RECALL

Identify the square numbers on your multiplication grid.

Can you help the children answer their questions?

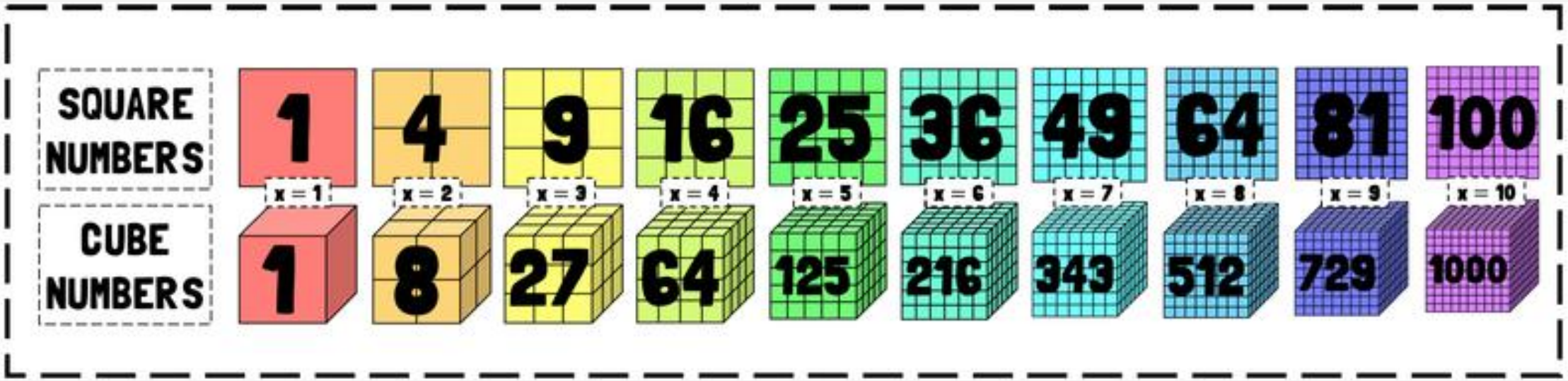
×	1	2	3	4	5	6	7	8	9	10	11	12
1	1	2	3	4	5	6	7	8	9	10	11	12
2	2	4	6	8	10	12	14	16	18	20	22	24
3	3	6	9	12	15	18	21	24	27	30	33	36
4	4	8	12	16	20	24	28	32	36	40	44	48
5	5	10	15	20	25	30	35	40	45	50	55	60
6	6	12	18	24	30	36	42	48	54	60	66	72
7	7	14	21	28	35	42	49	56	63	70	77	84
8	8	16	24	32	40	48	56	64	72	80	88	96
9	9	18	27	36	45	54	63	72	81	90	99	108
10	10	20	30	40	50	60	70	80	90	100	110	120
11	11	22	33	44	55	66	77	88	99	110	121	132
12	12	24	36	48	60	72	84	96	108	120	132	144



I wonder why there is not a pattern for cube numbers on this grid.

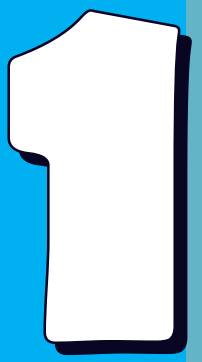
Maybe the grid needs to be extended beyond 12 × 12! I wonder how many rows and columns I would need so I can find 5^3.




SQUARE NUMBERS
CUBE NUMBERS
1
4
9
16
25
36
49
64
81
100
x = 1
x = 2
x = 3
x = 4
x = 5
x = 6
x = 7
x = 8
x = 9
x = 10
1
8
27
64
125
216
343
512
729
1000

L.O. USE THEIR KNOWLEDGE OF THE ORDER OF OPERATIONS TO CARRY OUT CALCULATIONS INVOLVING THE FOUR OPERATIONS.

- SOME WILL EVEN: Solve problems involving BODMAS
- SOME WILL: Recognise errors in calculating and correct.
- MOST WILL: Use BODMAS to calculate in correct order.
- ALL WILL: Recognise mathematical symbols (+ - x ÷ ( ) x^2 x^3)



B	Brackets	$10 \times (4 + 2) = 10 \times 6 = 60$
O	Order	$5 + 2^2 = 5 + 4 = 9$
D	Division	$10 + 6 \div 2 = 10 + 3 = 13$
M	Multiplication	$10 - 4 \times 2 = 10 - 8 = 2$
A	Addition	$10 \times 4 + 7 = 40 + 7 = 47$
S	Subtraction	$10 \div 2 - 3 = 5 - 3 = 2$

B - Brackets

Complete anything in the brackets first

O - Orders

Next apply any orders of - square roots, indices etc.

