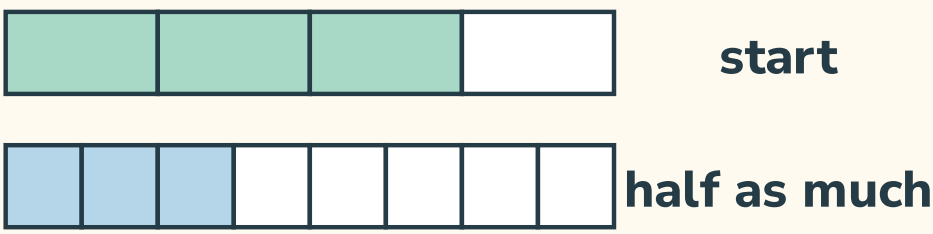
MATHS FIELD GUIDE · GRADE 5

Find a fraction of an amount

OPENING PROBLEM

What is half of three quarters?



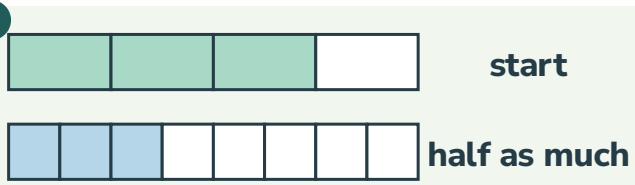
02 Predict what multiplication will do
03 Rules and worked cases
04 Library book boxes
05 Compare the models
06 Keep corresponding parts together
07 Check your reasoning

ILLUSTRATED PROBLEM SHEET

Predict what multiplication will do

For a positive starting amount, a factor below one shrinks it. A factor above one enlarges it.

1



What is half of three quarters?

Split each quarter into two eighths. Taking half leaves three eighths.

2

⅔ of ¾
↓
2 × 3 over 3 × 4
↓
½

Why is the product smaller than three quarters?

Only two of three equal shares of the starting amount are kept.

3

1½ × 8
↓
8 + 4
↓
12

What does the extra half add?

Half of eight is four. One full eight plus four is twelve.

4

¾ × 4/3
↓
12/12
↓
1

Which factor undoes multiplication by ¾?

Its reciprocal, 4/3. The product is exactly one.

¾ of 20
15.

20 is ¾ of the whole
whole = 26⅔.

CHAPTER PROBLEM

Four pieces are each 1/3 m long. What is their total length?

4/3 m, or 1 1/3 m.

MATHS REFERENCE · GRADE 5

Find a fraction of an amount

Finding a fraction of an amount selects some equal shares of that amount.

The starting amount is the whole. The denominator tells how many equal shares; the numerator tells how many to select.

Cases to recognise

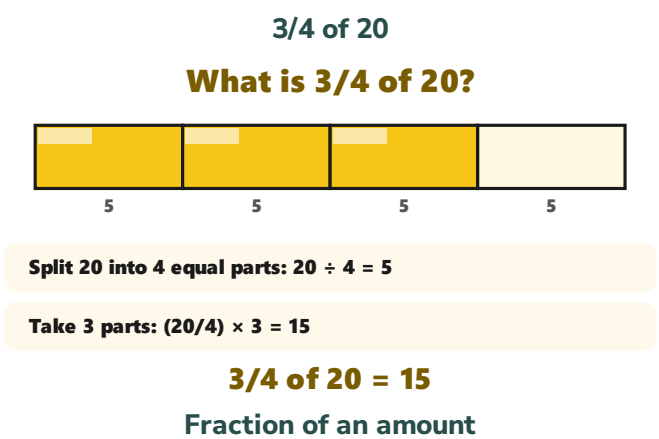
Situation	What to do and why
5/8 of 64	One eighth is eight. Five shares give 40.
18 is 3/4 of what amount?	One quarter is six. The whole is 24.

Read the model

Find one share first

To find 3/4 of twenty counters, split twenty into four equal groups.

Each group has five. Choose three groups: fifteen counters.



Connect to multiplication

3/4 of 20 can be written 3/4 × 20.

It is three copies of one quarter of twenty, not three quarters added to twenty.

fraction of an amount Selected equal shares of a starting amount.
unit fraction A fraction with numerator one.
reference whole The starting amount treated as one complete whole.



How much is shaded?

Three fifths. The five describes the pieces in the whole.

WORKED INVESTIGATION

Library book boxes

Three fifths of 40 books are stories. One fifth is one of five equal groups, so divide 40 by five before counting three groups.

