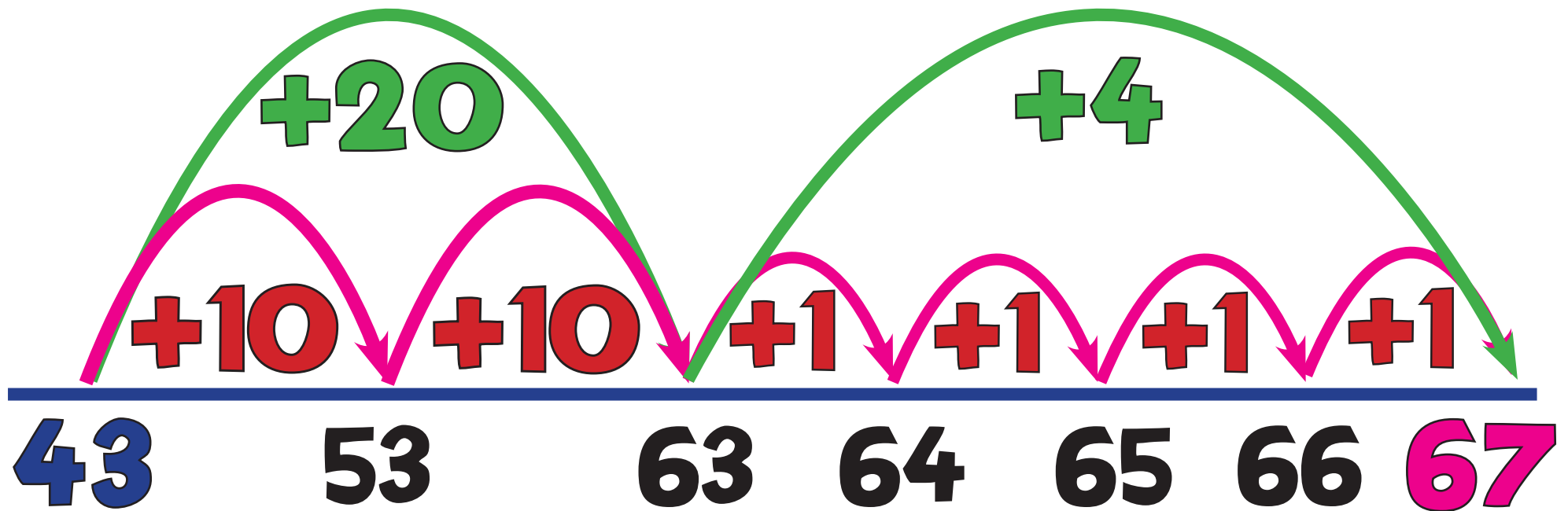


$$5 + 3 = 8$$



A3: Forwards Jump

$$43 + 24 = 67$$



A4: Partitioning

$$43 + 24 = 67$$

$$40 + 20 = 60$$

$$3 + 4 = 7$$

$$67$$



MA1: Partitioning

$$45 + 28 = 73$$

$$60 + 13 = 73$$



A5: Partition Jot

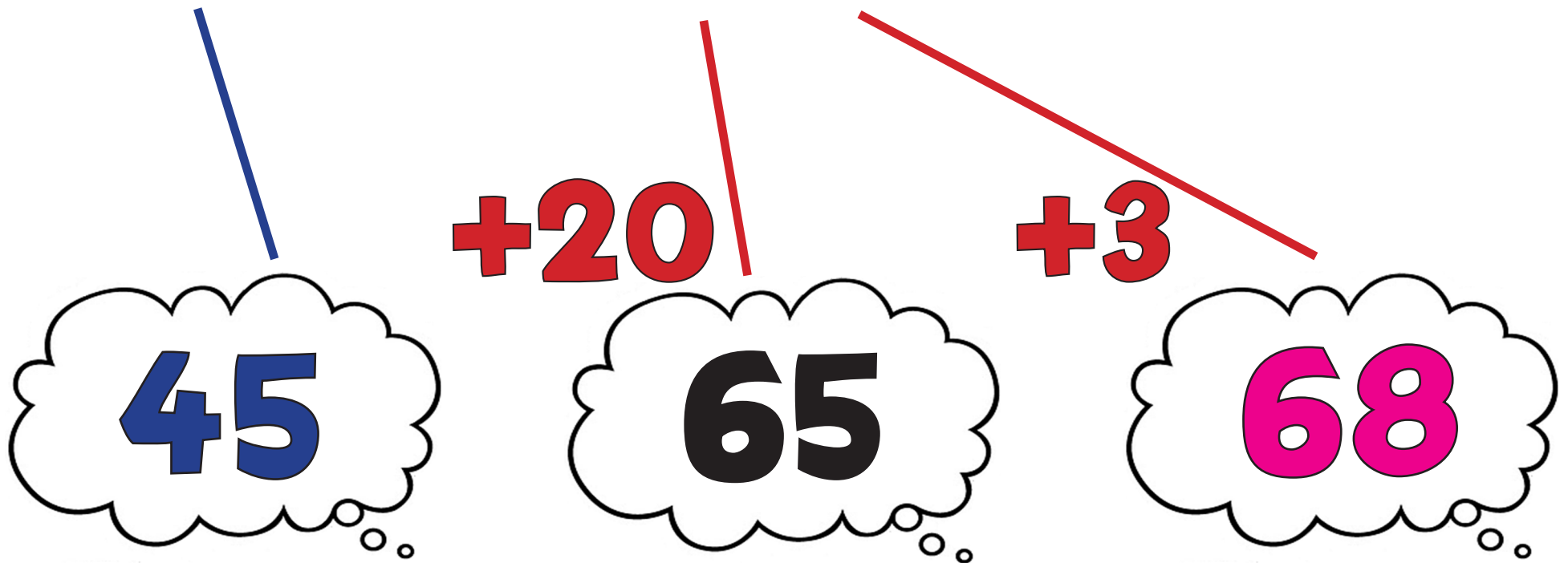
$$43 + 24 = 67$$

$$60 + 7$$



MA2: Counting On

$$45 + 23 = 68$$



MA3: Number Bonds

$$45 + 95 = 140$$

$$40 + 100 = 140$$



MA4: Double & Adjust

$$45 + 46 = 91$$

$$45 + 45 + 1$$

$$90 + 1 = 91$$



MA5: Round & Adjust

$$45 + 19 = 64$$

$$45 + 20 - 1$$

$$65 - 1 = 64$$



A6: Expanded Column Addition

	H	T	U
	6	8	7
