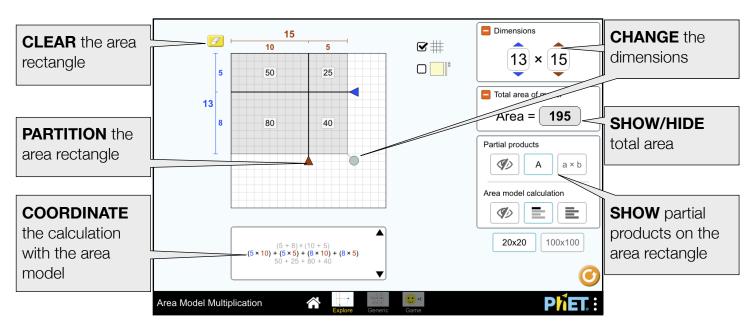


# Area Model Multiplication

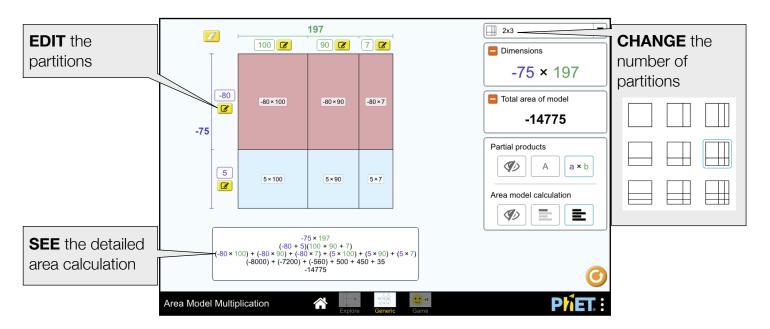
### **Explore Screen**

Discover how an area model can be used to justify the product of two numbers, that the product/area can be partitioned into smaller products/areas, and that the total area is the sum of the partial areas.



#### Generic Screen

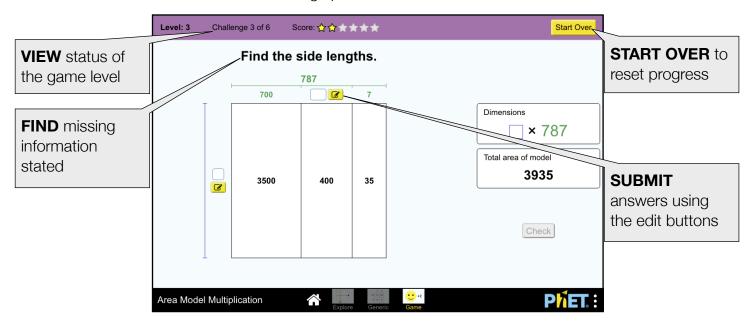
Apply the area model to justify the product of two integers using a generic model.



#### **Game Screen**

Test your understanding of the area model by finding missing partial products, dimensions, or total area.

- Level 1: Find 1 partial product or total area
- Level 2: Find 2 partial products or 1 partial product and total area
- Level 3: Find 2 partial dimensions or 1 partial dimension and 1 partial product
- **Level 4:** Find 2 partial dimensions or 1 partial dimension and 1 partial product
- **Level 5:** Find factors of single x double or single x triple digit problems
- **Level 6:** Find factors of double x double digit problems



## **Design Notes**

- On the Explore screen, the area rectangle drag handle is useful for initial exploration, and the number spinners are useful for more precise configurations.
- On the Explore screen, multiplying numbers less than 10 in the 100x100 grid will result in very small areas displayed on the area grid.
- Multiplication of  $5 \times 7$  will not lead to as rich of a discussion as  $15 \times 7$  or  $15 \times 17$ . Encourage students to justify why partitioning dimensions larger than 10 is useful, and describe a useful partition strategy.

## **Suggestions for Use**

**Sample Challenge Prompts** 

- Look at each line of the calculation. Where is that represented in the area model?
- Given a total area, find the dimensions. Can you find other dimensions that produce the same total area?

See all published activities for Area Model Multiplication here.

For more tips on using PhET sims with your students, see Tips for Using PhET.