

Lesson 117 ALGEBRA

Equivalent expressions ($3 + 3 + 3 = 3 \times 3$)

WHAT THIS LESSON TEACHES

A repeated addition and a multiplication can be two ways of writing the same amount. When both sides are worth the same, they are equivalent expressions and a balance beam sits level.

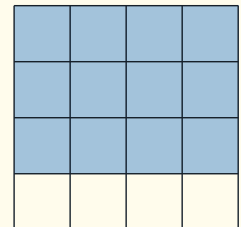
→ $4 + 4 + 4$ and 3×4 both make 12.

→ $5 + 5 + 5 + 5$ is four lots of 5, written 4×5 .

MODEL THIS ON THE BOARD

$$4 + 4 + 4 = 3 \times 4$$

- ① The grid shows three rows with four squares in each row.
- ② Three rows of 4 is the same as the addition $4 + 4 + 4$.
- ③ Three lots of 4 is written as the multiplication 3×4 .
- ④ Both equal 12, so $4 + 4 + 4 = 3 \times 4$.



DISCUSSION STARTER

REFLECT

When does knowing that order does not matter in addition or multiplication save you time?

ANSWER KEY

a) 3×5

b) 4×5

c) $6 + 6$

Q1: 3×7

Q2: 4×3

a) Always — Three lots of 4 is exactly 3×4 , and both make 12.

b) Always — Four lots of 5 is 4×5 , and both make 20.

c) Always — Equal groups added up always match a lots-of multiplication.

d) Never — $2 + 2 + 2$ is 6 but 2×2 is only 4, so the beam would not balance.

EXTENSION SHEET · STRETCH ANSWERS

S1: no, they give different totals

S2: no, they give different totals

S3: yes, both are the same total

S4: no, they give different totals

S5: no, they give different totals