6th Grade Math

ELG 6.3: **Compute fluently withmulti-digit numbers and find common factors and multiples.**

Vertical Progression:

4th Grade	**4.OA.B Gain familiarity with factors and multiples.** o **4.OA.B.4** Find all factor pairs for a whole number in the range 1 – 100. Recognize that a whole number is multiple of each of its factors. Determine whether a given whole number in the range 1 – 100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1 – 100 is prime or composite. **4.NBT.B Use place value understanding and properties of operations to perform multi-digit arithmetic.** o **4 NBT.B.4** Fluently add and subtract multi-digit whole numbers using the standard algorithm. o **4.NBT.B.5** Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers. o **4.NBT.B.6** Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors. **4.NF.C Understand decimal notation for fractions, and compare decimal fractions.** o **4.NF.C.6** Use decimal notation for fractions with denominators of 10 or 100.
5th Grade	**5.NBT.C Perform operations with multi-digit whole numbers and with decimals to hundredths.** o **5.NBT.C.6** Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. o **5.NBT.C.7** Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.
6th Grade	**ELG 6.3 Compute fluently with multi-digit numbers and find common factors and multiples.** o **6.NS.B.2** Fluently divide multi-digit numbers using the standard algorithm. o **6.NS.B.3** Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation. o **6.NS.B.4** Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1-100 with a common factor as a multiple of a sum of two whole numbers with no common factor. For example, express 36 + 8 as 4 (9 + 2).
7th Grade	**ELG 7.2 Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.** o **7.NS.A.1d** Apply properties of operations as strategies to add and subtract rational numbers. o **7.NS.A.2** Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. o **7.NS.A.3** Solve real-world and mathematical problems involving the four operations with rational numbers. **ELG 7.3 Use properties of operations to generate equivalent expressions** o **7.EE.A.1** Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.

ELG 6.3: Compute fluently withmulti-digit numbers and find common factors and multiples.

Students will demonstrate command of the ELG by:

- Explaining and justifying the process of adding and subtracting multi-digit decimals.
- Creating problems that involve adding, subtracting, multiplying, or dividing multi-digit decimals.
- Explaining the decimal point placement in the product of two multi-digit decimals and justifying why this makes sense.
- Explaining the movement of the decimal point when dividing two multi-digit decimals and justifying why this makes sense.
- Calculating the sum, difference, product, and quotient of two multi-digit decimals
- Estimating to determine if an answer is reasonable.
- Identifying GCF of two whole numbers less than or equal to 100.
- Determining LCM of two whole numbers less than or equal to 12.
- Using the distributive property to express a sum of two whole numbers as the GCF multiplied by the sum of two whole numbers.
- Connecting knowledge and explaining the GCF and Distributive Property in an everyday situation.

Vocabulary:

- composite number
- decimal place value
- decimal point
- difference
- distributive property
- dividend
- divisor
- factors
- greatest common factor
- least common multiple
- multiples
- non-terminating decimal
- prime number
- product
- quotient
- remainder
- repeating decimal
- standard division algorithm
- sum
- terminating decimal

Sample Instructional/Assessment Tasks:

1) **Standard(s): 6.NS.B.4**

Source: illustrativemathematics.org

Item Prompt:

The Florist Shop

The florist can order roses in bunches of one dozen and lilies in bunches of 8. Last month she ordered the same number of roses as lilies. If she ordered no more than 100 roses, how many bunches of each could she have ordered? What is the smallest number of bunches of each that she could have ordered? Explain your reasoning.

Solution:

The florist could have ordered any multiple of 12 roses that is less than 100:
12, 24, 36, 48, 60, 72, 84, or 96.
The florist could have ordered any multiple of 8 lilies that is less than 100:
8, 16, 24, 32, 40, 48, 56, 64, 72, 80, 88, 96

If she ordered the same number of each kind of flower, she must have ordered a common multiple of 8 and 12,

shown in the table below:

Number of each kind of flower	24	48	72	96
Number of bunches of roses	2	4	6	8
Number of bunches of lilies	3	6	9	12

The number of bunches of each are shown in the second and third rows. We can find the number of bunches of roses by dividing the number of flowers by 12, and we can find the number of bunches of lilies by dividing the number of flowers by 8.
The smallest number of each she could have ordered was 2 bunches of roses and 3 bunches of lilies.

2) Standard(s): 6.NS.B.3

Source: illustrativemathematics.org

Item Prompt:

Gifts from Grandma, Variation 3

a. Juanita spent $24.50 on each of her 6 grandchildren at the fair. How much money did Juanita spend?

b. Nita bought some games for her grandchildren for $42.50 each. If she spent a total of $340, how many games did Nita buy?

c. Helen spent an equal amount of money on each of her 7 grandchildren at the fair. If she spent a total of $227.50, how much did each grandchild get?

Solution:

a. Juanita spent 6 groups of $24.50, which is $6 \times 24.5 = 147$ dollars all together.

b. Since the number of games represents the number of groups, but we don't know how many games were purchased, this is a "How many groups?" division problem. We can represent it as

$$?\times 42.5 = 340 \quad \textbf{or} \quad 340 \div 42.5 = ?$$

So Nita must have purchased 8 games.

c. Here we know how many grandchildren there are (so we know the number of groups), but we don't know how much money each one gets (the number of dollars in each group). So this is a "How many in each group?" division problem. We can represent it as

$$7\times ? = 227.5 \quad \textbf{or} \quad 227.5 \div 7 = ?$$

So Helen must have spent $32.50 on each grandchild.