DES - MATH INSTRUCTIONAL PLAN   GRADE: ___4____

MONTH	TOPIC
SEPTEMBER	PLACE VALUE AND NUMBER SENSE COMPARE AND ORDER WHOLE NUMBERS
OCTOBER	ADD AND SUBTRACT WHOLE NUMBERS ALGEBRA: USE ADDITION AND SUBTRACTION UNDERSTAND TIME
NOVEMBER	BAR GRAPHING (DONE IN SCIENCE) MULTIPLICATION AND DIVISION FACTS ALGEBRA: USE MULTIPLICATION AND DIVISION FACTS
DECEMBER	MULTIPLY BY ONE DIGIT NUMBERS
JANUARY	UNDERSTAND DIVISION DIVIDE BY 1 DIGIT DIVISORS
FEBRUARY	PLANE FIGURES PERIMETER AND AREA MEASUREMENT TEST PREP
MARCH	MULTIPLY BY 2 DIGITS UNDERSTAND FRACTIONS ADD AND SUBTRACT FRACTIONS AND MIXED NUMBERS
APRIL	UNDERSTAND DECIMALS ADD AND SUBTRACT DECIMALS
MAY	MULTIPLICATION AND DIVISION PRACTICE LINES RAYS AND ANGLES
JUNE	REVIEW AND EXTRA PRACTICE

Topic: 4th Grade: Algebra
Essential Questions: How can algebraic expressions, equations, and formulas be used as problem solving tools?

Performance Indicators	Guided Questions	Essential Knowledge & Skills	Classroom Ideas (Instructional Strategies)	Assessment Ideas (Evidence of Learning)
4.A.1	How do you evaluate and express relationships using an equation? How do you use a formula to solve a problem?	Write and solve addition and subtraction equations using mental math. Write and evaluate expressions with variables. Solve problems using the work backwards strategy. Use an open sentence with one operation to express relationships.	**One or more of the following instructional strategies will be used to teach the essential knowledge and skills of algebra:** Use paper and pencil, individual white boards, and blackboard to create and solve open sentence equations. Use everyday situations to demonstrate algebraic expressions and inequalities. Use manipulatives to represent algebraic expressions, equations, and formulas.	**Students demonstrate mastery of knowledge and skills by one or more of the following methods:** ▪ Oral answers to directed questions ▪ Guided and independent practice of skills ▪ Completion of written assessments ▪ Teacher observation of group activities and projects ▪ Data from Performance on computer based activites
4.A.2	How do you use the greater than, less than, and equal to symbols to compare whole numbers, fractions, and decimals?	Use number lines and place value to compare numbers, fractions, and decimals.		
4.A.5	How do you analyze a pattern or function and state the rule given a table or input/output box? How do you express a rule with an equation using a variable?	Find a rule/extended pattern in the input/output box. Write and evaluate expressions and equations with variables.		
4.A.4	How do you describe, extend, and make generalizations about numeric and geometric patterns? How do you use algebra to figure out how shapes and mixed shapes tessellate?	Solve problems using the strategy "Find a Pattern." Identify shapes and make shapes that tessellate?		
4.A.3	How do you use algebra to find whole numbers that make an inequality true?	Find the values that make open sentences true if they contain greater than or less than symbols.		

Connections to Text (**Resources**)   **Harcourt Math Textbook – Algebra strand is taught throughout all units.**
Connections to Technology: Harcourt Brace Mega Math Program
Key Vocabulary: expression, variable, equation, solution, inequality, evaluate, commutative property, associative property, distributive property, order of operations, value, range, input, output, rule

Topic: 4th Grade Decimals and Measurement

Essential Questions:
1. How do you use decimals in everyday life?
2. How can you use a variety of strategies and models to solve decimal problems?

