

Decimal Area Detectives

Use rectangle parts to find decimal products.

GRADE 5 • TEKS 5.3.D

5.3.D "represent multiplication of decimals with products to the hundredths using objects and pictorial models, including area models;"

NAME _____

DATE _____

BUILD THE PRODUCT

An area model splits one factor into easier parts, such as whole numbers and tenths. Multiply each part by the other factor, then add the partial products. Keep place value clear by writing zeros in the hundredths place when needed.

WORKED EXAMPLE

Use an area model to find 2.8×0.4 .

1. Split 2.8 into $2 + 0.8$.
2. Multiply $2 \times 0.4 = 0.80$.
3. Multiply $0.8 \times 0.4 = 0.32$.
4. Add $0.80 + 0.32 = 1.12$.

Answer: 1.12

PRACTICE 6 problems

- 1** Complete the area model: $(1 + 0.2) \times 0.5$.
Partial products: $1 \times 0.5 = \underline{\hspace{1cm}}$; $0.2 \times 0.5 = \underline{\hspace{1cm}}$.
Product = $\underline{\hspace{1cm}}$.

ANSWER _____

- 2** Complete the area model: $(2 + 0.3) \times 0.2$.
Partial products: $2 \times 0.2 = \underline{\hspace{1cm}}$; $0.3 \times 0.2 = \underline{\hspace{1cm}}$.
Product = $\underline{\hspace{1cm}}$.

ANSWER _____

- 3** Complete the area model: $(0.8 + 0.1) \times 0.9$.
Partial products: $0.8 \times 0.9 = \underline{\hspace{1cm}}$; $0.1 \times 0.9 = \underline{\hspace{1cm}}$.
Product = $\underline{\hspace{1cm}}$.

ANSWER _____

- 4** Complete the area model: $(1 + 0.5) \times 0.8$.
Partial products: $1 \times 0.8 = \underline{\hspace{1cm}}$; $0.5 \times 0.8 = \underline{\hspace{1cm}}$.
Product = $\underline{\hspace{1cm}}$.

ANSWER _____

- 5** Complete the area model: $(3 + 0.1) \times 0.3$.
Partial products: $3 \times 0.3 = \underline{\hspace{1cm}}$; $0.1 \times 0.3 = \underline{\hspace{1cm}}$.
Product = $\underline{\hspace{1cm}}$.

ANSWER _____

- 6** Complete the area model: $(0.5 + 0.2) \times 0.7$.
Partial products: $0.5 \times 0.7 = \underline{\hspace{1cm}}$; $0.2 \times 0.7 = \underline{\hspace{1cm}}$.
Product = $\underline{\hspace{1cm}}$.

ANSWER _____

APPLY IT Show your work

- 1** At the snack bar, dried fruit costs \$0.50 per pound. You buy 1.9 pounds. Use an area model to find the total cost.

WORK SPACE

ANSWER _____

- 2** You design a rectangular sticker for your game notebook. It is 1.3 inches long and 0.8 inches wide. Use an area model to find its area.

WORK SPACE

ANSWER _____

CHALLENGE One step up

An area model has one side of 0.6. Its other side is split into 2 and 0.2. What is the whole side length and the product? Explain using the two partial products.

WORK SPACE AND ANSWER

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Complete the area model: $(1 + 0.2) \times 0.5$. Partial products: $1 \times 0.5 = \underline{\hspace{1cm}}$; $0.2 \times 0.5 = \underline{\hspace{1cm}}$. Product = $\underline{\hspace{1cm}}$.	0.50, 0.10, 0.60
2	Complete the area model: $(2 + 0.3) \times 0.2$. Partial products: $2 \times 0.2 = \underline{\hspace{1cm}}$; $0.3 \times 0.2 = \underline{\hspace{1cm}}$. Product = $\underline{\hspace{1cm}}$.	0.40, 0.06, 0.46
3	Complete the area model: $(0.8 + 0.1) \times 0.9$. Partial products: $0.8 \times 0.9 = \underline{\hspace{1cm}}$; $0.1 \times 0.9 = \underline{\hspace{1cm}}$. Product = $\underline{\hspace{1cm}}$.	0.72, 0.09, 0.81
4	Complete the area model: $(1 + 0.5) \times 0.8$. Partial products: $1 \times 0.8 = \underline{\hspace{1cm}}$; $0.5 \times 0.8 = \underline{\hspace{1cm}}$. Product = $\underline{\hspace{1cm}}$.	0.80, 0.40, 1.20
5	Complete the area model: $(3 + 0.1) \times 0.3$. Partial products: $3 \times 0.3 = \underline{\hspace{1cm}}$; $0.1 \times 0.3 = \underline{\hspace{1cm}}$. Product = $\underline{\hspace{1cm}}$.	0.90, 0.03, 0.93
6	Complete the area model: $(0.5 + 0.2) \times 0.7$. Partial products: $0.5 \times 0.7 = \underline{\hspace{1cm}}$; $0.2 \times 0.7 = \underline{\hspace{1cm}}$. Product = $\underline{\hspace{1cm}}$.	0.35, 0.14, 0.49

PART 2 • APPLY IT

1. **\$0.95** Split 1.9 into $1 + 0.9$. The partial costs are \$0.50 and \$0.45, and their sum is \$0.95.
2. **1.04 square inches** Split 1.3 into $1 + 0.3$. The partial areas are 0.80 square inches and 0.24 square inches, which add to 1.04 square inches.

CHALLENGE

The whole side length is 2.2. The partial products are 1.20 and 0.12, so the product is 1.32.

Accept equivalent decimal forms, such as 0.6 for 0.60 and 1.2 for 1.20. Students should show both partial products and add them to find each final product.