

Lesson 117 **ALGEBRA****Equivalent expressions ($4 + 4 + 4 = 3 \times 4$)**

CURRICULUM ALIGNMENT

ALG.EXP.3

represent and express problems with known and unknown values in different ways to include the use of appropriate letter-symbols or words.

NUM.OPS.3

understand and apply flexibly the four operations; and the relationships between operations.

INTERACTIVES **Balance Scales** · challenge, display

WHAT THIS LESSON TEACHES

Repeated addition of the same number is the same as multiplying that number by how many times it appears. So $4 + 4 + 4$ matches 3×4 because both make the same total.

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

$$\rightarrow 2 + 2 + 2 + 2 = 4 \times 2$$

MODEL THIS ON THE BOARD

BALANCING THREE LOTS OF FOUR

- 1 Look at the repeated addition $4 + 4 + 4$.
- 2 Count how many fours there are: there are **3** groups.
- 3 Write the matching multiplication as **3×4** .
- 4 Both sides equal **12** so the expressions are equivalent.

DISCUSSION STARTER

REFLECT Which feels shorter — repeated addition or a times sentence? Why?

ANSWER KEY

Scaffold: visual check on the page**Q1:** 5×2 **Q2:** 4×3 **Q3:** $3 + 3 + 3$ **Spot:** There are four fives added, not five. So $5 + 5 + 5 + 5 = 4 \times 5$ (both equal 20).

EXTENSION SHEET · STRETCH ANSWERS

S1: $6 \times 5 = 30$ **S2:** $3 + 3 + 3 + 3 + 3$ and $5 + 5 + 5$ (both make 15)**S3:** 4**S4:** Yes to both. All three make 12.**S5:** $6 + 6 + 6 + 6$ is bigger (24 and 18), by 6.