

# **Sixth Grade**

## **Sixth Grade Instructional Objectives**

**Students will be able to:**

### **A. Number Sense/Numeration**

1. Write, read and identify place value through twelve-digits.
2. Identify prime and composite numbers up to 100.
3. Round decimals to the nearest tenth, hundredths and thousandths.
4. Read, evaluate and use numerical expressions with exponents.
5. Compare positive and negative decimals, mixed numbers, whole numbers and fractions with like and unlike denominators, using the  $<$ ,  $>$  and  $=$ , using scientific notation.
6. Add whole numbers and decimals using properties of addition.
7. Identify exponents up to 10.

### **B. Number Facts- Addition & Subtraction**

1. Estimate and find the sum and difference by using front end digits, rounding and clustering.
2. Round whole numbers and decimals to specified places.
3. Write and solve equations for word problems involving addition and subtraction.
4. Find the sum and difference of four and five-digit numbers with renaming.

### **C. Number Facts - Multiplication, Division**

1. Demonstrate the distributive property of multiplication over addition.
2. Estimate product by rounding to nearest 100.
3. Divide a number up to four digit number by one- and two- and three- digit numbers.
4. Express the remainder as a fraction.

5. Move decimal point when dividing by 10, 100 and 1,000.
6. Solve one and two step word problems involving multiplication and division.
7. Multiply a whole number or decimal by a decimal.
8. Multiply by one or more digits.
9. Multiply decimals involving zeros in the product.
10. Divide by a one-digit or two-digit divisor to get a quotient with one or two zeros.
11. Solve problems by writing equations involving addition, subtraction, multiplication or division.
12. Divide a decimal by a whole number.
13. Multiply a whole number, a mixed number, or a fraction by a mixed number.
14. Divide fractions, whole numbers and mixed numbers.

**D. Fractions & Decimals Concepts**

**VIS 5**

1. Read and write fractions with denominators of 1,000 as decimals.
2. Compare and order of like and unlike fractions through thousandths.
3. Write improper fractions as mixed numbers and vice versa.
4. Use multiples to find the least common denominator.
5. Add and subtract unlike fractions through twelfths.
6. Add whole numbers and decimals using properties of addition.
7. Multiply a whole number or decimal by a decimal.
8. Multiply two fractions and simplify the product.
9. Multiply a whole number and a fraction.
10. Add, subtract, multiply and divide mixed numbers with unlike denominators.
11. Subtract whole numbers and decimals.

12. Write reciprocals of whole numbers and fractions.
13. Divide whole numbers by fractions using reciprocals.

**E. Ratios, Proportion & Percent**

**VIS 4**

1. Explain meaning of percent as related to hundredths.
2. Change percent to decimal to fraction.
3. Change a fraction and whole number to percent.
4. Find the unknown when the percent and the number representing the percent is given.
5. Solve word problems involving percents.
6. Write percents for ratios and ratios for percents.
7. Write percents for fractions and fractions for percent.
8. Find a percent of a number using a decimal or a fraction.
9. Give probabilities as fractions.
10. Add integers with the same sign and with different signs.
11. Subtract integers with the same sign and with different sign.
12. Multiply and divide integers with the same sign and with different signs.
13. Solve problems by choosing addition or subtraction of integers.

**F. Measurement**

1. Add and subtract like and unlike standard units and metric of measure.
2. Use customary units of length, area and volume.
3. Find the area of a square and a rectangle by using a formula.
4. Find the area of a circle by using a formula.
5. Solve problems involving proportions.

## **G. Geometry & Pattern**

**V IS 6**

1. Find surface area of rectangular solids.
2. Estimate and measure angles up to 30 degrees.
3. Identify and use signs that means is congruent to, is similar to, is parallel to and is perpendicular to.
4. Construct parallel lines and parallelograms.
5. Identify faces, edges and vertices.
6. Identify and label varying angles and triangles-right, acute and obtuse.
7. Recognize and define equilateral, isosceles and scalene triangles.
8. Identify similar and congruent polygons.

