Math Curriculum

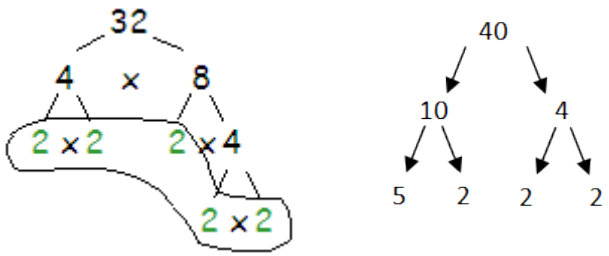
Fifth Grade

By the end of fifth grade students have applied addition, subtraction, multiplication, and division algorithms to fractions and decimals, mastered place value to the billions place, and used associated vocabulary. They have applied and adapted a variety of appropriate strategies to solve problems. Students identified, constructed, and classified geometric figures by their properties using appropriate terminology, as well as provided proof/explanation for their reasoning. They applied learned measurement skills/strategies to real world situations using both customary and metric units of measure. They understood and applied data collection, organization, representation, and vocabulary to communicate, reason, and justify their real world solutions.

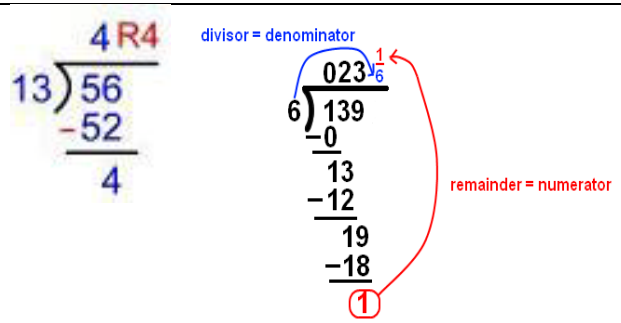
Archdiocese of Santa Fe Standard 1: **Numbers and Operations:**
Students understand numbers, ways of representing numbers, relationships among numbers, and number systems; understand meanings of operations and how they relate to one another; and compute fluently and make reasonable estimates. **NCTM**

Critical for Mastery in Grade 5

LEARNING OUTCOMES (What students will be able to do, know, understand and value)	**SAMPLE ASSESSMENTS/STRATEGIES** (What evidence will demonstrate that students have achieved the Learning Outcome)	**BEST PRACTICES**
A. Number Sense: **Understand numbers, ways of representing numbers, relationships among numbers, and number systems.**		
1. Read whole numbers to 100 billion.	• When given a number students will be able to read number orally (i.e. 75,283,419,123).	
2. Write to 100 billion in: • Standard • Expanded • Word form	• Standard: 9,219,243,178 • Expanded: 9,000,000,000 + 200,000,000+10,000,000+9,000,000+ 200,000+40,000+3,000+100+70+8 • Word: Nine billion, two hundred nineteen million, two hundred forty-three	

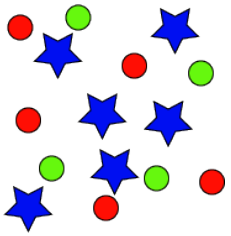
<table>
<tr><td></td><td>thousand, one hundred seventy-eight.</td><td></td></tr>
<tr><td>3. Estimate by rounding whole numbers to 1 billions place.</td><td>• 7,123,469,452 rounded to 7,000,000,000</td><td></td></tr>
<tr><td>4. Identify Place Value to 100 Billions Place.</td><td>• Name the place value of the underlined digit.
• 72,489,234,124
• 123,456,789,987</td><td></td></tr>
<tr><td>5. Compare numbers to 1,000,000,000 using the inequality symbols <, > and =.</td><td>• 1,000,000,000 > 1,000,000
• 123,456,789 < 213,456,789</td><td></td></tr>
<tr><td>6. Determine if a number is prime or composite.</td><td>• Prime: two factors (1 and itself)
• Composite: more than two factors
<table>
<tr><th>Number</th><th>Factors</th><th>Type</th></tr>
<tr><td>2</td><td>1,2</td><td>Prime</td></tr>
<tr><td>3</td><td>1,3</td><td>Prime</td></tr>
<tr><td>4</td><td>1,2,4</td><td>Composite</td></tr>
<tr><td>5</td><td>1,5</td><td>Prime</td></tr>
<tr><td>6</td><td>1,2,3,6</td><td>Composite</td></tr>
</table></td><td></td></tr>
<tr><td>7. Apply special classes of numbers.
a) Even, Odd
b) Factors
c) Multiples
d) Square Numbers and Square Roots</td><td>a) Even end with 0,2,4,6,8
Odd end with 1,3,5,7,9
b) Factors of 20 (1,2,4,5,10,20)
c) Multiples of 4 (4,8,12,16,20 ….)
d) Square Numbers and Square Roots
$1^2=1$ $\sqrt{1}=1$
$2^2=4$ $\sqrt{4}=2$
$3^2=9$ $\sqrt{9}=3$
$4^2=16$ $\sqrt{16}=4$
$5^2=25$ $\sqrt{25}=5$</td><td></td></tr>
<tr><td>8. Demonstrate finding prime factorization up to 50.</td><td> 
</td><td></td></tr>
</table>

