MATHS FIELD GUIDE · GRADE 5

Grouping gives a calculation its meaning

OPENING PROBLEM

Which operation groups the three pairs?

$$4 + 3 \times 2$$
$$\downarrow$$
$$4 + 6$$
$$\downarrow$$
$$10$$

02 Change the grouping, test the result
03 Rules and worked cases
04 Write the ticket bill
05 Compare the models
06 Run the operation backwards
07 Check your reasoning

ILLUSTRATED PROBLEM SHEET

Change the grouping, test the result

Brackets are calculated first. Multiplication and division at the same level run left to right.

1

$$4 + 3 \times 2 \downarrow 4 + 6 \downarrow 10$$

Which operation groups the three pairs?

Multiply three by two before adding the four.

2

$$(4 + 3) \times 2 \downarrow 7 \times 2 \downarrow 14$$

What did the brackets change?

Both the four and the three are doubled.

3

$$24 \div 4 \times 2 \downarrow 6 \times 2 \downarrow 12$$

Is multiplying first always correct?

No. Here division is first from the left at the same priority.

4

$$24 \div (4 \times 2) \downarrow 24 \div 8 \downarrow 3$$

What does the divisor include now?

The entire product eight. Grouping changes the division.

$8 - 3 + 2$
7.

$8 - (3 + 2)$
3.

CHAPTER PROBLEM

Compare $2 + 3 \times 4$ and $(2 + 3) \times 4$.

The first is fourteen; the second twenty. Brackets change what is grouped.

MATHS REFERENCE · GRADE 5

Grouping gives a calculation its meaning

An expression describes a quantity using numbers and operations.

Agreed operation order makes the meaning consistent. Brackets name a group that must be evaluated first.

Cases to recognise

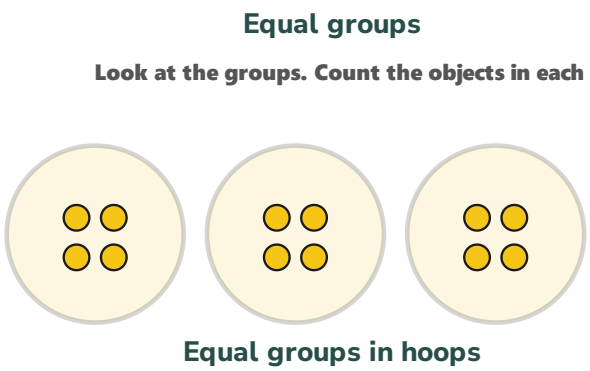
Situation	What to do and why
6 + 4 × 3	Four groups of three give 12. Add six to get 18.
(6 + 4) × 3	Each group has ten. Three groups make 30.

Read the model

Read the groups in a story

Three packs each hold four pencils, with two extra pencils.

The expression is 3 × 4 + 2. Multiply the pack count by the size of a pack, then add the extras. The total is fourteen.

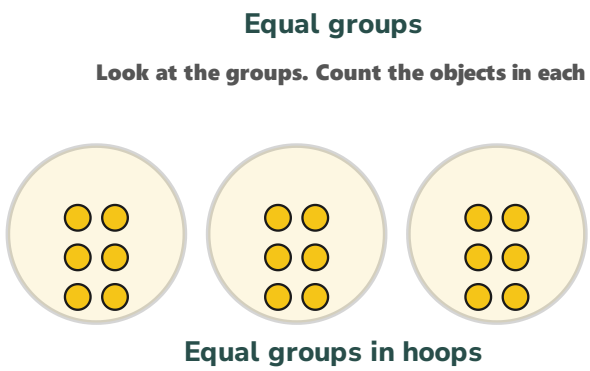


Equal groups in hoops

Brackets can change the story

3 × (4 + 2) means three groups, each containing four and two.

Each group has six, giving eighteen. It is not the same story as three groups of four with only two extras.



Equal groups in hoops

expression A mathematical description of a quantity.
brackets Marks that group part of an expression.
priority Which operations are evaluated first.



Can either side be read first?

Yes. Each row has two.

WORKED INVESTIGATION

Write the ticket bill

Three child tickets cost ₹20 each and one programme costs ₹8. The receipt is 3 × 20 + 8 because the ₹8 charge occurs once.