## **H. Statistics, Probability & Algebra**

1. Create data summaries in graphic forms- bar, line, circle.
2. Solve problems by combining and comparing data from a line graph.
3. Recognize variables and solve linear equations in one variable.
4. Write and solve equations for word problems using variables.
5. Plot points on a coordinate plane, using ordered pairs of positive and negative whole numbers.
6. Use the terms origin, x-axis and y-axis when working with the coordinate plane.
7. Read a frequency table.
8. Find mean, mode, median and range for a set of data.

## **Learning Outcomes for Sixth Grade**

**Students will be able to:**

**A. Number Sense/Numeration**

1. Write, read and identify place value through twelve-digits.
2. Identify prime and composite numbers up to 100.

**Ex. Prime numbers are numbers whose factors are itself and one only.**  
**2,3,5,7,11, etc.**  
**Composite numbers are numbers whose factors are more than just itself and one.**  
**4, 6, 8, 10,etc.**

3. Round decimals to the nearest tenth, hundredth and thousandth.

**Ex. Round to the nearest tenth: 2,109.7265 ~ 2,109.7**

4. Read, evaluate and use numerical expressions with exponents.

□      **Exponent**

**Ex.**  $3^4$        $= 3 \times 3 \times 3 \times 3 = 81$

**Base**

5. Compare positive and negative decimals, mixed numbers, whole numbers and fractions with like and unlike denominators, using the <, > and =, using scientific notation.
6. Add whole numbers and decimals using properties of addition.
7. Identify exponents up to 10.

**B. Number Facts- Addition & Subtraction**

1. Estimate and find the sum and difference by using front end digits,

rounding and clustering.

Ex. Estimate and find the sum using cluster.

$$6278 + 6589 + 5893 + 6134 \cong 4 \times 6\,000 = 24\,000$$

2. Round whole numbers and decimals to specified places.
3. Write and solve equations for word problems involving addition and subtraction.
4. Find the sum and difference of 4- and 5-digit numbers with renaming.

### C. Number Facts - Multiplication, Division

1. Demonstrate the distributive property of multiplication over addition.

$$\text{Ex. } 3 \times (5 + 2) = 3 \times 5 + 3 \times 2 = 15 + 6 = 21$$

2. Estimate product by rounding to nearest 100.

$$\text{Ex. } 475 \times 135 \approx 500 \times 100 \approx 50,000$$

3. Divide a four digit number by one- and two- and three- digit numbers.
4. Express the remainder as a fraction.

<input type="checkbox"/>	<input type="checkbox"/>			
<input type="checkbox"/>	Ex.	$2 \overline{)57}$	Ans.	$28 \frac{1}{2}$
<input type="checkbox"/>		$\quad -4$		
<input type="checkbox"/>		$\quad \underline{17}$		
<input type="checkbox"/>		$\quad \quad -16$		
<input type="checkbox"/>		$\quad \quad \underline{1}$		

5. Move decimal point when dividing by 10, 100 and 1,000.

<b>Ex. <math>82.4 \div 1000 = 0.0824</math></b>
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6. Solve one and two step word problems involving multiplication and division.
7. Multiply a whole number or decimal by a decimal.
8. Multiply by one or more digits.
9. Multiply decimals involving zeros in the product.
10. Divide by a one-digit or two-digit divisor to get a quotient with one or two zeros.
11. Solve problems by writing equations involving addition, subtraction, multiplication or division.
12. Divide a decimal by a whole number.
13. Multiply a whole number, a mixed number, or a fraction by a mixed number.
14. Divide fractions, whole numbers and mixed numbers.

#### **D. Fractions & Decimals Concepts**

**VIS 5**

1. Read and write fractions with denominators of 1,000 as decimals.
2. Compare and order of like and unlike fractions through thousandths.
3. Write improper fractions as mixed numbers and vice versa.

Ex. $\frac{14}{3} = 4 \frac{2}{3}$ , $9 \frac{1}{3} = \frac{28}{3}$
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4. Use multiples to find the least common denominator.
5. Add and subtract unlike fractions through twelfths.
6. Add whole numbers and decimals using properties of addition.
7. Multiply a whole number or decimal by a decimal.

