LESSON MAKER PRO

Product Power

Estimate, multiply, and choose a strategy.

GRADE 5 · 5.NOS.B.4

5.NOS.B.4 "Fluently multiply multi-digit whole numbers. Apply estimation strategies to estimate products. Use computational strategies (e.g., partial products, doubling and halving) efficiently to multiply. Use a standard algorithm to multiply..."

NAME _____ DATE _____

BREAK IT APART

To multiply, break one factor into place-value parts. Multiply by each part, then add the partial products. You can round the factors first to estimate and check whether your exact answer makes sense.

WORKED EXAMPLE

Estimate and find 47×23.

1. Estimate: $50 \times 20 = 1{,}000$.
2. Break apart 23: $47 \times 20 = 940$ and $47 \times 3 = 141$.
3. Add the partial products: $940 + 141 = 1{,}081$.

Answer: Estimate: 1,000. Exact product: 1,081.

PRACTICE 6 problems

1 Find 64×25. Try doubling one factor and halving the other.

ANSWER _____

2 Find 318×24 using partial products.

ANSWER _____

3 Find 406×37 using the standard algorithm.

ANSWER _____

4 Round each factor to the nearest ten to estimate 72×45. Then find the exact product.

ANSWER _____

5 Find 125×48 using a strategy you choose.

ANSWER _____

6 Find 284×63 using the standard algorithm.

ANSWER _____

APPLY IT Show your work

1 A game designer puts 128 coins in each of 36 levels. How many coins are in all the levels?

WORK SPACE

ANSWER _____

2 A robotics team orders 245 packs of building pieces. Each pack has 18 pieces. How many pieces does the team order?

WORK SPACE

ANSWER _____

CHALLENGE One step up

A game store has 49 boxes with 236 trading cards in each box. Estimate the total using 50 boxes. Then find the exact total without using the standard algorithm. Explain why your strategy is efficient.

WORK SPACE AND ANSWER

ANSWER KEY

Product Power

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Find 64 × 25. Try doubling one factor and halving the other.	**1,600**
2	Find 318 × 24 using partial products.	**7,632**
3	Find 406 × 37 using the standard algorithm.	**15,022**
4	Round each factor to the nearest ten to estimate 72 × 45. Then find the exact product.	**Estimate: 3,500. Exact product: 3,240.**
5	Find 125 × 48 using a strategy you choose.	**6,000**
6	Find 284 × 63 using the standard algorithm.	**17,892**

PART 2 · APPLY IT

1. **4,608 coins** Multiply 128 × 36. The partial products are 3,840 and 768, which add to 4,608.
2. **4,410 pieces** Multiply 245 × 18. The partial products are 2,450 and 1,960, which add to 4,410.

CHALLENGE

Estimate: 11,800 cards. Exact total: 11,564 cards. Multiply 236 × 50 = 11,800, then subtract one box of 236 cards. This is efficient because 49 is one less than 50.

Accept any correct multiplication strategy unless a problem names a required method. For the challenge, accept explanations that use 50 groups minus 1 group.