Look at this part	What it tells you
Tickets	₹60
Programme	₹8
Bill	₹68

Work it through

If each child also buys a programme, write 3 × (20 + 8). The brackets produce a cost of ₹28 per child before multiplying.

Catch the mistake

Working left to right regardless of symbols fails for 8 + 3 × 20. Multiplication groups the three ticket prices first.

Compare the cases

State the order clearly

For expressions here: evaluate brackets first. Then multiplication and division, from left to right.

Then addition and subtraction, from left to right. Operations at the same level have equal priority.

Multiplication is not always before division

For 24 ÷ 6 × 2, work left to right: 24 ÷ 6 = 4, then 4 × 2 = 8.

Doing 6 × 2 first would create different grouping that was not written.

Change one condition

In 24 ÷ 3 × 2, division and multiplication have equal priority. Work left to right to get 16.

3 + 2
↓
5
↓
4 + 1

Can different additions have the same total?

Yes. Both describe five.

GROUPING GIVES A CALCULATION ITS MEANING

Compare the models

Addition is not always before subtraction

For 15 − 4 + 2, work left to right: eleven, then thirteen.

A memory word must not override the equal priority of addition and subtraction.

Explain before calculating

For 5 + 2 × (9 − 6), first find the bracket value, three.

Then two groups of three make six; add five to get eleven.

Write a clear expression

Use brackets when you intend a combined amount to be treated as one group.

This chapter uses the four operations. Rules involving powers can be added when powers have been taught.

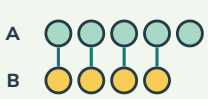
Explain your reasoning

Calculate 18 ÷ 3 × 2. Explain the order.

12. Division and multiplication have equal priority, so work left to right.

Two more worked cases

Situation	Reasoning
48 ÷ 4 × 2	Operations share priority. Work left to right: 12 × 2 = 24.
Place brackets in 20 − 8 ÷ 4 to make 3	(20 − 8) ÷ 4 = 12 ÷ 4 = 3.



How could adding just one make the rows equal?

Add one to B. Adding one to A would increase the difference.

ILLUSTRATED PROBLEM SHEET

Run the operation backwards

Begin with the result and undo the last change first.

1

? + 18 = 43
↓
43 − 18 = 25

What number was hidden?

Twenty-five. Adding eighteen to it returns forty-three.

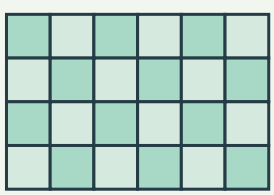
2

? − 16 = 27
↓
27 + 16 = 43

A box lost sixteen and now has twenty-seven. How many at first?

Forty-three. Undo a loss by putting it back.

3



Twenty-four counters fill four identical rows. How many per row?

Six. Four times six gives the original total.

4

? × 3 + 2 = 20
↓
20 − 2 = 18
↓
18 ÷ 3 = 6

Which change do you undo first?

Remove the final two, then divide by three. Check: three sixes and two make twenty.

□ + 9 = 32
subtract nine: 23.

□ − 9 = 32
add nine: 41.

CHAPTER PROBLEM

A basket has two packs of five apples and three loose apples. Write an expression.

2 × 5 + 3, giving thirteen. The loose apples are added only once.

QUESTION BANK · FOLD OR COVER THE RIGHT COLUMN

Check your reasoning

Try the problem	Solution and reasoning
01 Place brackets in 18 – 6 – 2 to make 14.	18 – (6 – 2) = 14. Without the brackets the value is 10.
02 Is 35 – 12 a check for 23 + 12 = 35?	Yes. Removing one part from the total recovers the other.
03 Write and evaluate the cost of four ₹15 tickets with a single ₹10 discount.	4 × 15 – 10 = ₹50. Bracketing 15 – 10 would apply the discount to each ticket.
04 Find 40 – 3 × (4 + 5).	Add in the brackets, multiply by three, then subtract: 40 – 27 = 13.
05 How can 12 + 6 ÷ 3 give either 14 or 6 with brackets?	12 + (6 ÷ 3) = 14. (12 + 6) ÷ 3 = 6.

6 = 4 + □
↓
4 + 2 = 6

What fits the empty square?

Two. Four and two match the six on the other side.

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