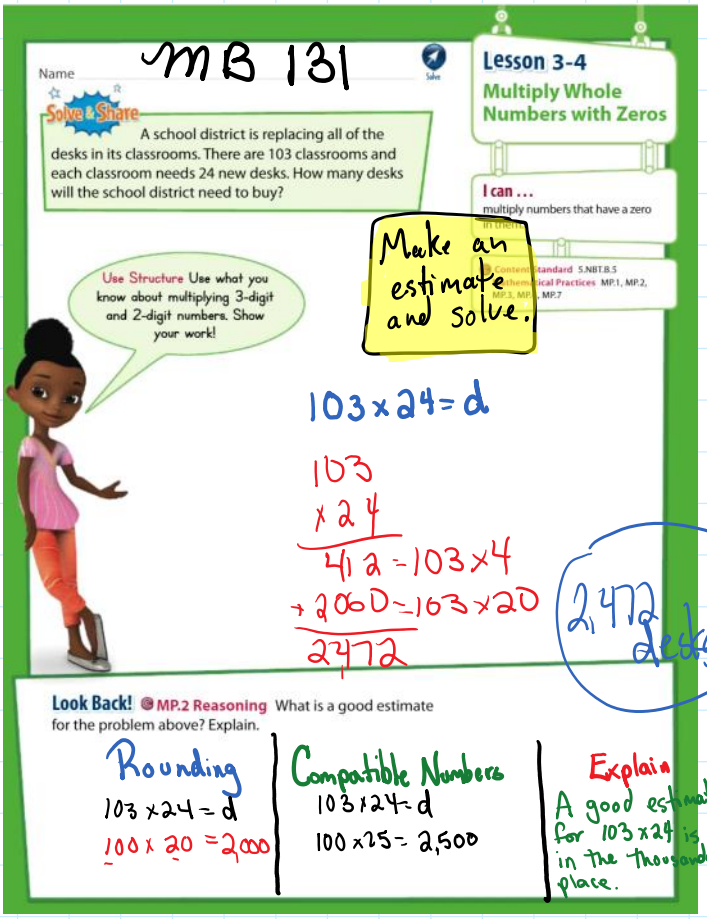
Lesson 3-4

Monday, September 30, 2019 1:38 PM



MB 131

Name

Lesson 3-4
Multiply Whole Numbers with Zeros

Solve & Share
A school district is replacing all of the desks in its classrooms. There are 103 classrooms and each classroom needs 24 new desks. How many desks will the school district need to buy?

I can ...
multiply numbers that have a zero

Content Standard 5.NBT.B.5
Mathematical Practices MP.1, MP.2, MP.4, MP.5, MP.7

Use Structure Use what you know about multiplying 3-digit and 2-digit numbers. Show your work!

Make an estimate and solve.

$103 \times 24 = d$

103
× 24
412 = 103 × 4
+ 2060 = 103 × 20
2472

2,472 desks

Look Back! MP.2 Reasoning What is a good estimate for the problem above? Explain.

Rounding
$103 \times 24 = d$
$100 \times 20 = 2{,}000$

Compatible Numbers
$103 \times 24 = d$
$100 \times 25 = 2{,}500$

Explain
A good estimate for 103 × 24 is in the thousands place.

Essential Question: How Can You Multiply with Zeros?

An antique steam train makes one sight-seeing tour each day. If every seat is filled for each trip, how many passengers can it carry for 31 tours?

You can use multiplication to find the total number of passengers.

Step 1

Find 31 × 208.

Estimate:

30 × 200 = 6,000

? passengers in all

208 — 31 tours

Number of seats per tour

Step 2

Multiply the ones.

Regroup if necessary.

Remember that multiplying with a zero gives a product of zero.

$$\begin{array}{r} 208 \\ \times\ 31 \\ \hline 208 \end{array}$$

Step 3

Multiply the tens.