+	2	4	8
<hr/>			
		15	
	1	2	0
	8	0	0
<hr/>			
	9	3	5
<hr/>			

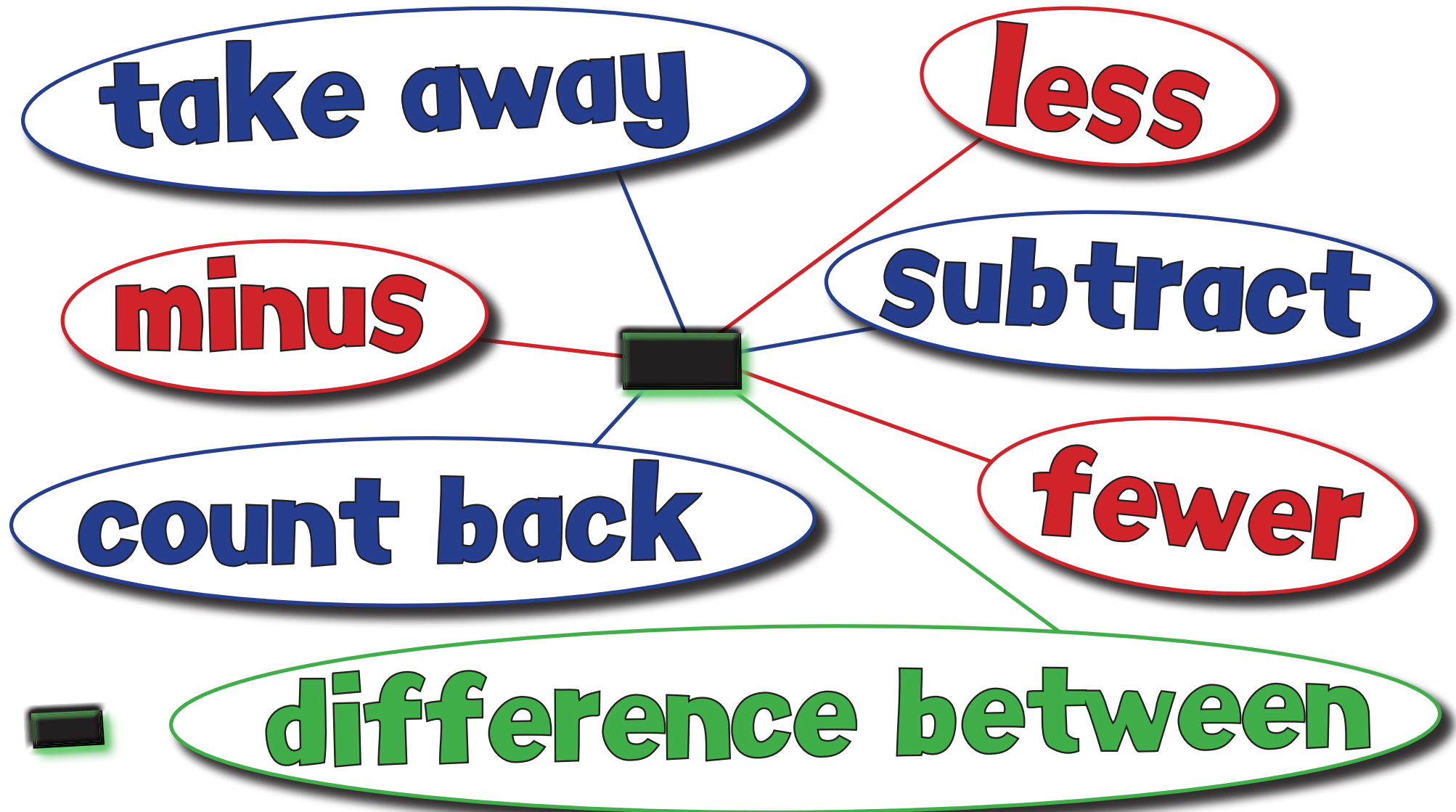


A7: Column Addition

	H	T	U
	6	8	7
+	2	4	8
<hr/>			
	9	3	5
<hr/>			
	1	1	



Subtraction Vocabulary



Subtraction Calculation

$$6 - 2 = 4$$

(subtract)

(equals)

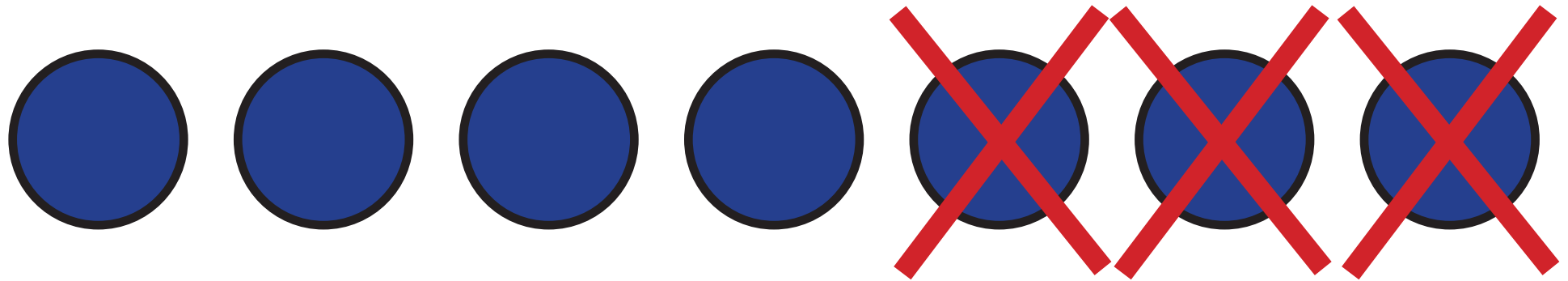
minuend

difference

subtrahend



S1: Objects

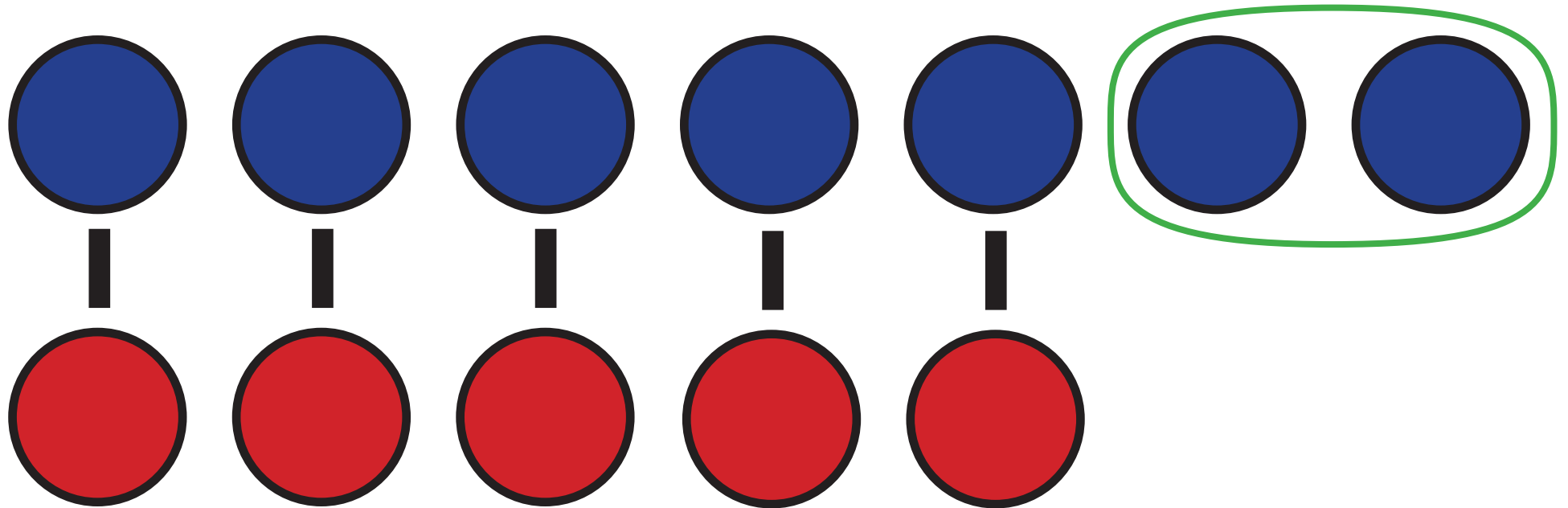


$$7 - 3 = 4$$

“What do I get if I take 3 away from 7? Answer: 4”



S2: What's the Difference?

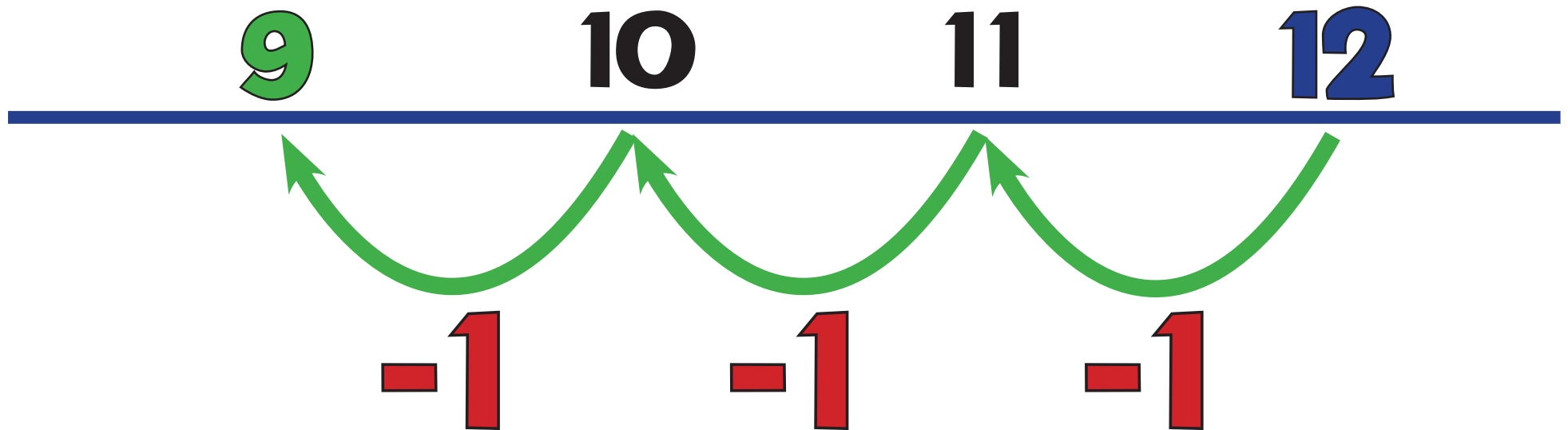


$$7 - 5 = 2$$

“How many more is 7 than 5? What is the difference?”