9. Determine Greatest Common Factor (GCF) for a set of two whole numbers.	• Find the GCF for 12 and 18 Factors of 12: 1,2,3,4,6,12 Factors of 18: 1,2,3,6,9,19 GCF is 6	
10. Determine Least Common Multiple (LCM) for a set of two whole numbers.	• Least Common Multiple of 4 and 6 Multiples of 4: 4,8,12,16, Multiples of 6: 6,12,18 LCM is 12	
B. Addition and Subtraction: Compute fluently and make reasonable estimates.		
1. Add and subtract up to millions place with or without regrouping.	1,437,284 + 2,127,498 = 2,234,589 - 123,489 = 89,786 + 26,428 + 57, 814 + 91, 875 =	
2. Add groups of numbers looking for combinations of 10.	4+7+3+6= 43+29+467+94=	
3. Add and subtract decimals to thousandths.	4.3 + 2 = 24.6 - 8 = 9 + 4.8 + 0.62 = 6.2 - 0.71 =	
4. Evaluate reasonableness of solutions by comparing estimate to actual answer.	585 + 312 Estimate: 600 + 300	
C. Multiplication and Division: Compute fluently and make reasonable estimates.		
1. Multiply a 4 digit number by a 1 or 2 digit number.	4098 × 7 378 × 23 4578 × 59	
2. Divide a 4 digit number by a 1 or 2 digit divisor with and without a remainder.	1,283 6) 7,698 6 16 12 49 48 18 18 0 377 ÷ 80	

<table>
<tr>
<td>3. Divide and express remainder as a whole number or as a fraction.</td>
<td> 
</td>
<td></td>
</tr>
<tr>
<td>4. Use divisibility rules for 2,3,4,5,6,9, and 10.</td>
<td>
<table>
<tr><th>Number is divisible by:</th><th>Rule</th></tr>
<tr><td>2 if</td><td>The last digit is even (0,2,4,6,8,)</td></tr>
<tr><td>3 if</td><td>The sum of the digits is divisible by 3</td></tr>
<tr><td>4 if</td><td>The last two digits are divisible by 4</td></tr>
<tr><td>5 if</td><td>The last digit is 0 or 5</td></tr>
<tr><td>6 if</td><td>The number is both divisible by 2 and 3</td></tr>
<tr><td>9 if</td><td>The sum of the digits is divisible by 9</td></tr>
<tr><td>10 if</td><td>The number ends in zero</td></tr>
</table>
</td>
<td></td>
</tr>
<tr>
<td>5. Division with zeros in the quotient.</td>
<td>121 ÷ 3 =
4818 ÷ 8 =</td>
<td></td>
</tr>
<tr>
<td>6. Evaluate reasonableness of solutions by comparing estimate to actual answer.</td>
<td>527 Estimate: 500
× 49 × 50</td>
<td></td>
</tr>
<tr>
<td>D. Properties:
Understand the meaning of operations and how they relate to one another.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Select and use appropriate operations to solve problems.</td>
<td>• Sum=Addition
• Difference=Subtraction
• Product=Multiplication
• Quotient=Division</td>
<td></td>
</tr>
</table>

