Luna's Space Adventure

Name _____

Grade 3 · Multiplying with properties · 3.OA.B.5

Date _____

Astronaut Luna is exploring a far-off corner of space. Solve each problem to help Luna's mission go smoothly!

Turn-around facts

Switching the order doesn't change the product.

3 × 2 = 2 × ☐

4 × 4 = 4 × ☐

4 × 5 = 5 × ☐

5 × 3 = 3 × ☐

Break it apart

Split the bigger factor into two easier ones.

5 × 7 = 5 × 5 + 5 × ☐ = ☐ + ☐ = ☐

6 × 9 = 6 × 5 + 6 × ☐ = ☐ + ☐ = ☐

8 × 6 = 8 × 5 + 8 × ☐ = ☐ + ☐ = ☐

9 × 9 = 9 × 5 + 9 × ☐ = ☐ + ☐ = ☐

Group them

Multiply the easy pair first.

2 × 2 × 4 = ☐ × (☐) = ☐

4 × 2 × 3 = ☐ × (☐) = ☐

3 × 5 × 5 = ☐ × (☐) = ☐

4 × 5 × 5 = ☐ × (☐) = ☐

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ANSWER KEY

Astronaut Luna is exploring a far-off corner of space. Solve each problem to help Luna's mission go smoothly!

Turn-around facts

Switching the order doesn't change the product.

3 × 2 = 2 × 3

4 × 5 = 5 × 4

4 × 4 = 4 × 4

5 × 3 = 3 × 5

Break it apart

Split the bigger factor into two easier ones.

5 × 7 = 5 × 5 + 5 × 2 = 25 + 10 = 35

6 × 9 = 6 × 5 + 6 × 4 = 30 + 24 = 54

8 × 6 = 8 × 5 + 8 × 1 = 40 + 8 = 48

9 × 9 = 9 × 5 + 9 × 4 = 45 + 36 = 81

Group them

Multiply the easy pair first.

2 × 2 × 4 = 2 × (8) = 16

4 × 2 × 3 = 4 × (6) = 24

3 × 5 × 5 = 3 × (25) = 75

4 × 5 × 5 = 4 × (25) = 100

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GUIDE

1 What this sheet practises

Using the rules of multiplication to make facts easier: switching the order, breaking a factor apart, or grouping factors a handier way.

2 A problem from the sheet, worked out

Break it apart Split the bigger factor into two easier ones.

$5 \times 7 = 5 \times 5 + 5 \times$ [2] = [25] + [10] = [35]

$6 \times 9 = 6 \times 5 + 6 \times$ [4] = [30] + [24] = [54]

$8 \times 6 = 8 \times 5 + 8 \times$ [1] = [40] + [8] = [48]

How: Break the harder factor into two easier ones, multiply each part, then add: $3 \times 7 = 3 \times 5 + 3 \times 2 = 15 + 6 = 21$.

3 Words to know

commutative switching the order: $3 \times 2 = 2 \times 3$

distributive break a number apart, multiply each part, add

associative multiply any two first: $(5 \times 2) \times 5$

factor a number being multiplied

4 Watch for

- Multiplying only one of the parts after breaking a factor apart.
- Adding the parts before multiplying them.
- Changing a number when switching the order.

5 Where it fits

BEFORE
1.OA.B.3
Use turn-around facts and grouping to make adding easier.

THIS SHEET
3.OA.B.5
Use turn-around facts and grouping to multiply.

NEXT
4.NBT.B.5
Multiply up to four digits by one digit, and two digits by two digits.

6 Helping at home

When a fact like 6×8 is hard, ask what they already know that's close: $5 \times 8 = 40$, then one more 8.