S3: Counting Back

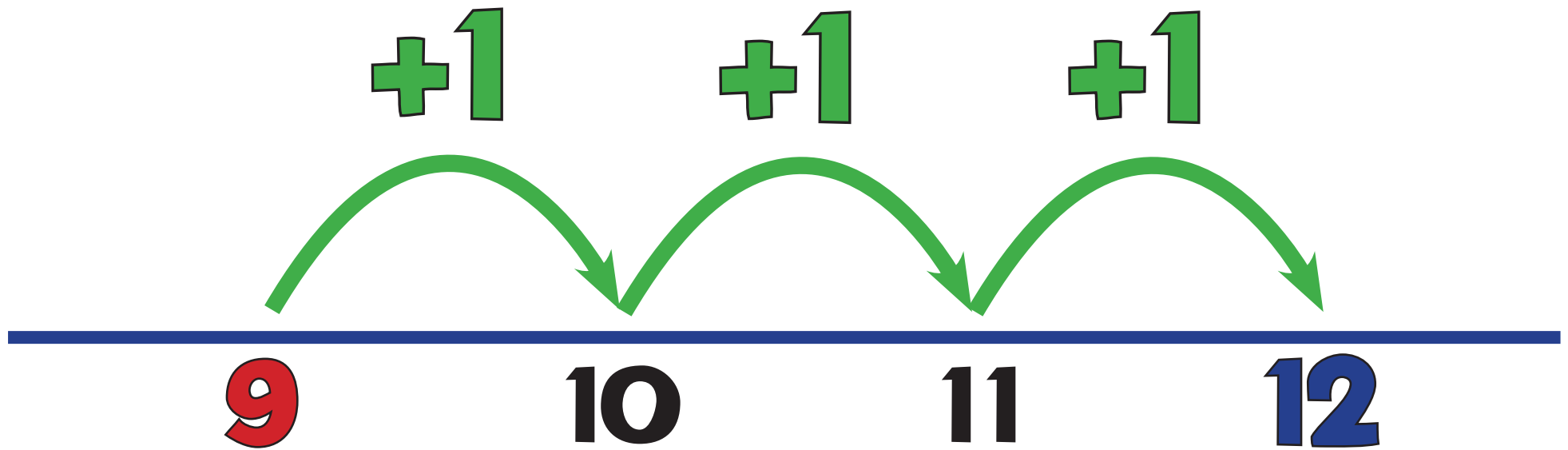


$$12 - 3 = 9$$

“What do I get if I take 3 away from 12? Answer: 9”



S4: Counting On

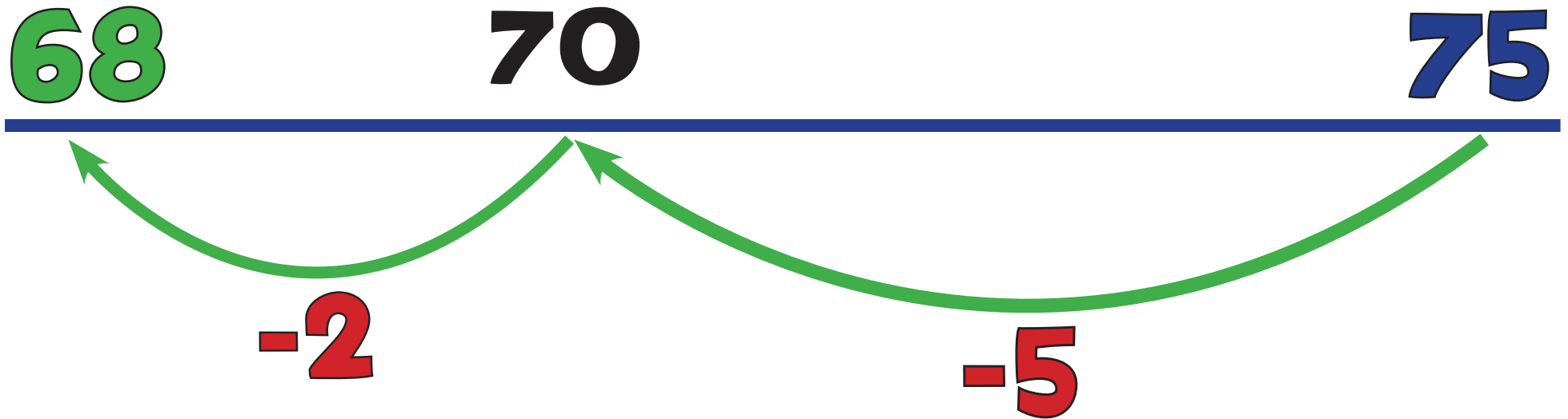


$$12 - 9 = 3$$

“How many more is 12 than 9? What is the difference?”