8. Multiply two fractions and simplify the product.

$$\text{Ex. } \frac{3}{4} \times \frac{2}{5} = \frac{6}{20} = \frac{3}{10}$$

9. Multiply a whole number and a fraction.

10. Add, subtract, multiply and divide mixed numbers with unlike denominators.

11. Subtract whole numbers and decimals.

12. Write reciprocals of whole numbers and fractions.

Ex. What is the reciprocal of 3 and  $\frac{2}{7}$  ?

The reciprocal of 3 is  $\frac{1}{3}$  and the reciprocal of  $\frac{2}{7}$  is  $\frac{7}{2}$

13. Divide whole numbers by fractions using reciprocals.

$$\text{Ex. } 4 \div \frac{5}{6} = \frac{4}{1} \times \frac{6}{5} = \frac{24}{5} = 4 \frac{4}{5}$$

### E. Ratios, Proportion & Percent

VIS 4

1. Explain meaning of percent as related to hundredths.

2. Change percent to decimal to fraction.

Ex. Change the following percent to decimal.

$$50\% = 0.50 = \frac{1}{2}$$

- When converting a percent to decimal, remove the percent symbol and move the decimal point two places to the left.
- When converting a decimal to fraction, remove the decimal point and place the number in the numerator and in the denominator place the power of 10 the corresponds.

3. Change a fraction and whole number to percent.

4. Find the unknown when the percent and the number representing the percent is given.
5. Solve word problems involving percents.
6. Write percents for ratios and ratios for percents.
  7. Write percents for fractions and fractions for percent.
  8. Find a percent of a number using a decimal or a fraction.
  9. Give probabilities as fractions.
  10. Add integers with the same sign and with different signs.
  11. Subtract integers with the same sign and with different sign.
  12. Multiply and divide integers with the same sign and with different signs.
  13. Solve problems by choosing addition or subtraction of integers.

**F. Measurement**

1. Add and subtract like and unlike standard units and metric of measure.
2. Use customary units of length, area and volume.
3. Find the area of a square and a rectangle by using a formula.
4. Find the area of a circle by using a formula.
5. Solve problems involving proportions.

**G. Geometry & Pattern**

**VIS 6**

1. Find surface area of rectangular solids.

Ex. Find the surface area of the rectangular prism
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2. Estimate and measure angles up to 30 degrees.
3. Identify and use signs that means is congruent to, is similar to, is parallel to and is perpendicular to.
4. Construct parallel lines and parallelograms.

5. Identify faces, edges and vertices.

Ex. Label the faces, edges and vertices.

6. Identify and label varying angles and triangles-right, acute and obtuse.
7. Recognize and define equilateral, isosceles and scalene triangles.
8. Identify similar and congruent polygons.

## H. Statistics, Probability & Algebra

1. Create data summaries in graphic forms- bar, line, circle.
2. Solve problems by combining and comparing data from a line graph.
3. Recognize variables and solve linear equations in one variable.

Ex. Solve the following equation:

$$X - 27 = 56$$

$$X - 27 + 27 = 56 + 27$$

$$X = 83$$

4. Write and solve equations for word problems using variables.
5. Plot points on a coordinate plane, using ordered pairs of positive and negative whole numbers.
6. Use the terms origin, x-axis and y-axis when working with the coordinate plane.
7. Read a frequency table.
8. Find the mean, mode, median and range of a set of data.