Performance Indicators	Guided Questions	Essential Knowledge & Skills	Classroom Ideas (Instructional Strategies)	Assessment Ideas (Evidence of Learning)
4.N.10 4.N.24 4.A.2 4.PS.10 4.PS.15 4.N.4 4.N.14 4.N.25 4.G.6	How do you read and write fractions and decimals? What are the places of decimals to 1,000ths? How do you read and write equivalent decimals? How do fractions and mixed numbers relate to decimals? How do you compare and order decimals? How do you use the process of elimination and charts to solve problems? How do you add and subtract decimals to tenths and hundredths? How do you add and subtract decimals and money? How do you use a ruler to measure English and Metric units?	• Express decimals as an equivalent form of fractions to tenths and hundredths • Develop an understanding of decimals as part of a whole • Use symbols $>,<,=$ to compare whole numbers and unit fractions and decimals • Use process of elimination to solve problems • Make charts to solve numerical problems • Add and subtract decimals to tenths and hundredths • Determine what information is needed to solve a problem • Use a ruler to measure inches to the nearest ¼ inch • Use a ruler to measure centimeters to the nearest tenth	Counters Dry erase board Transparency Number lines Place Value Chart Small group instruction & practice	Informal observations of students' use of manipulatives Math Journal Practice Book End of Chapter Test (multiple choice and short response) NYS practice tests Rulers

Connections to Text (Resources) Harcourt pages Chapters 26 and 27	**Time:4 weeks : See Pre/Post March Doc. For unit lesson planning**

Connections to Technology: Harcourt Math Center, Cool Math.com

<u>**Key Vocabulary: decimal, decimal point, equivalent decimals tenths, hundredths, thousandths,**</u>

Topic: 4th Grade: Multiplication & Division

Essential Questions: How do you use multiplication and division of whole numbers in everyday life?

Performance Indicators	Guided Questions	Essential Knowledge & Skills SWBAT:	Classroom Ideas (Instructional Strategies)	Assessment Ideas (Evidence of Learning)
4.N.17	How do you relate multiplication and division facts?	Use multiplication and division as inverse operations to solve problems	**One or more of the following instructional strategies will be used to teach the essential knowledge and skills of multiplication:**	**Students demonstrate mastery of knowledge and skills by one or more of the following methods:**
4.N.16	How do you multiply and divide facts from 0-12?	Understand various meanings of multiplication and division	Use paper and pencil and blackboard to model multiplication and division of whole numbers.	
4.N.6	How do you multiply 2 or more factors using the properties of multiplication?	Understand, use, and explain the associative property of multiplication	Drill multiplication facts using:	Oral answers to directed questions
4.N.15	How do you choose the correct operation to solve the problem?	Select appropriate computational and operational methods to solve problems	• multiplication and division wraps • multiplication and division fact cards	Guided and independent practice of skills
4.PS.7	How do you use a picture to help solve a problem?	Represent problem situations in oral, written, concrete, pictorial and graphical forms	• charts	Completion of written assessments
4.A.1	How do you use a variable to help you solve a problem?	Evaluate and express relationships using open sentences with one operation	Use the following strategies for estimating quotients when using single digit divisors:	Teacher observation of group activities and projects
4.PS.6	How do you use a picture to help you write a number sentence?	Translate from a picture/diagram to a numeric expression	• use front end estimation (always use five as first guess and work up or down)	
4.A.5	How do you use an open sentence to represent an input/output box?	Analyze a pattern or a whole-number function and state the rule, given a table or an input/output box		Harcourt Math Program

Connections to Text (Resources): Chapter 8 Harcourt Math
Connections to Technology: Harcourt Math Program
Key Vocabulary: factor, product, quotient, inverse operation, fact family, multiple, identity property, zero property, commutative property, associative property

Topic: 4th Grade Place Value, addition and subtraction
Content Strand: Number Sense and Operations
Essential Questions: How can place value and the base ten system help us understand math?
How do place value and the base ten system work together?

Performance Indicators	Guided Questions	Essential Knowledge & Skills	Classroom Ideas (Instructional Strategies)	Assessment Ideas (Evidence of Learning)
4.N.4

4.PS.6

4.S.3

4.N.3

4.A.2

4.N.26

4.N.14 | How do we read write and identify the value of whole numbers through millions?

How do you use benchmark numbers to give meaning to numbers?

How do we use graphs and tables to interpret data?

How do we compare and order numbers using a number line and place value?

What strategies and steps are used to round whole numbers to a given place value?