S5: Backwards Boing

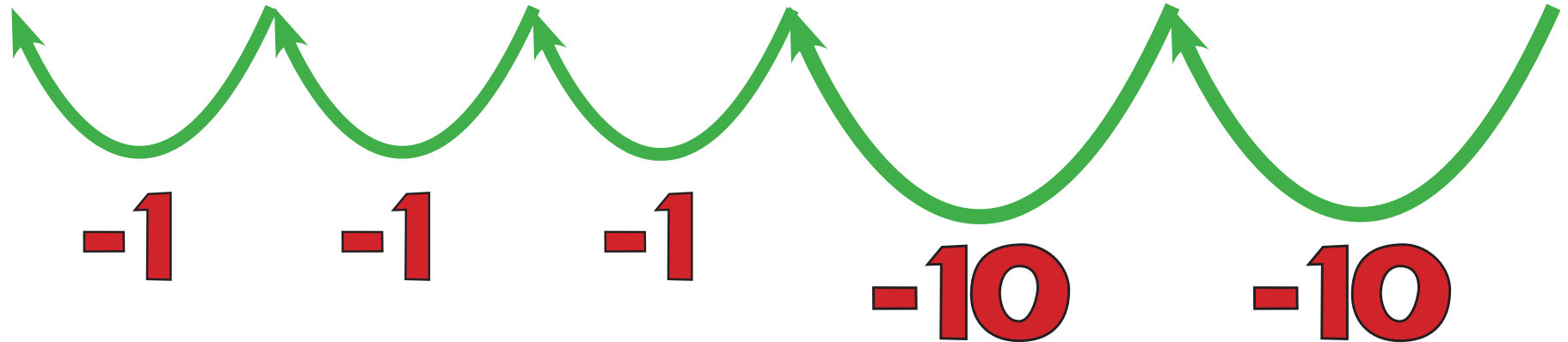


$$75 - 7 = 68$$



S6: Backwards Bounce

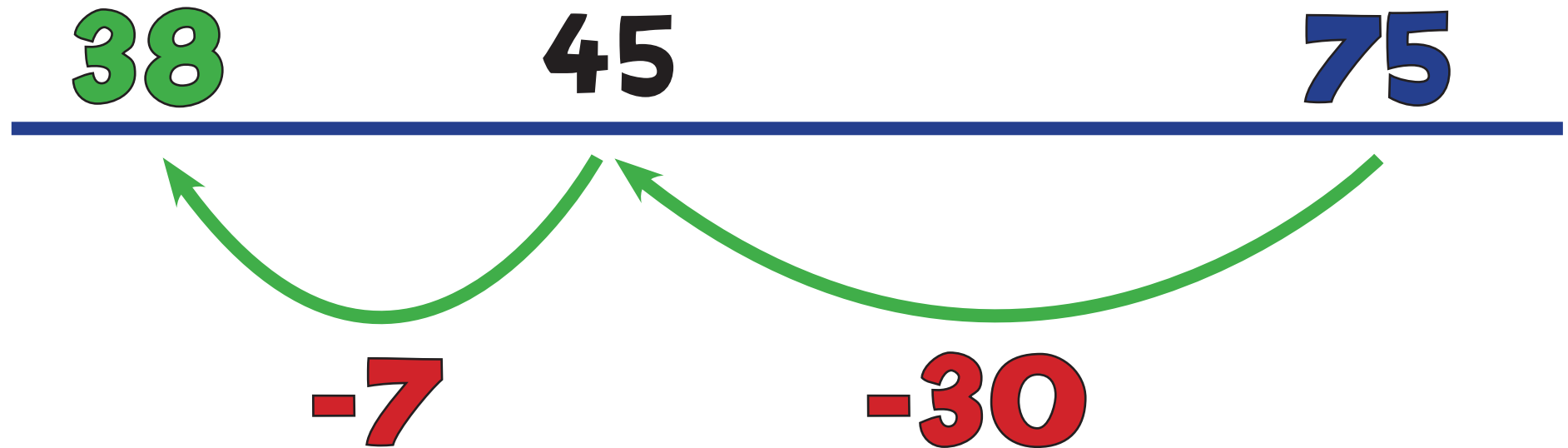
64 65 66 67 77 87



$$87 - 23 = 64$$



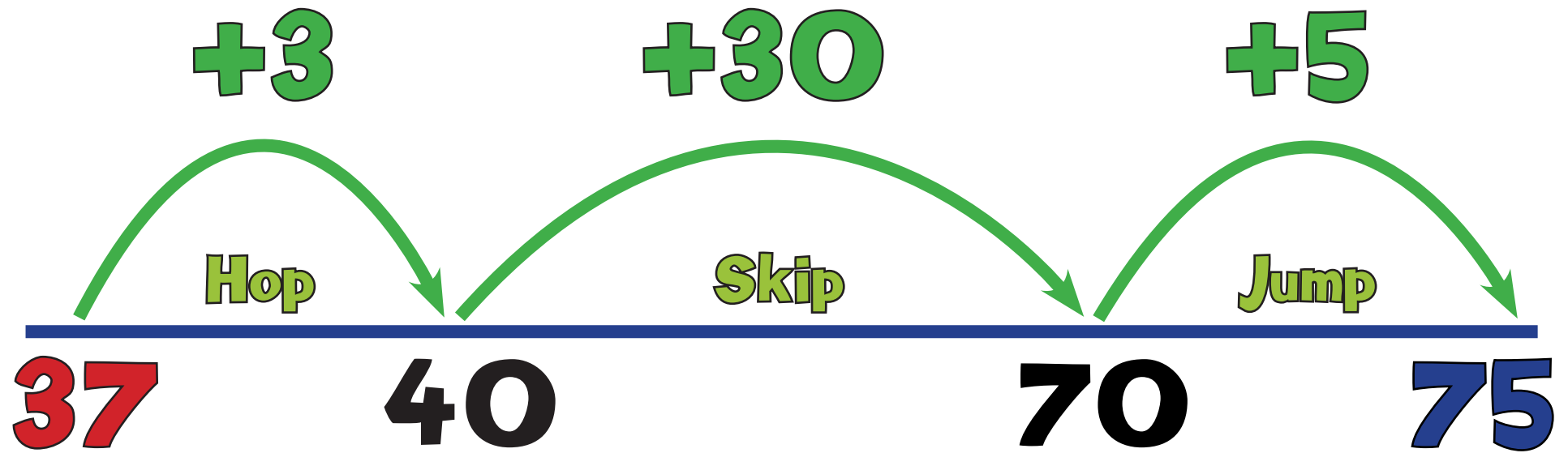
S7: Backwards Jump



$$75 - 37 = 38$$



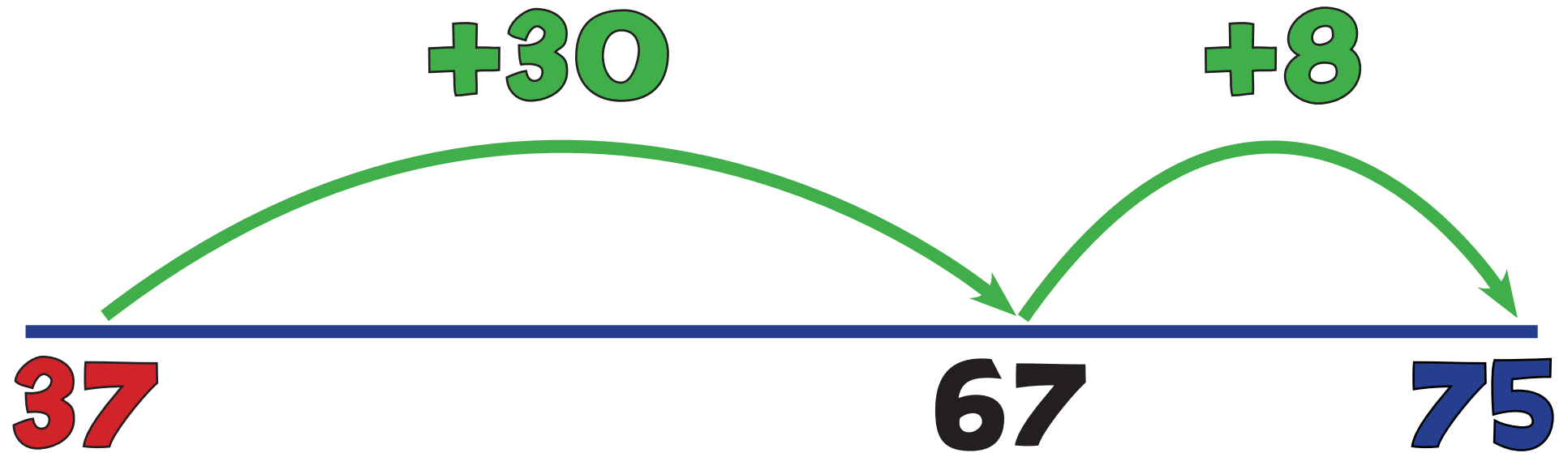
S7: Triple Jump!



$$75 - 37 = 38$$



S8: 10s Jump, 1s Jump!



$$75 - 37 = 38$$



S9: Expanded Subtraction

$$723 - 356 = 367$$

H

T

U

600

110

1

~~700~~

~~20~~

3

- 300

50

6

300

60

7

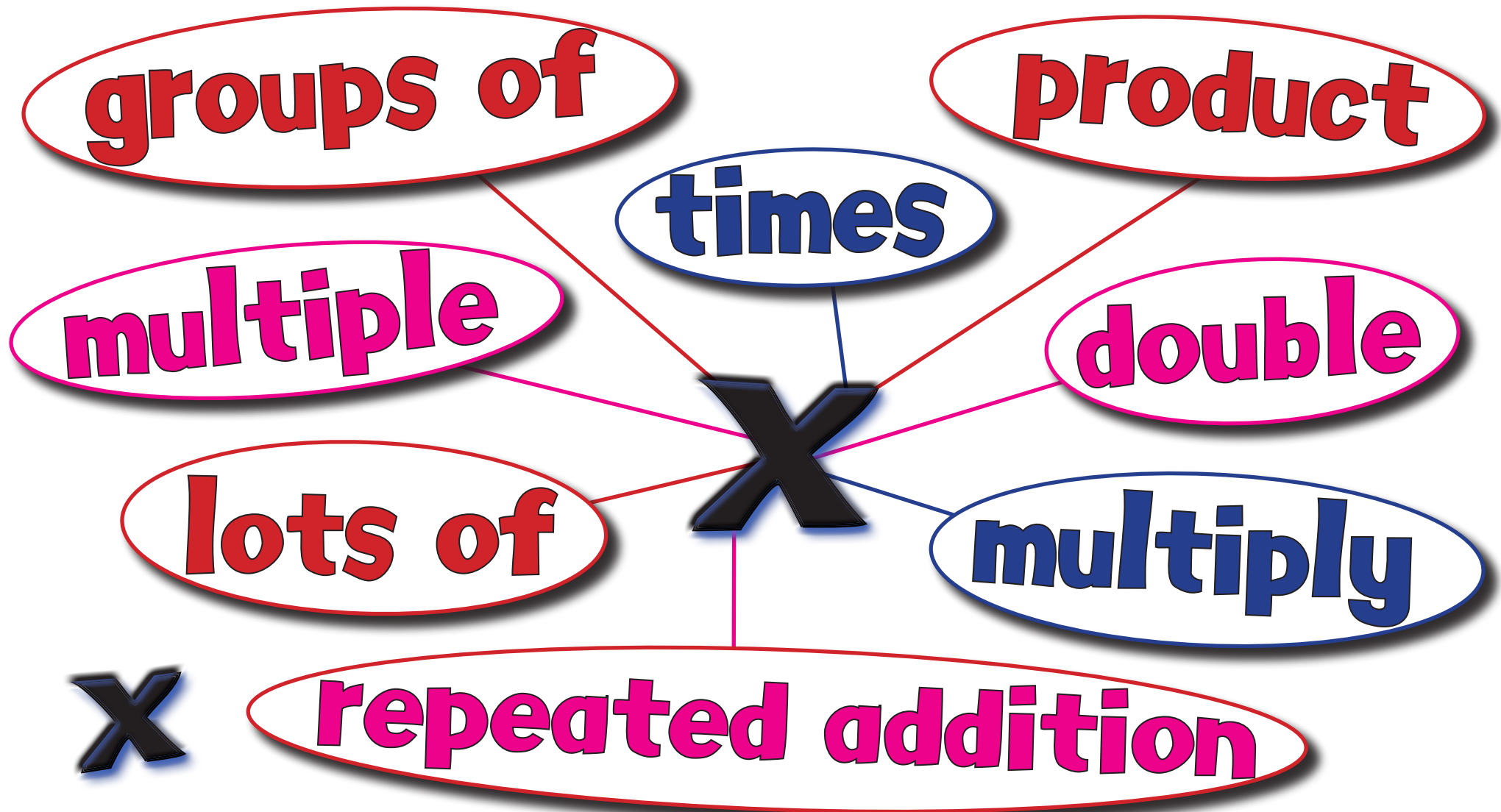


S10: Column Subtraction

	H	T	U
	6	11	1
	7	2	3
-	3	5	6
<hr/>			
	3	6	7
<hr/>			



Multiplication Vocabulary



Multiplication Calculation

$$4 \times 2 = 8$$

(multiplied by)

