MATHS FIELD GUIDE · GRADE 5

Division can share or count groups

OPENING PROBLEM

Does the digit 4 change its value?

Change	Start	Result
× 10	0.045	0.45
÷ 10	0.45	0.045

02 Move between tenths, money and measurement
03 Rules and worked cases
04 Pouring juice into bottles
05 Compare the models
06 Keep the decimal point tied to the unit
07 Check your reasoning

ILLUSTRATED PROBLEM SHEET

Move between tenths, money and measurement

Scale both quantities in a division by the same nonzero factor. In multiplication, track each factor's place value.

1

$$0.3 \times 0.4$$
$$\downarrow$$
$$3 \text{ tenths} \times 4 \text{ tenths}$$
$$\downarrow$$
$$12 \text{ hundredths} = 0.12$$

Which unit does each small product represent?

A tenth of a tenth is a hundredth. Twelve such pieces give 0.12.

2

$$2.4 \div 0.3$$
$$\downarrow$$
$$24 \text{ tenths} \div 3 \text{ tenths}$$
$$\downarrow$$
$$8 \text{ groups}$$

Why can the quotient exceed 2.4?

It counts groups that are smaller than one whole unit.

3

$$4.8 \div 6$$
$$\downarrow$$
$$48 \text{ tenths} \div 6$$
$$\downarrow$$
$$8 \text{ tenths} = 0.8$$

What does eight count in the second line?

Eight tenths per group. Write the decimal unit back into the answer.

4

Change	Start	Result
× 10	0.045	0.45
÷ 10	0.45	0.045

Does the digit 4 change its value?

Yes. Multiplying by ten moves its value from four hundredths to four tenths.

0.05 × 0.2
0.01.

0.05 ÷ 0.2
0.25.

CHAPTER PROBLEM

How many 0.2 L cupfuls fill 1.4 L?

Seven. Fourteen tenths contains seven groups of two tenths.

MATHS REFERENCE · GRADE 5

Division can share or count groups

Division can share an amount into equal shares, or count how many equal groups fit.

A decimal quotient still needs a meaning and a unit.

Cases to recognise

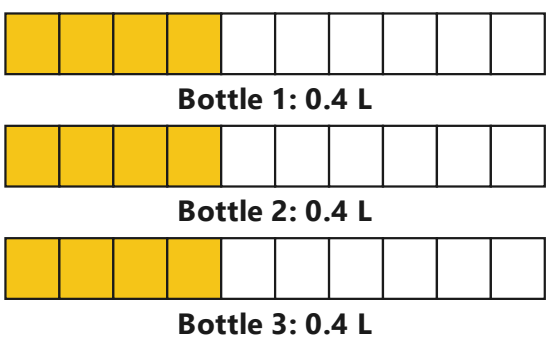
Situation	What to do and why
4.5 ÷ 0.5	Count nine halves in four and a half.
3.36 ÷ 4	336 hundredths shared equally gives 84 hundredths or 0.84.

Read the model

Share decimal units

Share 1.2 L equally into three bottles. Rename 1.2 L as twelve tenths of a litre.

Each bottle gets four tenths: 1.2 ÷ 3 = 0.4 L.



Count how many groups fit

How many 0.3 L cupfuls fit into 1.2 L?

Twelve tenths divided into groups of three tenths makes four cupfuls.

1.2 ÷ 0.3

Multiply both numbers by the same 10s until the divisor is whole

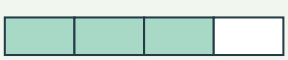
1.2	÷	0.3
× 10 on both		
12	÷	3

1.2 ÷ 0.3 = 12 ÷ 3 = 4

Then divide by the whole-number divisor

Dividing decimals

dividend The amount being divided.
divisor The group size or number of equal shares.
quotient The result of division.



How many quarter-litre cups fill ¾ of a litre?

Three cups. Each is one of the three shaded quarters.

WORKED INVESTIGATION

Pouring juice into bottles

Divide 2.4 L equally among six bottles. Change to 24 tenths of a litre so you can divide a whole-number count.

Look at this part	What it tells you
24 tenths ÷ 6	4 tenths
4 tenths	0.4 L
Six bottles	2.4 L

Work it through

A different question asks how many 0.3 L cups fit in 2.4 L. Divide 24 tenths by three tenths to get eight cups.

Catch the mistake

Dividing 24 by 3 without naming the units happens to give eight here. Dividing 2.4 L by 3 cups instead gives 0.8 L per cup.