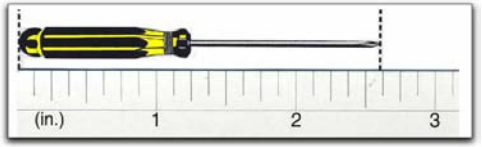
2. Use order of operations to simplify and solve numerical expressions.	1. Parenthesis 2. Exponents 3. Multiplication and division (left to right) 4. Addition and subtraction (left to right) $(54 - 6) \div 4 - 5^2$ $8 \times (10 - 2) + 4$	
E. Decimals/Fractions/Ratios/Percents: Understand the meaning of operations and how they relate to one another.		
1. Add and subtract decimal numbers to thousandths.	$\begin{array}{r} {\scriptstyle 1\ \ 1\ \ \ \ } \\ 6.200 \\ +\ 3.941 \\ \hline 10.141 \end{array}$ $\begin{array}{r} 0.342 \\ -0.276 \\ \hline 0.066 \end{array}$	
2. Multiply and divide decimal numbers with both whole and decimal numbers.	$\begin{array}{r} 0.3 \leftarrow 1 \text{ decimal place} \\ \times\ 7 \leftarrow +\ 0 \text{ decimal place} \\ \hline 2.1 \leftarrow 1 \text{ decimal place} \end{array}$ $\begin{array}{r} 0.64 \leftarrow 2 \text{ decimal places} \\ \times\ 9 \leftarrow +\ 0 \text{ decimal place} \\ \hline 5.76 \leftarrow 2 \text{ decimal places} \end{array}$ $\begin{array}{r} 2.90 \\ 3\overline{)\,8.70} \\ -\ 6 \\ \hline 27 \\ -\ 27 \\ \hline 00 \end{array}$	
3. Round numbers to hundredths place.	• 0.843 rounded to hundredths = 0.84 • 1.789 rounded to hundredths = 1.79	
4. Order three or more decimal numbers from least to greatest.	• Arrange from least to greatest 2.4, 2.04, 2.21 (2.04, 2.21, 2.4)	
5. Add and subtract fractions with like denominators.	2/7 + 3/7 = 5/7 3/7 – 2/7 = 1/7	
6. Add and subtract fractions with unlike denominators.	$\begin{array}{r} 1/2 \\ +\ 1/3 \\ \hline 5/6 \end{array}$ $\begin{array}{r} 5/7 \\ -2/3 \\ \hline 14/21 \end{array}$	

7. Add and subtract mixed numbers with like denominators.	$2\frac{1}{3} + 7\frac{1}{3} = 9\frac{2}{3}$ $2\frac{4}{3} - 1\frac{2}{3} = 1\frac{2}{3}$	
8. Add and subtract mixed numbers with unlike denominators.	4 1/3 + 3 2/5 = 7 11/15 3 - 1/4 = 2 3/4	
9. Recognize fractions as division.	$\frac{13}{5} = 13 \div 5$	
10. Recognize mixed numbers as the sum of a whole number and a fraction.	1+ ¾ = 1¾	
11. Read and write fractions and mixed numbers.	• ¼ = one fourth, ½ = one half, ¾ = three fourths • 1 ¼ = one and one fourth • 1 ½ = one and one half • 1 ¾ = one and three fourths	
12. Convert mixed numbers to improper fractions and improper fractions to mixed numbers.	• Mixed number to improper fraction $4\frac{3}{5} = \frac{4 \cdot 5 + 3}{5} = \frac{23}{5}$ • Improper fraction to mixed number $\frac{13}{5} = 13 \div 5$ $5\overline{)13}$ $\frac{-10}{3}$	
13. Multiply and divide fractions.	$\frac{3}{4} \times \frac{1}{2} = \frac{3 \times 1}{4 \times 2} = \frac{3}{8}$ $\frac{2}{5} \div \frac{3}{4} = \frac{2}{5} \times \frac{4}{3} = \frac{8}{15}$	

14. Find equivalent fractions.	• Find the numerator that completes each equivalent fraction: $\frac{1}{2}=\frac{1\times5}{2\times5}=\frac{5}{10}$ 1/3 = **3**/9 $\frac{3}{5}=\frac{3\times2}{5\times2}=\frac{6}{10}$ 2/3 = **10**/15	
15. Reduce a fraction to simplest form.	$\frac{4}{10}=\frac{4\div2}{10\div2}=\frac{2}{5}$	
16. Identify and write a ratio for a picture.	 Green balls to red balls 4:5 Red balls to green balls 5:4 Blue stars to green balls 6:4 Blue stars to purple hearts 6:0	
17. Express a percent as a fraction and as a decimal.	• 25% = ¼ = 0.25 • 50% = ½ = 0.50 • 75% = ¾ = 0.75	
18. Use percent to name part of a group.	• The team won 2/3 of its games. Find the percent of the games they won. $\frac{2}{3}\times100\%=\frac{200\%}{3}$ 200 ÷ 3 = 66 2/3 % games won	

Archdiocese of Santa Fe Standard 2: **Measurement:**
Students understand measurable attributes of objects and the units, systems and processes of measurement; and apply the appropriate techniques, tools, and formulas to determine measurements. NCTM