(equals)

multiplicand

product

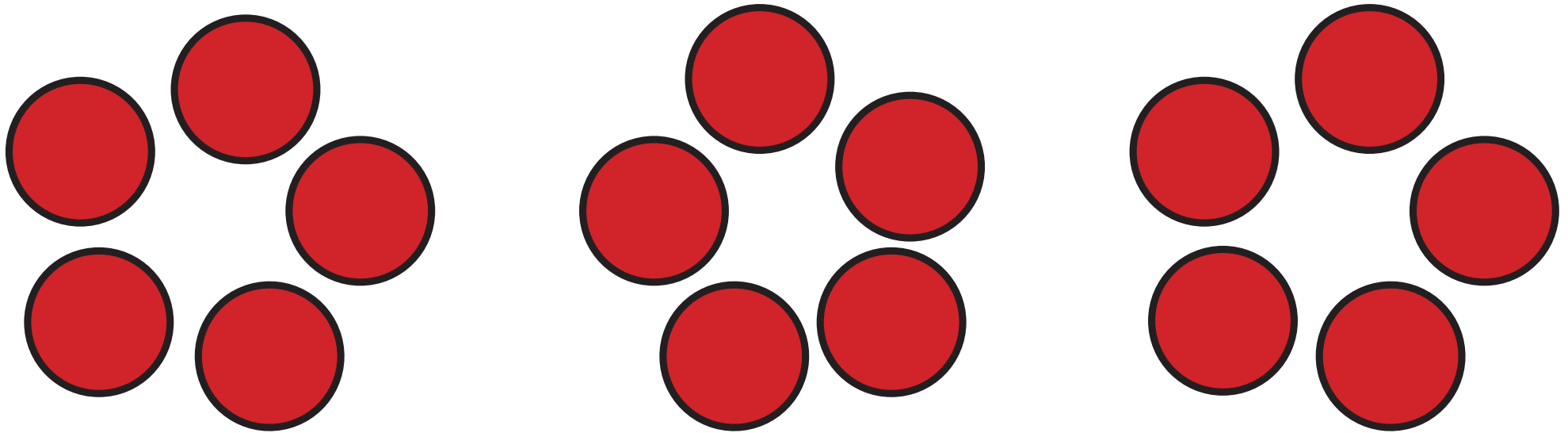
multiplier

x



M1: Repeated Addition

(Groups)



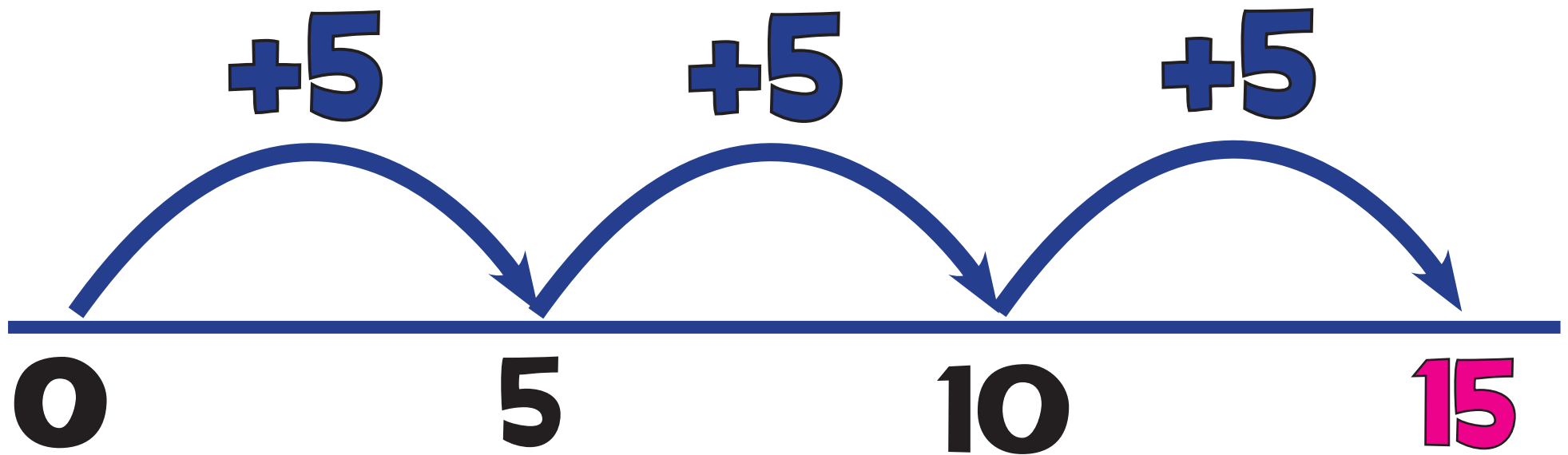
$$5 \times 3 = 5 + 5 + 5 = 15$$

“5 multiplied by 3” means “5, 3 times”, which gives “3 lots of 5”!



M2: Repeated Addition

(Number Line)

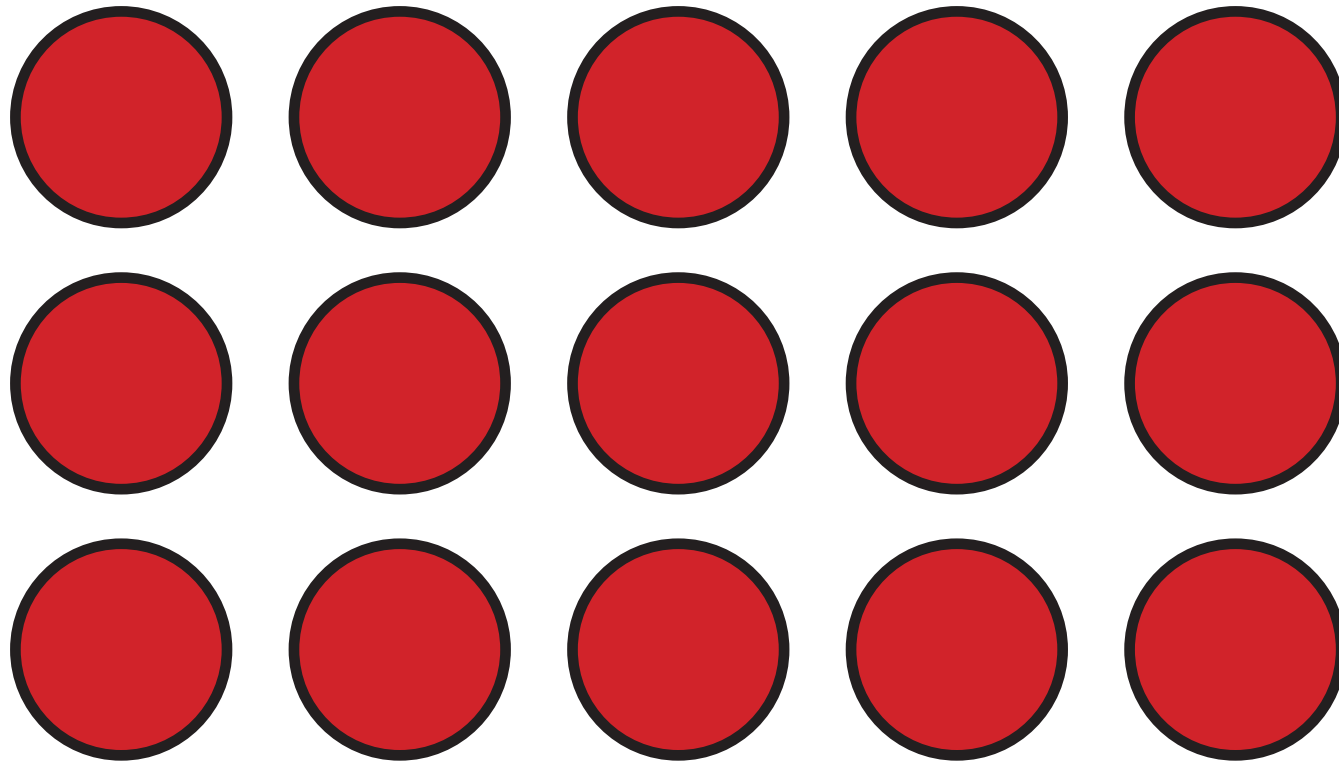


$$5 \times 3 = 5 + 5 + 5 = 15$$

“5 times 3” means “5, 3 times!”