How do strategies such as: mental math, estimation, commutative property, associative property, identity property and exact answer computation assist in finding sums and | • Understand the place value structure of the base ten number system
10 ones = 1 ten
10 tens = 1 hundred
10 hundreds = 1 thousand
10 thousands = 1 ten thousand

• Translate from a picture/diagram to a numeric expression

• Represent data using tables, bar graphs and pictographs

• Compare and order numbers to 10,000

• Use the symbols <.>=, and ≠ (with and without the use of a numberline) to compare whole numbers and unit fractions and decimals (up to hundredths)

• Round numbers less than 1,000 to the nearest tens and hundreds

• Use a variety of strategies to add and subtract numbers up to 10,000 | **One or more of the following instructional strategies will be used to teach the essential knowledge and skills of place value, addition and subtraction:**

▪ Use base ten blocks to represent addition, subtraction and place value
▪ Use pictures and graphic representation to model place value, addition and subtraction
▪ Use number lines to compare and order numbers
▪ Use everyday situations to estimate sums and differences
▪ Model a variety of strategies to make addition and subtraction easier using mental math
▪ Model and share out various methods of problem solving to demonstrate more than one way to solve a problem
▪ Use written and verbal response to explain use of various properties | **Students demonstrate mastery of knowledge and skills by one or more of the following methods:**

▪ Oral answers to directed questions
▪ Guided and independent practice of skills
▪ Completion of written assessments
▪ Teacher observation of group activities and projects
▪ Data from Performance on computer based activites |

4.N.15	differences? What different methods can be used to add and subtract numbers with regrouping through 100,000?	• Select appropriate computational and operational methods to solve problems • Evaluate and express relationships using open sentences with one operation Find the value or values that will make an open sentence true, if it contains < or >		
4.A.1	How are mental math strategies used to write and solve addition and subtraction equations?			
4.A.3	How do we determine which whole numbers can make an inequality true?	• Represent problem situations in oral, written, concrete, pictorial, and graphical form • Analyze a pattern or a whole-number function and state the rule, given a table or an input/output box		
4.PS.7	How are expressions used to represent problems in oral, written, concrete, pictorial and graphic form?			
4.A.5	How are expressions used to define rules for patterns in input/output boxes and tables?			

Time:

Connections to Text (Resources): Chapters 1-4, 20.5 in Harcourt math series

Connections to Technology: Harcourt Math Center activities that correspond to chapters 1-4, Compass learning activities that correspond to place value, addition and subtraction

Key Vocabulary: Period, millions, benchmark, digit, pictograph, place value, compare, order, round, sum, difference, estimate, parentheses, expression, variable, commutative property, associative property, identity property, equation, inequality.

Topic: 4th Grade Time, Data, and Graphing

Essential Questions:
1. How are time and data related?
2. How can you use data from graphs and tables to solve problems?

Performance Indicators	Guided Questions	Essential Knowledge & Skills	Classroom Ideas (Instructional Strategies)	Assessment Ideas (Evidence of Learning)
3.M.9 4.M.9 4.M.10 4.S.2 4.S.3 4.S.4 4.S.5	How do you read and write time to the nearest minute and second? How do you calculate elapsed time using clocks, calendars, and schedules? How do you appropriately record data collected during surveys, observations and experiments? How do you represent data using tables, bar graphs and pictographs? How do you read and interpret line graphs? How do you interpret similarities and differences in representations of data?	• Tell time to the minute using digital and analog clocks • Calculate elapsed time in hours and half hours not crossing am/pm • Calculate elapsed time in days and weeks using a calendar • Collect and organize data using frequency tables • Find mean, median and mode • Represent data using tables, bar graphs and pictographs. • Read and interpret line graphs and circle graphs • Draw conclusions using graphs	Graph paper Dry erase board Transparency Colored pencils Rulers Small group instruction & practice	Informal observations of students' use of manipulatives Practice Book End of Chapter Test (multiple choice and short response) NYS practice tests Science class Social Studies class

Connections to Text (Resources) Harcourt pages Chapters 5, 6, and 7   Time:4 weeks : See Pre/Post March Doc. For unit lesson planning
Connections to Technology: Harcourt Math Center, Cool Math.com
Key Vocabulary: Minute, second, am/pm, century, elapsed time, data, tally, pictograph, survey, frequency, mean, median, mode, range, scale, interval, bar graph, line graph, circle graph, trends