5 Module 2

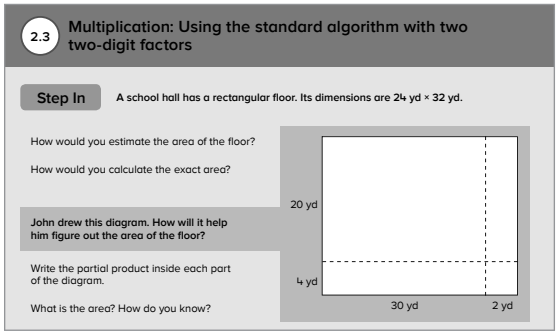
ORIGO STEPPING STONES 2.0

Core Focus

- Multiplication: Using the standard multiplication algorithm and solving word problems
- Volume: Measuring volume and developing formulas

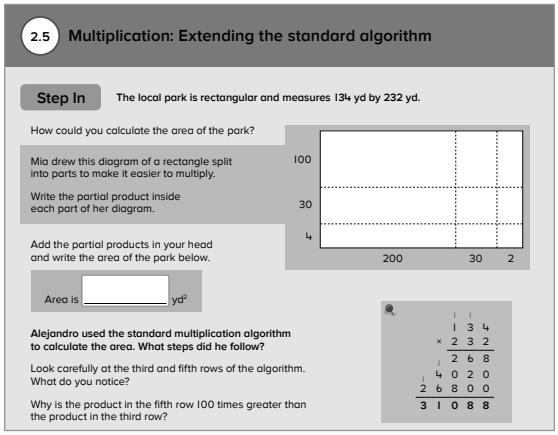
Multiplication

- The standard multiplication algorithm provides a method for performing multi-digit multiplications that are difficult to do mentally, such as 24 × 32.



In this lesson, students use the standard algorithm to calculate multiplication problems.

- This algorithm can be represented visually using the **partial-products strategy**, which maps complex multiplication onto a rectangular area model that breaks **factors** down by place value.



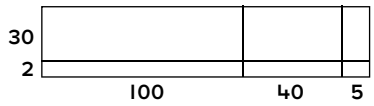
In this lesson, students connect the partial-products strategy to the standard algorithm for multiplication.

Ideas for Home

- Practice basic multiplication facts in short bursts throughout the week. Basic multiplication facts is another name for times tables or multiplication tables.
- If your child is having trouble with the standard algorithm, ask them to solve the problem first by using their preferred method. Then work with them step by step to connect their answer to the algorithm.

Glossary

- In multiplication, one **factor** is multiplied by the other, resulting in the **product**.
- Students use a rectangular area model in the **partial-products** approach to solving a complex multiplication problem, such as 32 × 145. Students break the factors up into their separate place values and then find the product for each of the smaller rectangles. All the partial products are added together to find the total product. In this case, the answer is 4,640.



Helpful videos

View these short one-minute videos to see these ideas in action.

www.bit.ly/O1_21
www.bit.ly/O1_22

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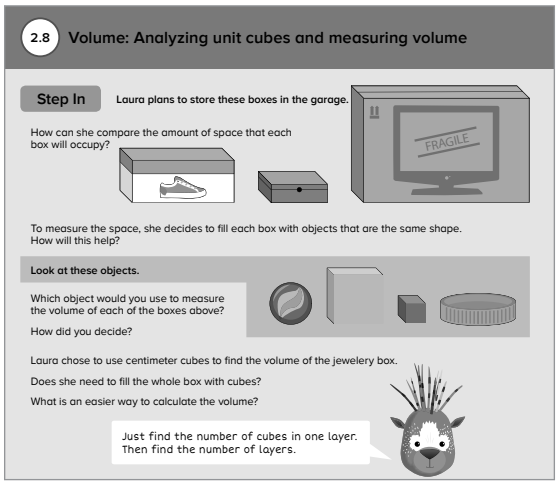
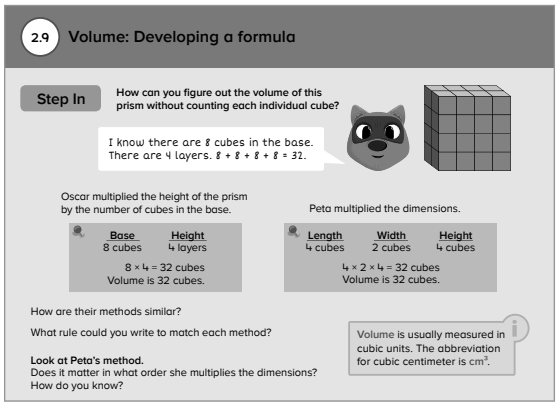
Volume

- The focus in later lessons of this module is on the concept of **volume**. To think about the volume of an object (e.g. a box), students visualize filling it with small identical cubes. The volume of the box is the number of cubes needed to fill it.
- Students visualize covering the base of an object with a single layer of small, identical cubes, and then think about how many layers of cubes would be needed to fill the shape.



In this lesson, students use small blocks to find the volume of rectangular-based prisms.

- Students eventually find the volume of boxes by multiplying the area of the base by the height, which is the same as length × width × height.
- Students then work in reverse by starting with the volume of a box and thinking about what its dimensions might be (i.e. three numbers that multiply to give the volume). E.g. if the volume of a box is 30, possible dimensions include 2 × 3 × 5, and 1 × 6 × 5.
- Students then use what they have learned to solve a variety of real-world problems.



In this lesson, students use small blocks to find the volume of a box.

Ideas for Home

- Have your child collect different-sized boxes from around your home (e.g. shoe boxes, cereal boxes, and gift boxes). Have your child measure the dimensions of the boxes (length, width, and height) to the nearest inch and then calculate the volume.
- Ask your child to compare the volumes of the different boxes. Boxes that look very different can have similar volumes.
- Make up the volume of a box and ask your child to find some possible dimensions. For example, if the volume is 36 cubic units, the dimensions could be 3 × 3 × 4, or 2 × 2 × 9. See how many solutions your child can find.

Glossary

- **Volume** and capacity are measured in cubic units, but the two are not the same. Volume measures the amount of space an object occupies, and capacity measures the amount of space within a container.