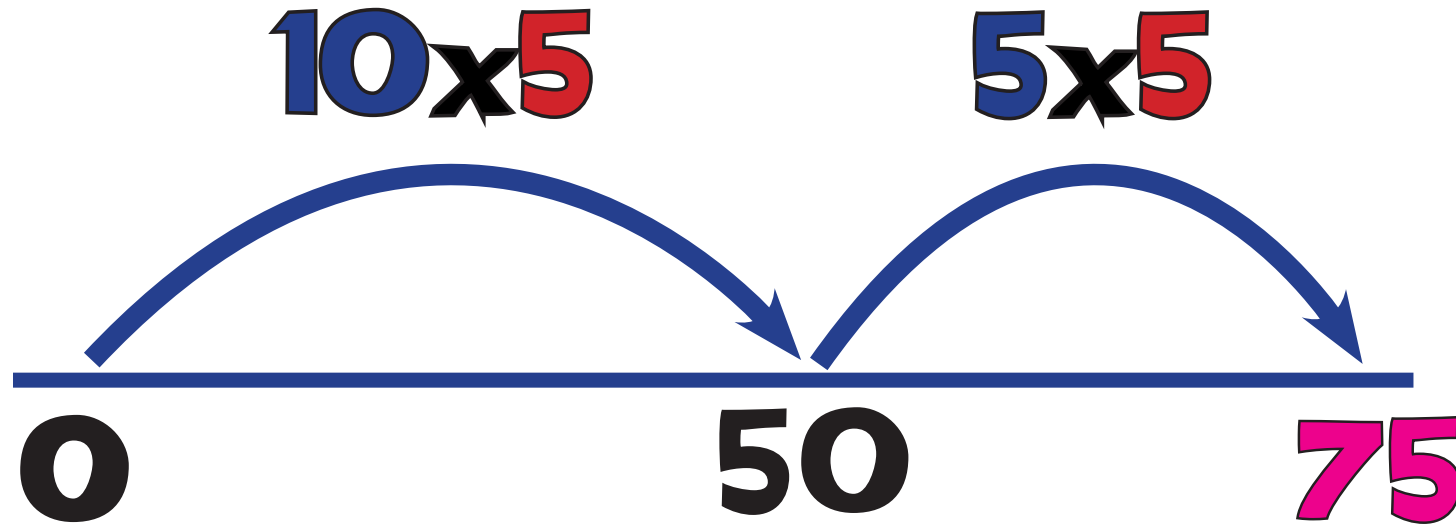
M3: Arrays



$$3 \times 5 = 15 \text{ or } 5 \times 3 = 15$$



M4: Multi Boing!



$$\begin{array}{r} 10 \times 5 = 50 \\ 5 \times 5 = 25 \\ \hline 75 \end{array}$$

$$15 \times 5 = 75$$



MM1: Jump!

x100

x10

÷10

÷100

Th H T U ■ $\frac{1}{10}$ $\frac{1}{100}$ $\frac{1}{1000}$

3400

340

34

3.4

0.34



M5: Grid Method

Short Multiplication

$$15 \times 5 = 75$$

x	10	5
5	50	25

$$50 + 25 = 75$$



M5b: Grid Method

Long Multiplication

$$43 \times 65 = 2795$$

x	40	3
60	2400	180
5	200	15

$$2400 + 180 + 200 + 15 = 2795$$



M6: Expanded Column

$$\begin{array}{r} \text{H} \quad \text{T} \quad \text{U} \\ 1 \quad 4 \quad 7 \\ \times \quad \quad 4 \\ \hline \quad \quad 28 \\ \quad 160 \\ 400 \\ \hline 588 \end{array}$$



M7: Column Multiplication

	H	T	U
	1	4	7
x			4
<hr/>			
	5	8	8
<hr/>			
	1	2	



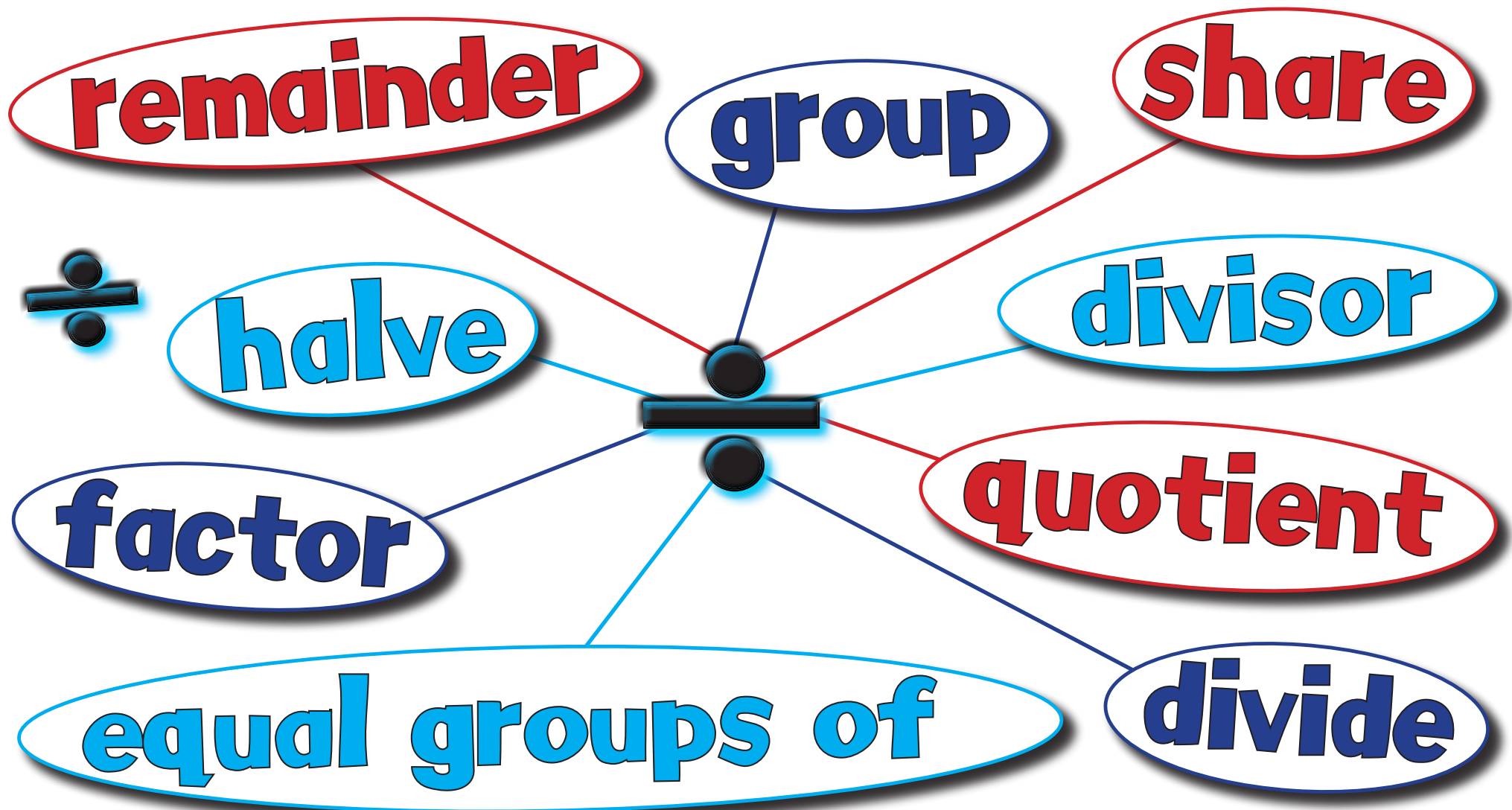
M9: Long Multiplication

Column

	Th	H	T	U	
			4	3	
x			6	5	
<hr/>					
		2	1	5	(5 x 43)
		2	1		
+	2	5	8	0	(60 x 43)
	2	1			
<hr/>					
	2	7	9	5	
<hr/>					



Division Vocabulary



Division Calculation

$$8 \div 2 = 4$$

(divided by)

(equals)

