



Fourth Grade Mathematics – Unit 6

Dear Parents and Guardians,

During Unit 6, your children will apply their understanding of measurement conversions and multiplicative comparison to solve multiplication and division situation problems. Multiplicative comparison problems involve a comparison of two quantities in which one is described as a multiple of the other. The relationship between the amounts is described in terms of how many times larger one is than the other. "Larger" can also be interpreted as "longer," "wider," or "heavier" with problems involving measurement. In 4th grade, whole number values are utilized in multiplicative comparison problems. This will provide a foundation for fraction problems in 5th grade when students use language such as "one fourth as much."

MULTIPLICATIVE COMPARISON AND MEASUREMENT

Students need to:

- Interpret a multiplication equation as a comparison, e.g. interpret $35 = 5 \times 7$ as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations
- Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.
- Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.
- Know relative sizes of measurement units within one system of units including km, m, cm, kg, g, lb., oz., l, mL, hr., min, and sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table.
- Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.

KEY VOCABULARY

Additive Comparison	Customary	Kilometer (km)
Convert/Conversion	Foot (ft.)	Gram (g)
Dividend	Inch (in.)	Kilogram (kg)
Divisor	Yard (yd.)	Liter (l)
Equation	Ounce (oz.)	Milliliter (mL)
Factor	Pound (lb.)	Hour (hr.)
Multiple	Metric	Second (sec)
Product	Meter (m)	Minute (min)
Quotient	Centimeter (cm)	
Multiplicative Comparison		

BACKGROUND INFORMATION AND EXAMPLES FOR PARENTS

Multiplicative Comparison

[Multiplicative Statements](#)

[Comparison Using Addition and Comparison Using Multiplication](#)

[Use Bar Models to Solve Multiplicative Comparison Problems](#)

[Solve a Multiplicative Comparison Word Problem](#)

Customary Measurement

[Customary Units of Length](#)

[Customary Units of Weight or Mass](#)

[Customary Units of Capacity](#)

Metric Measurement

[Metric Units of Length](#)

[Metric Units of Weight or Mass](#)

[Metric Units of Capacity](#)

WAYS PARENTS CAN HELP

Engage your child in measurement activities when possible. Use the information gained from the measurement activity to create some multiplication and division word problems like the examples provided on the reference chart on page two of this letter.

Common Multiplication and Division Problems

	Unknown Product	Group Size Unknown ("How many in each group?" division)	Number of Groups Unknown ("How many groups?" division)
	$3 \times 6 = ?$	$3 \times ? = 18$, and $18 \div 3 = ?$	$? \times 6 = 18$, and $18 \div 6 = ?$
Equal Groups	There are 3 bags with 6 plums in each bag. How many plums are there in all? Measurement example. You need 3 lengths of string, each 6 inches long. How much string will you need altogether?	If 18 plums are shared equally into 3 bags, then how many plums will be in each bag? Measurement example. You have 18 inches of string, which you will cut into 3 equal pieces. How long will each piece of string be?	If 18 plums are to be packed 6 to a bag, then how many bags are needed? Measurement example. You have 18 inches of string, which you will cut into pieces that are 6 inches long. How many pieces of string will you have?
Arrays, Area	There are 3 rows of apples with 6 apples in each row. How many apples are there? Area example. What is the area of a 3 cm by 6 cm rectangle?	If 18 apples are arranged into 3 equal rows, how many apples will be in each row? Area example. A rectangle has area 18 square centimeters. If one side is 3 cm long, how long is a side next to it?	If 18 apples are arranged into equal rows of 6 apples, how many rows will there be? Area example. A rectangle has area 18 square centimeters. If one side is 6 cm long, how long is a side next to it?
Compare	A blue hat costs \$6. A red hat costs 3 times as much as the blue hat. How much does the red hat cost? Measurement example. A rubber band is 6 cm long. How long will the rubber band be when it is stretched to be 3 times as long?	A red hat costs \$18 and that is 3 times as much as a blue hat costs. How much does a blue hat cost? Measurement example. A rubber band is stretched to be 18 cm long and that is 3 times as long as it was at first. How long was the rubber band at first?	A red hat costs \$18 and that is 3 times as much as a blue hat costs. How much does a blue hat cost? Measurement example. A rubber band is stretched to be 18 cm long and that is 3 times as long as it was at first. How long was the rubber band at first?
General	$a \times b = ?$	$a \times ? = p$, and $p \div a = ?$	$? \times b = p$, and $p \div b = ?$