Compare the cases

Why scaling both numbers works

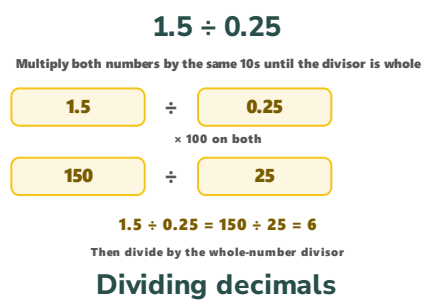
1.2 ÷ 0.3 becomes 12 ÷ 3 when both amounts are expressed in tenths.

The units get smaller, but the number of groups does not change.

Use hundredths when needed

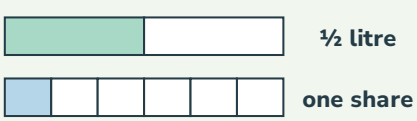
For 1.5 ÷ 0.25, count groups of twenty-five hundredths in 150 hundredths.

150 ÷ 25 = 6, so six quarter-litre cupfuls fill 1.5 L.



Change one condition

If each cup holds 0.6 L instead of 0.3 L, the same drink fills four cups. Doubling the cup size halves the count.



Half a litre is shared by three. What is one share?

One sixth of a litre. Three sixths rebuild the half.

DIVISION CAN SHARE OR COUNT GROUPS

Compare the models

Do not change only one number

Multiplying only the divisor by ten changes the size of every group.

Rename both the total and the group size in the same unit.

A smaller group can give a larger count

Two litres contain four half-litre groups.

2 ÷ 0.5 = 4. Division does not always make a positive number smaller.

Check by multiplication

Multiply the group count by the group size to remake the total.

For 1.5 ÷ 0.25 = 6, check 6 × 0.25 = 1.5. We never divide by zero.

Explain your reasoning

Share 2.4 L equally into four bottles. How much in each?

0.6 L. Twenty-four tenths shared by four gives six tenths each.

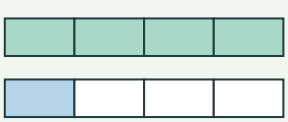
Two more worked cases

Situation	Reasoning
1.8 ÷ 0.03	Multiply both by 100. Now 180 ÷ 3 = 60.
12 bottles of 0.25 L	Check division in reverse: twelve quarters fill 3 L.

How many bottles fit?

A jug holds 2.4 L. Each bottle holds 0.3 L. Convert both to tenths of a litre: 24 tenths divided into groups of three makes eight bottles.

Sharing 2.4 L among three bottles would give 0.8 L per bottle. Look at whether the question asks for a count or a capacity.



How many quarter-litre cups fit in two litres?

Four in one litre, so eight in two.

ILLUSTRATED PROBLEM SHEET

Keep the decimal point tied to the unit

A rupee has one hundred paise. Estimate the size before calculating.

1

₹4.50 + ₹0.75
↓
450p + 75p
↓
₹5.25

Where does the extra rupee come from?

525 paise contains five complete hundreds and 25 paise.

2

Length	Cost
1 m	₹12
0.1 m	₹1.20
0.4 m	₹4.80

Why does the shorter piece cost less?

At the same rate four tenths of a metre costs four tenths of ₹12.

3

₹8.40 ÷ 7
↓
840p ÷ 7
↓
₹1.20

How can you check the share?

Seven shares of 120 paise give 840 paise.

4

₹2.50 × 0.6
↓
250p × 6/10
↓
₹1.50

Why does multiplication give a smaller amount?

The factor is six tenths. The product is six tenths of ₹2.50.

₹0.06
six paise.

₹0.60
sixty paise.

CHAPTER PROBLEM

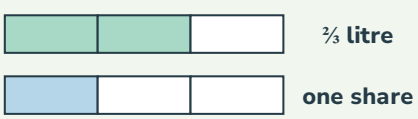
Why must both numbers change when 0.8 ÷ 0.04 becomes 80 ÷ 4?

Both amounts have been renamed in hundredths. The group count stays the same.

QUESTION BANK · FOLD OR COVER THE RIGHT COLUMN

Check your reasoning

Try the problem	Solution and reasoning
01 Can 0.7 × 0.8 equal 5.6?	No. Both positive factors are below one. The product is 56 hundredths, or 0.56.
02 ₹10 is shared among four children. Can every share be paid exactly in paise?	Yes. 1000 paise divided by four gives 250 paise each.
03 How many 0.25 L bottles can be filled from 1.5 L?	Convert both volumes to millilitres. 1,500 ÷ 250 = 6 bottles; six quarters of a litre equal 1.5 L.
04 What is 0.72 ÷ 0.08?	Divide 72 hundredths by eight hundredths to get nine.
05 Share ₹5.40 between eight friends. Can you pay all shares exactly in whole paise?	Each share is ₹0.675, or 67.5 paise. Equal whole-paise payments cannot give the exact share.



Divide two thirds equally between two. How large is each share?

One third of a litre. Here the two counts people.

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