Look at this part	What it tells you
One fifth	8 books
Three fifths	24 books
Two fifths left	16 books

Work it through

Reverse the reasoning if 24 storybooks make three fifths. One fifth is eight books and five fifths are 40 books.

Catch the mistake

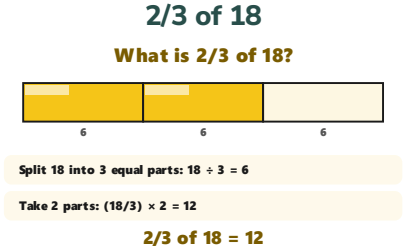
Dividing by the numerator would split into three groups. The denominator names the number of equal groups in the whole.

Compare the cases

Try a different amount

For 2/3 of eighteen, first find one third: six.

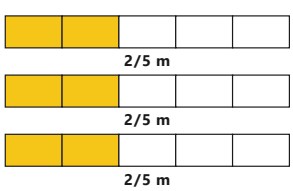
Two groups of six make twelve.



Repeat a fraction amount

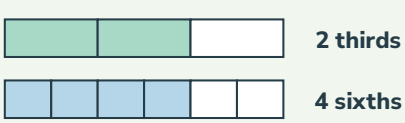
Three groups each contain 2/5 of a metre.

Together they contain 6/5 m, or 1 1/5 m. Repetition can give more than a whole.



Change one condition

If the total doubles to 80 while the fraction stays three fifths, each fifth doubles and the story count becomes 48.



Which strip has more shaded?

They cover the same length. Each third splits into two sixths.

FIND A FRACTION OF AN AMOUNT

Compare the models

Explain the two useful routes

You may divide the whole amount by the denominator, then multiply by the numerator.

For 3/4 of twenty: 20 ÷ 4 × 3 = 15. The units and equal shares explain the calculation.

Keep the reference whole

3/4 of twenty is fifteen; 3/4 of forty is thirty.

The same fraction can select different amounts when the wholes differ.

Check the bounds

A proper fraction of a positive amount must be less than that amount.

Three quarters of twenty cannot be sixty. The whole is your first size check.

Explain your reasoning

Find 2/5 of thirty. Show the equal-share reasoning.

Twelve. One fifth is six; two fifths is twelve.

Two more worked cases

Situation	Reasoning
Give away 2/7 of 35	Ten leave and 25 remain, equal to five sevenths.
Which is more, half of 18 or a third of 30?	Compare amounts: nine versus ten. The reference wholes differ.



How far apart are the marks?

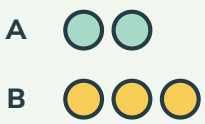
Two quarter-steps, or one half.

ILLUSTRATED PROBLEM SHEET

Keep corresponding parts together

Multiply or divide both counts by the same factor to preserve a ratio.

1



The mix is two parts A to three parts B. How many parts in all?

Five. A is two fifths of the whole mixture.

2

A	B
2	3
4	6
6	9

What changes across batches?

The totals change, while the amount of B for each unit of A stays at 3/2.

3

Total 35 g
↓
35 ÷ 5 = 7 g
↓
A = 14 g

How much A is in 35 g of this mix?

One part is 7 g. Two parts give 14 g and the remaining 21 g is B.

4

A	B
2	3
3	4

Does adding one to both counts preserve this recipe?

No. Cross-products 2 × 4 and 3 × 3 differ.

1:4 by parts
first share is 1/5 of the total.

1:4 by parts
first amount is 1/4 of the second.

CHAPTER PROBLEM

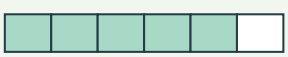
Must 1/2 of two different collections give the same number of objects?

No. Half of ten is five; half of sixteen is eight. The wholes differ.

QUESTION BANK · FOLD OR COVER THE RIGHT COLUMN

Check your reasoning

Try the problem	Solution and reasoning
01 What happens when the factor is exactly one?	The starting value stays the same. One whole copy is retained.
02 In the same mix B weighs 18 g. How much does A weigh?	Three parts weigh 18 g, so one weighs 6 g and A weighs 12 g.
03 Twenty-one books are three sevenths of a shelf. How many books are on the shelf?	One seventh is 21 ÷ 3 = 7 books. Seven sevenths are 49 books.
04 A student spends 3/8 of ₹160. How much remains?	One eighth is ₹20. Five eighths remain, or ₹100.
05 Thirty children are five sixths of a group. How large is the group?	One sixth has six children. Six sixths contain 36.



5 sixths

How much more makes one whole?

One sixth. Five sixths and one sixth fill the strip.

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