Domain: Measurement and Data

3.MD.A: Solve problems involving measurement and estimation.

Calculator Availability: No

Use the information to answer the question.

The total mass of 8 chairs is 32 kilograms. Each chair has the same mass.

What is the mass of each chair?

[   ] kilograms

Alignment: 3.MD.A.2: Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.

This item, while focused on measurement concepts, requires students to solve a division problem. It supports the key work in multiplication and division that students do in grade 3. For this problem, students need to understand that 8 multiplied by an unknown quantity is equal to 32 kilograms. They divide 32 kilograms by 8 chairs to find that each chair weighs 4 kilograms. Table 2 of the CCSS Mathematics Glossary delineates the three basic multiplication and division problem types. In grade 3, students focus primarily on the equal groups and arrays problem types. This item is an equal groups problem with an unknown group size.

Coherence: Students began exploring measurable attributes of objects in kindergarten.[K.MD.A] In grades 1[1.MD.A] and 2,[2.MD.A] students learned to measure and compare lengths. Problem solving and linear measurement were also connected in grade 2.[2.MD.B] Problem solving with units of mass and liquid volumes will be extended through grade 6. In grades 4[4.MD.A.1] and 5,[5.MD.A.1] students will solve problems that involve converting between units of measurement. This prepares students for the work they will do in grade 6[6.RP.A.3d] with ratios.

Rigor: This item attends to conceptual understanding, procedural skill, and application. Because multiplication is formally introduced in this grade, understanding the connection to equal groups involves recalling a grade-level concept. Students apply the grade-level procedure of dividing basic facts. If students understand the meaning of multiplication, the operation that is required to solve is directly indicated in the item and does not require significant reasoning.

Answer Key:

Use the information to answer the question.

The total mass of 8 chairs is 32 kilograms. Each chair has the same mass.

What is the mass of each chair?

[4   ] kilograms

Learn More
Learn more with the Math Assessment Item Alignment Professional Development Modules.

All content linked to within this resource was free for use when this resource was published in August 2020. Over time, the organizations that manage that external content may move or remove it or change the permissions. If the content is no longer available, please email info@studentsachieve.net.