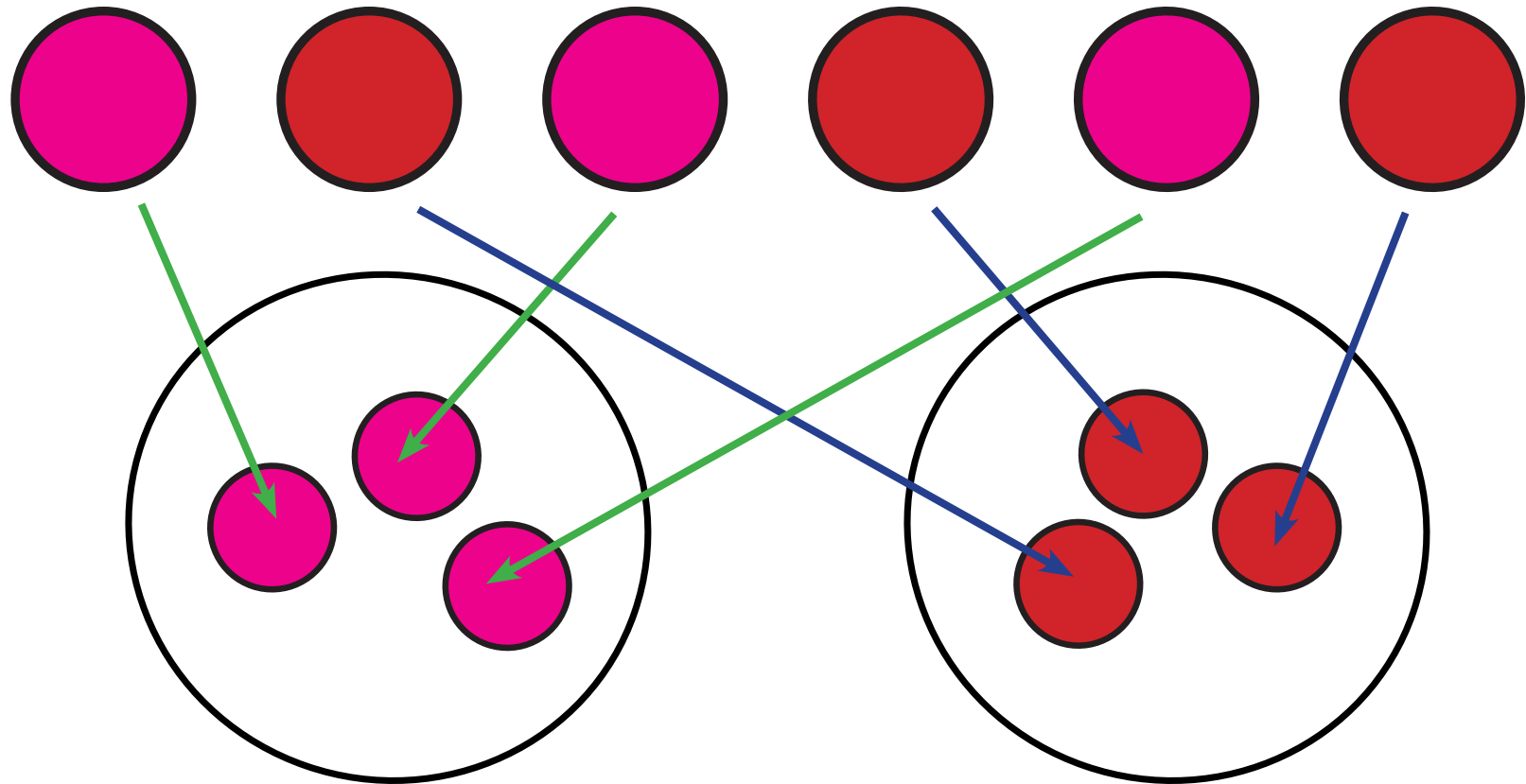
dividend

quotient

divisor



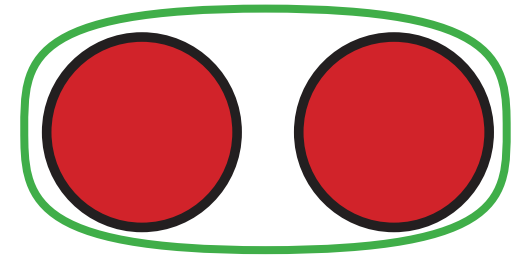
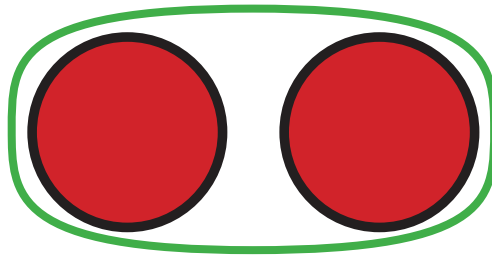
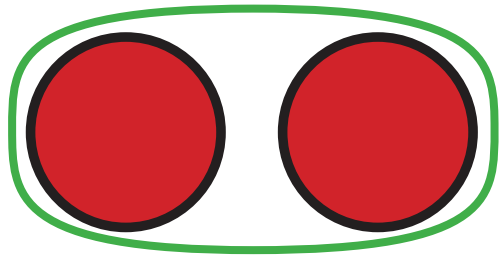
D1: Sharing (Concept)



“If I share 6 into 2 equal amounts, how many in each group?” Answer: 3



D2: Grouping (Concept)



“How many groups of **2** can I make out of **6**?”

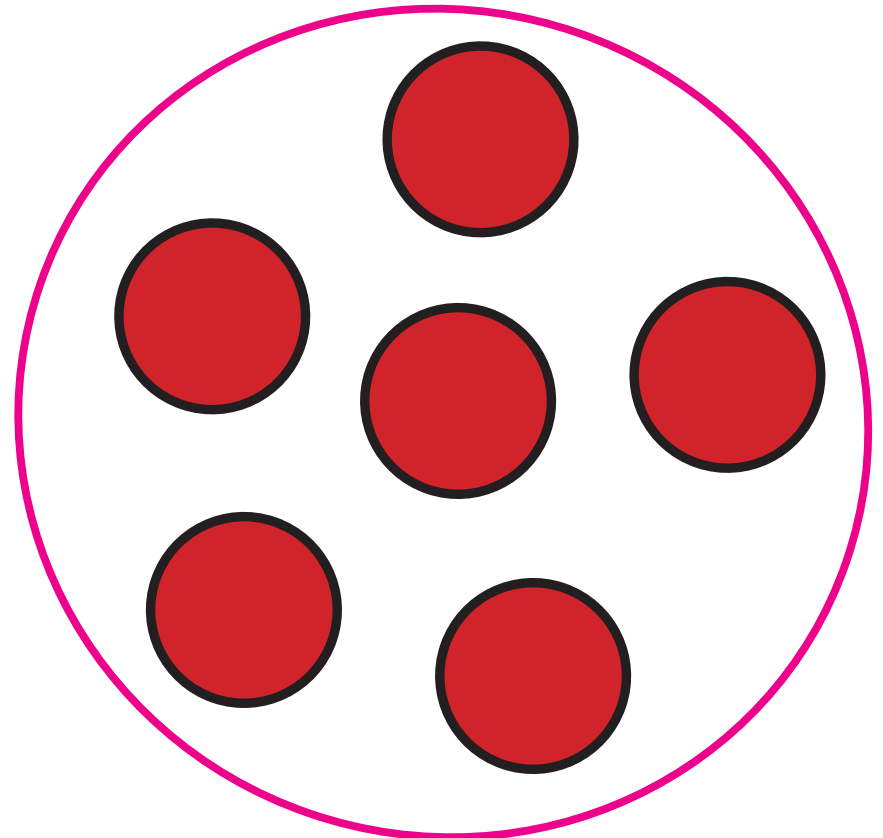
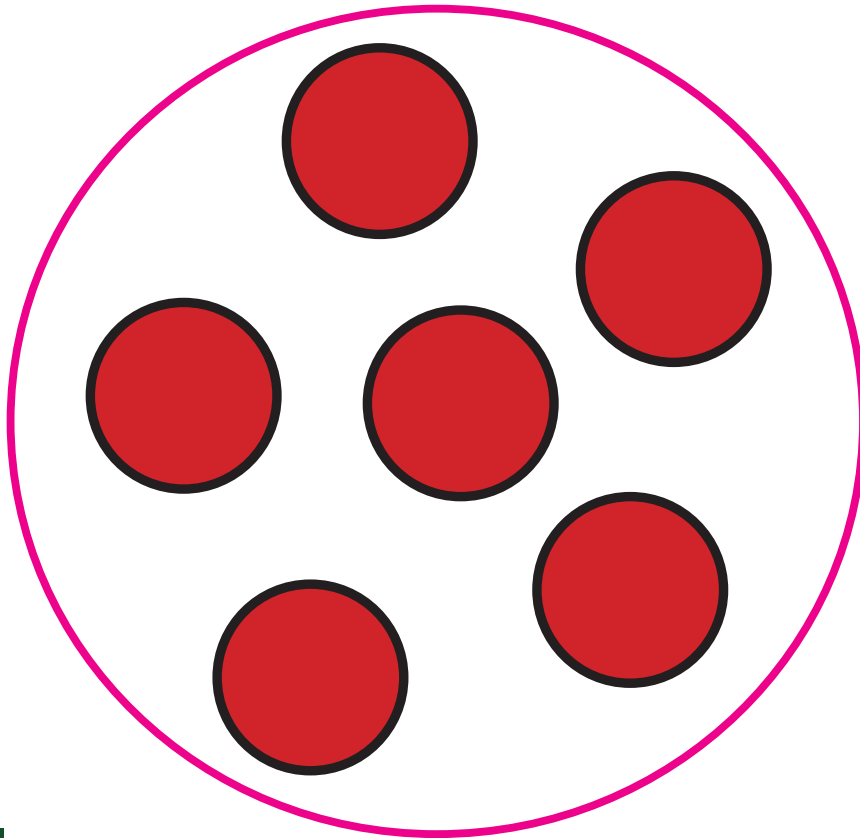
Answer: **3**