Regroup if necessary.

$$\begin{array}{r} {\scriptstyle 2}08 \\ \times\ 31 \\ \hline 208 \\ +\ 6240 \\ \hline 6{,}448 \end{array}$$

Add the Partial Products.

The train can carry 6,448 passengers.

Convince Me! MP.4 Model with Math Suppose the train fills an average of 102 seats for each tour. What is a reasonable estimate for the number of passengers that the train can carry in 28 tours? Write an equation to show your work.

$102 \times 28 = P$

$100 \times 28 = 2800$

About 2,800 passengers

Name _____

Guided Practice

Do You Understand?

$104 \times 24 = S$

$100 \times 24 = 2400$

1. In an auditorium, there are 104 rows with 24 seats in each row. How many seats are available?

2. MP.2 Reasoning Why is it important to "estimate to check for reasonableness"?

Do You Know How?

In **3–6**, multiply to find the product. Estimate to check for reasonableness.

$104 \times 24 = 416$

3. $\begin{array}{r} 205 \\ \times\ 23 \\ \hline \end{array}$

4. $\begin{array}{r} 108 \\ \times\ 34 \\ \hline \end{array}$

5. $\begin{array}{r} 410 \\ \times\ 44 \\ \hline \end{array}$

6. $\begin{array}{r} 302 \\ \times\ 30 \\ \hline \end{array}$

Independent Practice

Leveled Practice In **7–18**, find each product. Estimate to check for reasonableness.

7. 302 × 17	8. 608 × 23	9. 109 × 47	10. 510 × 72
11. 902 × 35	12. 207 × 61	13. 108 × 58	14. 505 × 77
15. 407 × 39	16. 280 × 66	17. 105 × 24	18. 360 × 48

(7) $302 \times 17 = x$

$300 \times 20 = 6{,}000$

$$\begin{array}{r} 302 \\ \times\ 17 \\ \hline 2114 \\ +3020 \\ \hline 5134 \\ {\scriptstyle 1} \end{array}$$

(14.) $505 \times 77 = r$

$500 \times 80 = 40{,}000$

$$\begin{array}{r} 505 \\ \times\ 77 \\ \hline 3535 \\ +35350 \\ \hline 38885 \end{array}$$

Math Practices and Problem Solving

History Book Progress (DATA)

Month	Chapter	Pages
September	1	35
October	2	38
November	3	35

19. **MP.1 Make Sense and Persevere** There are 27 students in Mr. Mello's class. Find the total number of pages the students read by the end of November.

20. Each student read 41 pages in December. How many total pages did the students read by the end of December?

21. **MP.3 Critique Reasoning** Meredith says that 15.17 is greater than 15.8 because 17 is greater than 8. Do you agree? Explain your reasoning.

22. **MP.7 Use Structure** Trudy wants to multiply 66 × 606. She says that all she has to do is find 6 × 606 and then double that number. Explain why Trudy's method will not give the correct answer. Then show how to find the correct product.

If you double the product of 6×606 then you are multiplying $6 \times 2 \times 606$ or 12×606. $606 \times 2 \times 6 = 7{,}272$; $606 \times 66 = 39{,}996$

23. **Higher Order Thinking** Maria needs a trombone for only 12 months. Renting the trombone costs $34 per month. She can buy the trombone for $495. Should she buy or rent the trombone? Explain. How much does she pay?

24. **MP.2 Reasoning** Another music store rents trombones for $30 per month plus a yearly fee of $48. Which deal is better? Should Maria change her rental plan?

Common Core Assessment

25. What are two partial products you would add to find 41 × 709? Write those partial products in the box.

41 × 709
709 710 719 2,836 3,545 28,360 28,760

$41 \times 709 = x$

$40 \times 700 = 28{,}000$

$$\begin{array}{r} 709 \\ \times\ 41 \\ \hline 709 \\ +28360 \\ \hline \end{array}$$

$$\begin{array}{r} {}^{1}709 \\ +28360 \\ \hline 29{,}069 \end{array}$$