D&M - Division or Multiplication

Then do any divisions or multiplications (if both are in the same calculation, complete them left to right)

A&S- Addition or Subtraction

Lastly, complete any additions or subtractions (if both are in the same calculation, do them from left to right)

EXPLORE

A theme park sells tickets online.



Each ticket costs £24.

There is a £3 charge for buying tickets online.

a) Which of these sums shows how to calculate the total cost, in pounds?

→ number of tickets x 3 + 24

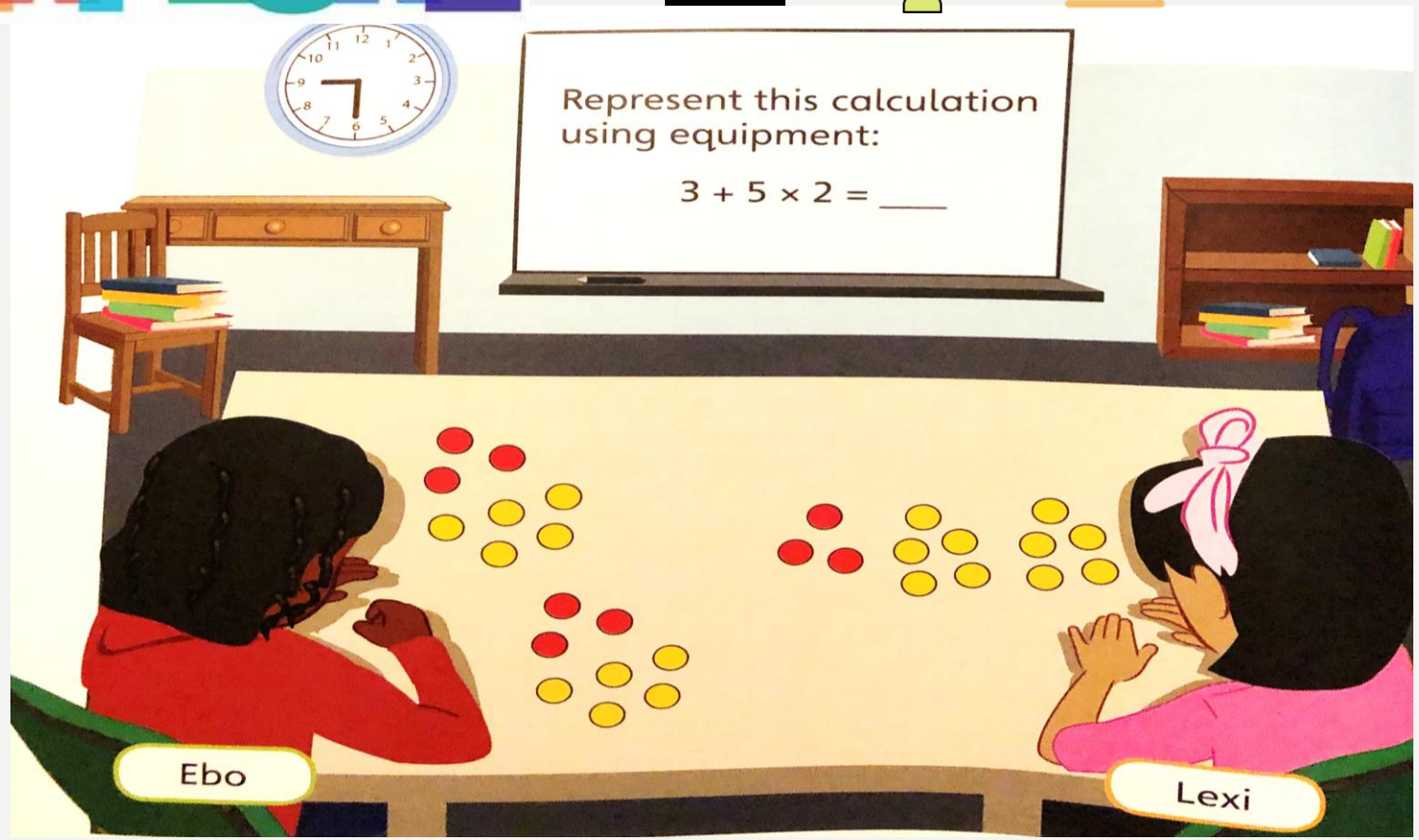
→number of tickets x 24 + 3

→number of tickets + 3 x 24

→number of tickets + 24 x 3

b) What if there was a £3 charge for every ticket bought online?

EXPLORE



a) Explain why Ebo and Lexi have produced different answers.

b) Who is correct and why?

help

Use cubes or a drawing to help you explain.

CHALLENGE!

What about if the sum was 3 x 5 x 2? Or 3 + 5 - 3 x 5 ?