<b>Sixth Grade Checklist</b>	M-Mastered NI-Needs Improvement
1. Write, read and identify place value through twelve-digits.	
2. Identify prime and composite numbers up to 100.	
3. Round decimals to the nearest tenth, hundredth and thousandth.	
4. Read, evaluate and use numerical expressions with exponents.	
5. Compare positive and negative decimals, mixed numbers, whole numbers and fractions with like and unlike denominators, using the $<$ , $>$ and $=$ , using scientific notation.	
6. Add whole numbers and decimals using properties of addition.	
7. Identify exponents up to 10.	
8. Estimate and find the sum and difference by using front-end digits, rounding and clustering.	
9. Round whole numbers and decimals to specified places.	
10. Write and solve equations for word problems involving addition and subtraction.	
11. Find the sum and difference of four and five-digit numbers with renaming.	
12. Demonstrate the distributive property of multiplication over addition.	
13. Estimate product by rounding to nearest 100.	
14. Divide a four digit number by one- and two- and three- digit numbers.	
15. Express the remainder as a fraction.	
16. Move decimal point when dividing by 10, 100 and 1,000.	
17. Solve one and two step word problems involving multiplication and division.	
18. Multiply a whole number or decimal by a decimal.	
19. Multiply by one or more digits.	
20. Multiply decimals involving zeros in the product.	
21. Divide by a one-digit or two-digit divisor to get a quotient with one or two zeros.	
22. Solve problems by writing equations involving addition, subtraction, multiplication or division.	
23. Divide a decimal by a whole number.	
24. Multiply a whole number, a mixed number, or a fraction by a mixed number.	
25. Divide fractions, whole numbers and mixed numbers.	
26. Read and write fractions with denominators of 1,000 as decimals.	
27. Compare and order of like and unlike fractions through thousandths.	
28. Write improper fractions as mixed numbers and vice versa.	
29. Use multiples to find the least common denominator.	

<b>Sixth Grade Checklist</b>	M-Mastered NI-Needs Improvement
30. Add and subtract unlike fractions through twelfths.	
31. Add whole numbers and decimals using properties of addition.	
32. Multiply a whole number or decimal by a decimal.	
33. Multiply two fractions and simplify the product.	
34. Multiply a whole number and a fraction.	
35. Add, subtract, multiply and divide mixed numbers with unlike denominators.	
36. Subtract whole numbers and decimals.	
37. Write reciprocals of whole numbers and fractions.	
<b>38.</b> Divide whole numbers by fractions using reciprocals.	
39. Explain meaning of percent as related to hundredths.	
40. Change percent to decimal to fraction.	
41. Change a fraction and whole number to percent.	
42. Find the unknown when the percent and the number representing the percent is given.	
43. Solve word problems involving percents.	
44. Write percents for ratios and ratios for percents.	
45. Write percents for fractions and fractions for percent.	
46. Find a percent of a number using a decimal or a fraction.	
47. Give probabilities as fractions.	
48. Add integers with the same sign and with different signs.	
49. Subtract integers with the same sign and with different sign.	
50. Multiply and divide integers with the same sign and with different signs.	
<b>51.</b> Solve problems by choosing addition or subtraction of integers.	
52. Add and subtract like and unlike standard units and metric of measure.	
53. Use customary units of length, area and volume.	
54. Find the area of a square and a rectangle by using a formula.	
55. Find the area of a circle by using a formula.	
<b>56.</b> Solve problems involving proportions.	
57. Find surface area of rectangular solids.	
58. Estimate and measure angles up to 30 degrees.	
59. Identify and use signs that means is congruent to, is similar to, is parallel to and is perpendicular to.	
60. Construct parallel lines and parallelograms.	
61. Identify faces, edges and vertices.	
62. Identify and label varying angles and triangles-right, acute and obtuse.	

<b>Sixth Grade Checklist</b>	M-Mastered NI-Needs Improvement
63. Recognize and define equilateral, isosceles and scalene triangles.	
<b>64.</b> Identify similar and congruent polygons.	
65. Create data summaries in graphic forms- bar, line, circle.	
66. Solve problems by combining and comparing data from a line graph.	
67. Recognize variables and solve linear equations in one variable.	
68. Write and solve equations for word problems using variables.	
69. Plot points on a coordinate plane, using ordered pairs of positive and negative whole numbers.	
70. Use the terms origin, x-axis and y-axis when working with the coordinate plane.	
71. Read a frequency table.	
72. Find the mean, mode, median and range of a set of data	

