

MULTI-DIGIT MULTIPLICATION AND DIVISION

Grade 5 Math | Free Study Guide | 5.NBT.B.5 and 5.NBT.B.6

START HERE Five steps and words into math

USE ALL FIVE STEPS

- 1 Identify math terms and units.
- 2 Choose the operation. Write an equation.
- 3 Estimate a reasonable answer.
- 4 Solve using the math. Check your work.
- 5 Eliminate and justify.

WORDS INTO MATH From this packet

MULTIPLY Product = total in equal groups

"pounds per trip" and "46 trips" -> "total catch"

$$1,247 \text{ pounds per trip} \times 46 \text{ trips} = 57,362 \text{ pounds}$$

DIVIDE Quotient = result of dividing

"12 students per van" -> find how many vans

$$3,850 / 12 = 320 \text{ R}10$$

"seat all students" -> 321 vans needed

1 MULTIPLY WITH PLACE VALUE

EXAMPLE $1,247 \times 46$

$$1,247 \times 6 = 7,482$$

$$1,247 \times 40 = 49,880$$

$$7,482 + 49,880 = 57,362$$

WHAT WE DID

Found two partial products and added them.

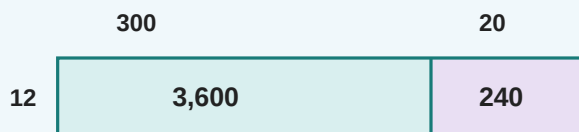
WHY IT WORKS

The 4 in 46 means 40, so use 49,880.

TRY IT Which partial products would you use for $1,324 \times 23$?

2 DIVIDE WITH A PLACE VALUE MODEL

EXAMPLE $3,850 / 12$



10 left outside | Not to scale

WHAT WE DID

Made 300 groups of 12, then 20 more groups.

WHY IT WORKS

$3,600 + 240 + 10 = 3,850$. Answer: 320 R10.

CHECK $12 \times 320 + 10 = 3,850$. Remainder 10 is less than divisor 12.

TRY IT Why does 319 R22 need another step? Explain.

3 LET THE QUESTION DECIDE THE REMAINDER

EXAMPLE 3,850 students / 12 seats per van = 320 R10

"FULL" vans
320 vans

Vans "NEEDED" for all
321 vans

Students "LEFT OVER"
10 students

Why: The 10 remaining students need seats but do not fill another van. Words are clues; use the situation and what is asked to choose the math.

TRY IT For 5,200 pounds in 15-pound boxes, compare full boxes and boxes needed.