Intelligent Practice



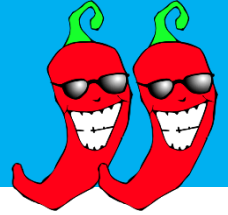
$3 \times 12 - 3 =$

$100 \times 8 - 8 =$

$20 + 20 \times 7 =$

$5 \times 10 - 5 =$

$10 - 2 \times 4 =$



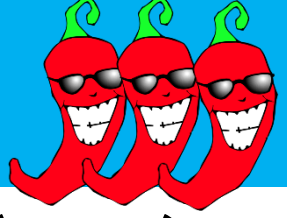
$2 \times 7 \div 4 =$

$120 \div 4 + 60 =$

$12 \times 4 - 48 =$

$3^2 \times 2 - 7 =$

$4 + 13 - 3^3 =$



$100 - (20 \times 3) =$

$(35 - 15) + (27 - 7) =$

$15 + (6 \times 6) =$

$(4 + 5) \times (3 + 6) =$

$(5 + 5) \times (5 - 2) =$





By putting brackets in different places,
how many different sums and answers
can you find for these two sequences:

$4 + 4 \times 5 - 3 =$ $8 + 5 \times 1 + 3 - 6 =$

Which would be correct?

Intelligent Practice



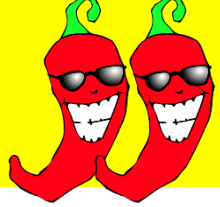
$3 \times 12 - 3 = 33$

$100 \times 8 - 8 = 792$

$20 + 20 \times 7 = 160$

$5 \times 10 - 5 = 45$

$10 - 2 \times 4 = 2$



$2 \times 7 \div 4 = 14$

$120 \div 4 + 60 = 90$

$12 \times 4 - 48 = 0$

$3^2 \times 2 - 7 = 11$

$4 + 13 - 3^3 = -10$



$100 - (20 \times 3) = 40$

$(35 - 15) + (27 - 7) = 40$

$15 + (6 \times 6) = 51$

$(4 + 5) \times (3 + 6) = 81$

$(5 + 5) \times (5 - 2) = 30$





$4 + 4 \times 5 - 3 =$

$(4 + 4) \times (5 - 3) = 16$

$4 + (4 \times 5) - 3 = 21$

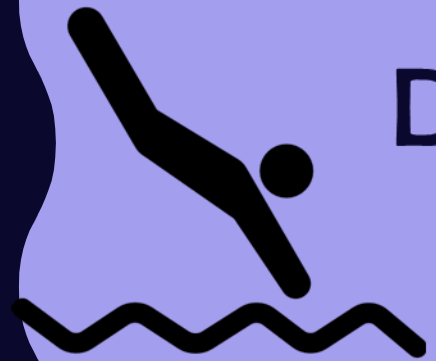
☺ $4+(4x5)-3 = 21$

$8 + 5 \times 1 + 3 - 6 =$

$(8 + 5) \times (1 + 3) - 6 = 46$

$8 + (5 \times 1) + (3 - 6) = 16$

☺ $8+(5x1)+3-6 = 10$



DIVE DEEPER 1



DIVE DEEPER 1

When?

Work out the answers to the following questions to find the time that the burglary took place.

(P.S. Your answer will be in the format of a 24-hour clock!)

1) 2(5 - 3) - 3 = _____

2) 2(3 +1) + 1 = _____

3) 8 x 4 - 2 = _____



Who?

Work out the answer to the following question to find out who was burgled!

7(6÷3 +2) – (10 x 2) + 1=

Fred = 37



Velma = 9



Daphne = 7



Shaggy = - 1



Scooby = 13



DIVE DEEPER 1

Where?

Answer the following question to work out where the burglary took place!

Scooby Doo is hungry, as always! First, he eats 2 Scooby Snacks. He then eats another 5 a few minutes later! When Shaggy turns his back, Scooby puts the whole bag in his mouth, containing twice as many Scooby snacks as he's already eaten. However, Shaggy catches him, and makes him spit out the last 3! How many Scooby Snacks did Scooby manage to eat?



Fred's mansion = 11
Shaggy's Mystery Machine = 18
Daphne's dressing room = 14
Velma's science lab = 12
Scooby's dog house = 21



What?

What did the burglar take?

8 + 3 x 2 – 5 x 1 + 7 =

Necklace = 24 Telescope = 17 Sandwich = 16 Bone = 25









Why?

Why did the burglar do such a thing!?!