D3: Division as Sharing

$$12 \div 2 = 6$$

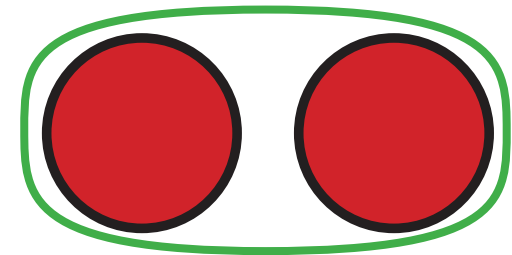
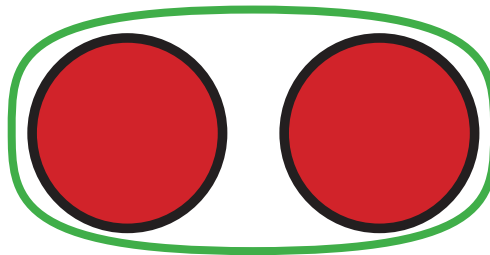
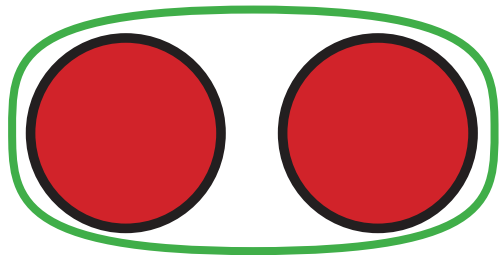
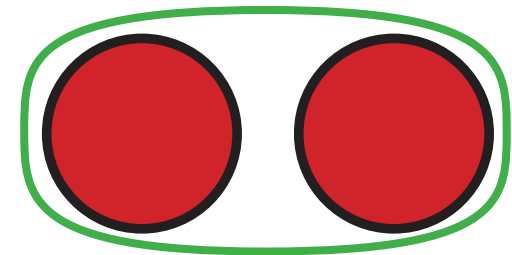
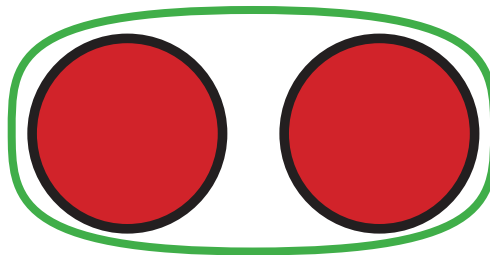
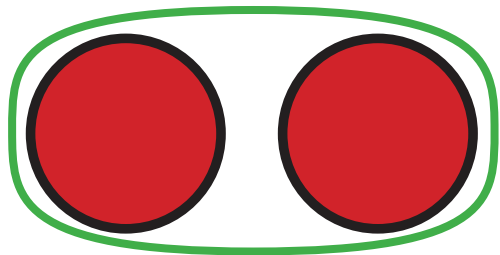
"If I share 12 into 2 equal amounts, how many in each group?" Answer: 6



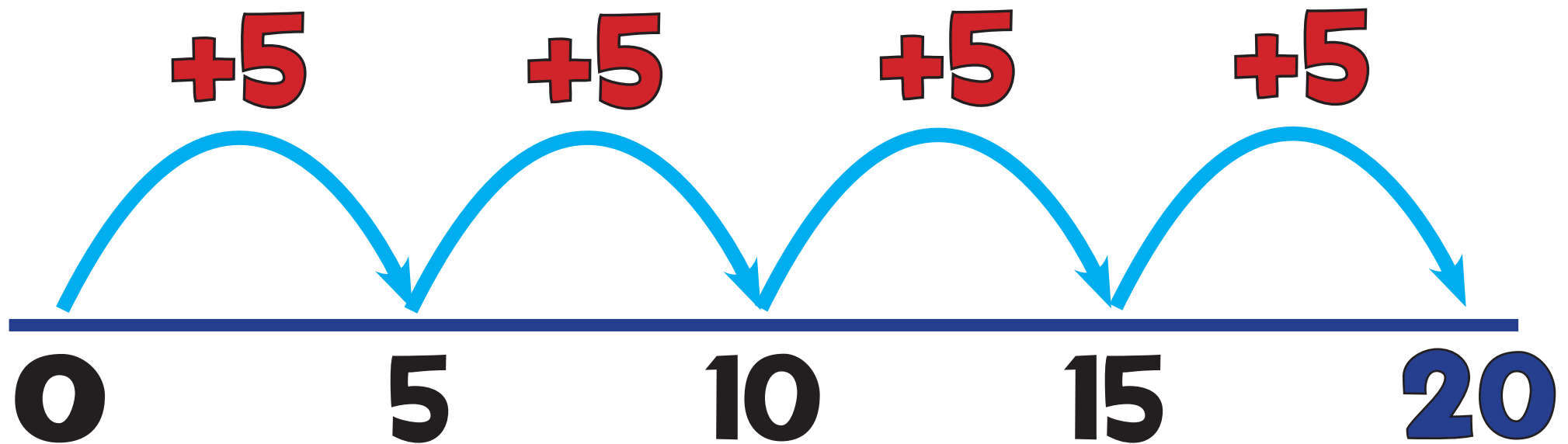
D4: Division as Grouping

$$12 \div 2 = 6$$

“How many groups of 2
can I fit in 12?”
Answer: 6



D5: Grouping on a Number Line



“How many 5s in 20?”

Answer: 4

$$20 \div 5 = 4$$



D6: Grouping Grid

4	4	4	4	4
4				3

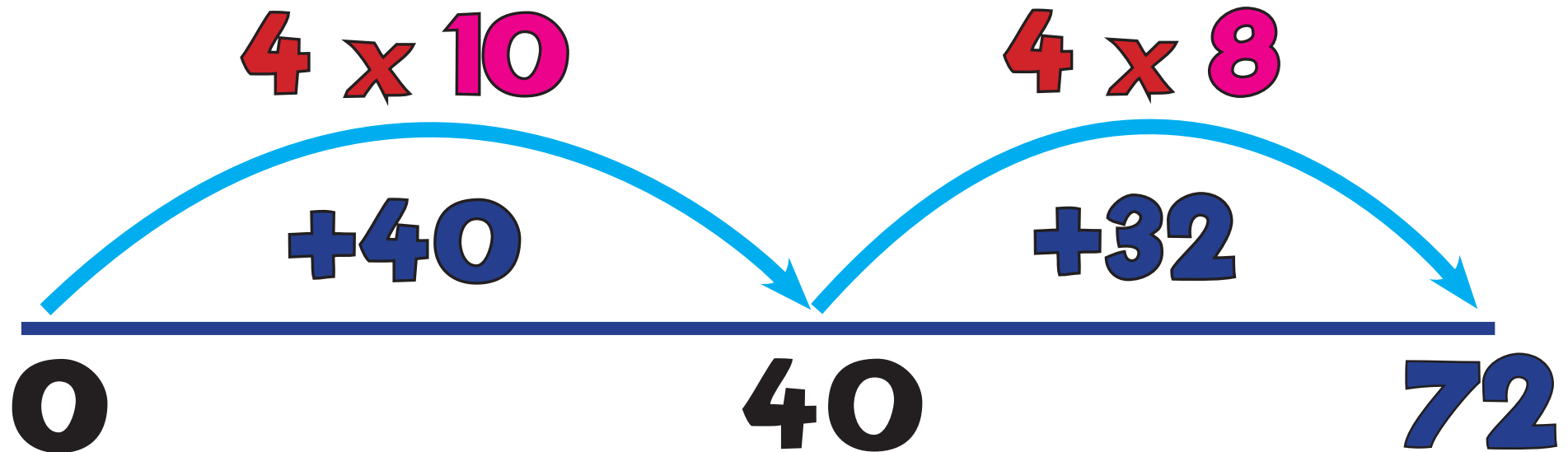
“How many times can I fit (groups of) 4 into 27?”

Answer: 6r3

$$27 \div 4 = 6r3$$



D7: Chunking Jump



$$72 \div 4 = 18$$

“How many 4s in 72?”
Answer: 18



D8: Find the Hunk!

$$72 \div 4 = 18$$

The
Hunk!

40

+

Chunk

32



10

+



8

$\div 4$

= 18



D9: Mega Hunk!

$$136 \div 4 = 34$$

Mega
Hunk!

120



30

Chunk

+ 16



+ 4

$\div 4$

= 34



D10: Chunking

$$\begin{array}{r} 34 \\ 4 \overline{) 136} \\ \underline{-120} \quad (4 \times 30) \\ 16 \\ \underline{-16} \quad (4 \times 2) \\ 0 \end{array}$$

$$136 \div 4 = 34$$



D11: Short Division

$$136 \div 4 = 34$$

$$\begin{array}{r} 34 \\ 4 \overline{) 136} \end{array}$$



D12: Chunking

Long Division
With Remainders

$$\begin{array}{r} 26 \text{ r}21 \\ 37 \overline{) 983} \\ \underline{- 370} \quad (37 \times 10) \\ 613 \\ \underline{- 370} \quad (37 \times 10) \\ 243 \\ \underline{- 222} \quad (37 \times 6) \\ 21 \end{array}$$

$$983 \div 37 = 26 \text{ r}21$$



D13: Long Division

$$\begin{array}{r} 26 \text{ r}21 \\ 37 \overline{) 983} \\ \underline{- 74} \\ 243 \\ \underline{- 222} \\ 21 \end{array}$$

$$983 \div 37 = 26 \text{ r}21$$

