Name & Surname: _____ Class: _____ Date: _____

Break Apart and Multiply

Use place value and area models to multiply big numbers.

About 35 minutes Level ★★★☆☆

Key words

place value: what a digit is worth because of its spot

area model: big rectangle split to show multiplication

estimate: close guess with rounded numbers

partial product: one small multiply step before adding

rectangular array: dots in equal rows and columns

Task A

/4

Find the area of each reading space. Area = length x width.

1



Area: _____ ft²

2



Area: _____ ft²

3



Area: _____ ft²

Perimeter: _____ ft

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Multiply by One Digit

Practice breaking 3-digit and 4-digit numbers into parts.

Task B /10

Show your partial products for each problem. Estimate first when it helps.

WARM UP

1 Work out 20 × 4

Answer: _____

2 Work out 1,000 × 3 using **place value**

Answer: _____

3 Work out 23 × 4 as **partial products**: 20 × 4 + 3 × 4

Answer: _____

4 Work out 1,212 × 3

Answer: _____

PRACTICE

5 Work out 508 × 3. Do not skip the **zero**.

Answer: _____

6 Work out 2,150 × 8

Answer: _____

7 Work out 4,527 × 9 using **partial products**

Answer: _____

PROBLEM SOLVING

8 A food bank packs 1,213 cans in each of 3 boxes. How many **cans** in all?

Answer: _____

9 A class orders 4 sets of 1,212 stickers. How many **stickers** in all?

Answer: _____

10 Student A says 508 × 3 = 154 because they skipped the zero. What went wrong with **place value**?

Answer: _____

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Multiply Two Digits

Use area models to multiply two two-digit numbers.

Task C /10

Draw a quick area model box for each problem and label the four parts.

WARM UP

1 Work out 10 × 10

Answer: _____

2 Work out 20 × 10 using **place value**

Answer: _____

3 Work out 23 × 14

Answer: _____

4 Write an **estimate** for 16 × 13 by rounding to 20 × 10

Answer: _____

PRACTICE

5 Work out 14 × 12 with an **area model**

Answer: _____

6 Work out 18 × 14. Label four **partial products**.

Answer: _____

7 Work out 34 × 26

Answer: _____

PROBLEM SOLVING

8 A reading corner is 16 feet by 13 feet. What is the **area** in square feet?

Answer: _____

9 A garden is 24 feet by 18 feet. What is the **area** in square feet?

Answer: _____

10 Student B did 23 × 14 and wrote the tens row as 46, not 230. Why must you write a **zero** when you multiply by tens?

Answer: _____

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Order and Model

Put the steps in order, then solve bar problems.

Task D

Example done for you

/4

Put the steps for solving 16 × 13 with an area model in the right order.

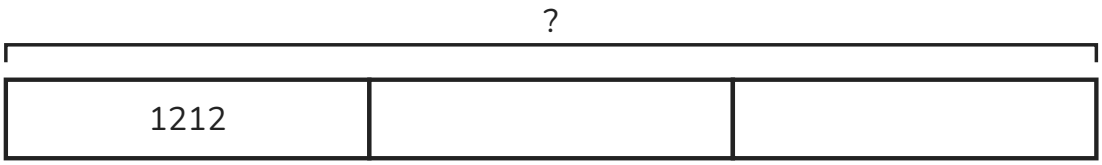
- [ ] Add the parts: 100 + 30 + 60 + 18 = 208
- [ ] Check with an estimate: about 20 x 10 = 200
- [ ] Multiply the four parts: 100, 30, 60, 18
- [ ] Draw a box split into 4 smaller rectangles
- [1] Break 16 into 10 + 6 and 13 into 10 + 3

Task E

/2

Solve each equal-groups story. Find the missing total.

1 A library orders 3 boxes. Each box holds 1,212 books. How many books in all?



Answer: _____ **books**

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Machines and Models

Try function machines, then follow the worked steps.

Task F

/9

Find the missing inputs and outputs. Work forward to multiply, backward to divide.

1 IN → × 4 → OUT

In	Out
20	
23	
1212	
	80
	120

2 IN → × 13 → OUT

In	Out
10	
16	
	182
	156

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Break Apart and Multiply

Task G

/2

Follow the area model and partial-product steps, then try one the same way.

WORKED EXAMPLE

Work out 23 × 14

1. Split 23 into 20 + 3 and 14 into 10 + 4
2. Multiply four parts: 200, 80, 30, 12
3. Add: 200 + 80 + 30 + 12 = 322

Answer: 322

YOUR TURN

Work out 14 × 12

Answer: _____

WORKED EXAMPLE

Work out 1,212 × 3

1. Split 1,212 into 1,000 + 200 + 10 + 2
2. Multiply each part by 3: 3,000, 600, 30, 6
3. Add: 3,000 + 600 + 30 + 6 = 3,636

Answer: 3636

YOUR TURN

Work out 1,213 × 4

Answer: _____

How did I do?

Circle a face for each line.

I can split numbers by place value to find partial products.

I can use an area model to multiply two two-digit numbers.

I can explain why multiplying by tens needs a zero.

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Answer sheet: Break Apart and Multiply

Task A

1. area = 208 ft²
2. area = 322 ft²
3. area = 168 ft², perimeter = 52 ft

Task B

1. 80
2. 3000
3. 92
4. 3636
5. 1524
6. 17200
7. 40743
8. 3639 cans
9. 4848 stickers
10. They did not multiply 3 x 0. You must multiply every digit, so 500 x 3 = 1500 and 8 x 3 = 24 for 1524.

Task C

1. 100
2. 200
3. 322
4. 200
5. 168
6. 252
7. 884
8. 208 square feet
9. 432 square feet
10. The 1 means 10, not 1, so 23 x 10 = 230. The zero shifts the digits one place left to count as tens.

Task D

1. Break 16 into 10 + 6 and 13 into 10 + 3 2. Draw a box split into 4 smaller rectangles 3. Multiply the four parts: 100, 30, 60, 18 4. Add the parts: 100 + 30 + 60 + 18 = 208 5. Check with an estimate: about 20 x 10 = 200

Task E

1. 3636 books

Task F

1. 20 → 80; 23 → 92; 1212 → 4848; 20 → 80; 30 → 120
2. 10 → 130; 16 → 208; 14 → 182; 12 → 156

Task G

1. 168
2. 4852

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