1) 3(1+2) = _____
2) 2 x 5 + 10 = _____

3) 4(7-2) + 3 = _____
4) (4 x 2) ÷ 8 = _____
5) 2 x 3 x 3 + 1 = _____

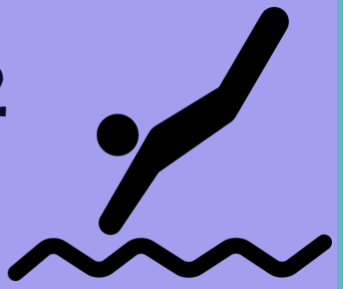
6) 100 ÷ 5 + 5 = _____
7) 1 + 40 ÷ 2 = _____
8) 3 + 3 + 9 - 2 = _____
9) 28 ÷ 2 - 1 = _____
10) 5 x 3 + 10 = _____

1	A	10	J	19	S
2	B	11	K	20	T
3	C	12	L	21	U
4	D	13	M	22	V
5	E	14	N	23	W
6	F	15	O	24	X
7	G	16	P	25	Y
8	H	17	Q	26	Z
9	I	18	R		

Look at all of your clues… now, who do you think is likely to be the burglar?

_____

DIVE DEEPER 2



BIDMAS/BODMAS

Solve the clues to find the four-digit code to escape the classroom!

a. Work out the answer to $3 + 5 \times 7$

b. Work out the answer to $11 - 2 \times 9$

c. Work out the answer to $(5 + 4)^2 - 8 \times 10$

d. Underline the correct calculation:

1. $(8 + 2) \times 6 - 5 = 10$
2. $8 + (2 \times 6) - 5 = 10$
3. $8 + (2 \times 6 - 5) = 10$
4. $(8 + 2) \times (6 - 5) = 10$

The first digit in the code is the value of the tens digit in the answer to part a. The second digit is 7 if answer to part b is positive, and 3 if it is negative. The third digit is the answer to part c. The fourth digit of the code is the number of the correct calculation in part d.

Exit Code: ☐ ☐ ☐ ☐



DIVE DEEPER 1

WHEN 19: 30
WHO Shaggy
WHERE Shaggy's mystery machine
WHAT Sandwich
WHY it was yummy

DIVE DEEPER 2

BIDMAS/BODMAS **Answers**

Solve the clues to find the four-digit code to escape the classroom!

a. Work out the answer to $3 + 5 \times 7$

38

b. Work out the answer to $11 - 2 \times 9$

-7

c. Work out the answer to $(5 + 4)^2 - 8 \times 10$

1

d. Underline the correct calculation:

1. $(8 + 2) \times 6 - 5 = 10$
2. $8 + (2 \times 6) - 5 = 10$
3. $8 + (2 \times 6 - 5) = 10$
4. **$(8 + 2) \times (6 - 5) = 10$**

The first digit in the code is the value of the tens digit in the answer to part a. The second digit is 7 if answer to part b is positive, and 3 if it is negative. The third digit is the answer to part c. The fourth digit of the code is the number of the correct calculation in part d.

Exit Code: | 3 | 3 | 1 | 4 |



NRICH

Where in the World #1

$2 \times 4 + 2 - 5$

$4^2 + 6 - 3$

$-6 + 12 + 6$

$2 + 5 + 7$

$11 \times 11 \div 11$

$-3 + 12$

$2 \times 2 \times 2$

$3 + 2 \times 3$

A	B	C	D	E	F	G	H	I	J	K	L	M
1	2	3	4	5	6	7	8	9	10	11	12	13

N	O	P	Q	R	S	T	U	V	W	X	Y	Z
14	15	16	17	18	19	20	21	22	23	24	25	26

Where in the World #2

$(3 + 3) + (6 + 1)$

$1 + 0 \times 12 \times 2$

$11 \times 2 - 1 + 1$

$3 \times 2 + 3$

$5 - 5 + 5$

$20 - 1$

$4 \times 4 - 4$

$5 - 10 \div 10$

A	B	C	D	E	F	G	H	I	J	K	L	M
1	2	3	4	5	6	7	8	9	10	11	12	13

N	O	P	Q	R	S	T	U	V	W	X	Y	Z
14	15	16	17	18	19	20	21	22	23	24	25	26

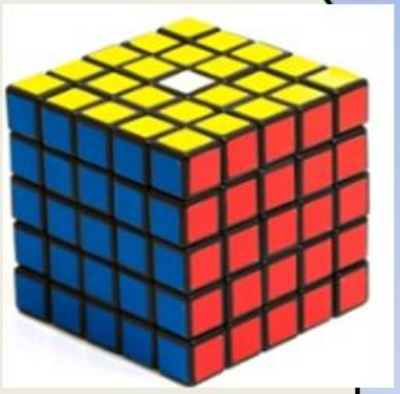
Square and Cube Numbers

1. How many little cubes in each of these?









2. (a) Check that

$$(1 + 2 + 3 + 4)^2 = 1^3 + 2^3 + 3^3 + 4^3$$

(b) See if it works for

$$(1 + 2 + \ldots + 9 + 10)^2 = 1^3 + 2^3 + \ldots + 9^3 + 10^3$$