Critical for Mastery in Grade 5

<table>
<tr><th>LEARNING OUTCOMES
(What students will be able to do, know, understand and value)</th><th>SAMPLE ASSESSMENTS/STRATEGIES
(What evidence will demonstrate that students have achieved the Learning Outcome)</th><th>BEST PRACTICES</th></tr>
<tr><td>A. Linear Measurement:
Understand measurable attributes of objects, and the units, systems, and processes of appropriate measurement.</td><td></td><td></td></tr>
<tr><td>1. Identify units of length in US Customary and Metric Systems.</td><td>US Customary
<table><tr><td>12 in.</td><td>1 ft.</td></tr><tr><td>3 ft.</td><td>1 yd.</td></tr><tr><td>36 in.</td><td>1 yd.</td></tr><tr><td>5280 ft.</td><td>1 mi.</td></tr></table>
Metric
<table><tr><td>10 mm</td><td>1cm</td></tr><tr><td>1000 mm</td><td>1m</td></tr><tr><td>100 cm</td><td>1m</td></tr><tr><td>1000 m</td><td>1km</td></tr></table></td><td></td></tr>
<tr><td>2. Convert within US Customary units and metric units.</td><td>3 ft. = ____in. 5 cm = ___ mm
2 yd. = ____ft. 2 km = ___ m</td><td></td></tr>
<tr><td>3. Measure to nearest 1/4, and 1/8 of an inch.</td><td>
3 ¼ in.
 
2 5/8 in.</td><td></td></tr>
<tr><td>4. Measure to nearest mm or cm.</td><td>
3cm, 30mm</td><td></td></tr>
<tr><td>B. Weight:
Understand measurable attributes of objects, and the units, systems, and processes of appropriate measurement.</td><td></td><td></td></tr>
</table>

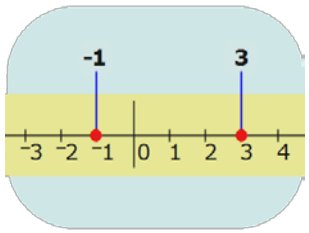
<table>
<tr><td>1. Convert within US Customary units and metric units of measurement.</td><td>US Customary
<table><tr><td>16 oz.</td><td>1 lb.</td></tr><tr><td>2000 lb.</td><td>1 ton</td></tr></table>
Metric
<table><tr><td>1000 g</td><td>1 kg</td></tr></table>
How many tons is a 4000 lb. elephant?
2 pounds of sugar is how many ounces?
3 kg = ___g</td><td></td></tr>
<tr><td>C. Temperature:
Understand measurable attributes of objects, and the units, systems, and processes of appropriate measurement.</td><td></td><td></td></tr>
<tr><td>1. No objectives.</td><td></td><td></td></tr>
<tr><td>D. Time:
Understand measurable attributes of objects, and the units, systems, and processes of appropriate measurement.</td><td></td><td></td></tr>
<tr><td>1. No objectives.</td><td></td><td></td></tr>
<tr><td>E. Money:
Understand measurable attributes of objects, and the units, systems, and processes of appropriate measurement.</td><td></td><td></td></tr>
<tr><td>1. Add, subtract multiply and divide money amounts.</td><td>$6.57 + $2.41 = $8.98
$9.85 − $4.36 = $5.49
$7.50 × 11 = $64.50
7) $3.99 = $5.70</td><td></td></tr>
<tr><td>2. Make change to values greater than $10.</td><td>• Eric bought a pair of sunglasses for $21. He gave the sales person $50. How much change should Eric get back?
$50 - $21 = $29</td><td></td></tr>
<tr><td>F. Capacity:
Understand measurable attributes of objects, and the units, systems, and processes of appropriate measurement.</td><td></td><td></td></tr>
</table>

1. Convert within US Customary units and metric units of measurement.	US Customary 8 fl. oz. = 1 cup 2 cups = 1 pint 2 pints = 1 quart 4 quarts = 1 gallon Metric 1000 mL = 1L How many pints equal a gallon? 8 pints 4 liters equal _____ mL (4000 mL)	

Archdiocese of Santa Fe Standard 3: **Algebra and Problem Solving:**
Students understand patterns, relations, and functions; represent and analyze mathematical situations and structures using algebraic symbols; use mathematical models to represent and understand quantitative relationships; analyze change in various contexts; and apply and adapt a variety of appropriate strategies to solve problems. NCTM

Critical for Mastery in Grade 5

LEARNING OUTCOMES (What students will be able to do, know, understand and value)	**SAMPLE ASSESSMENTS/STRATEGIES** (What evidence will demonstrate that students have achieved the Learning Outcome)	**BEST PRACTICES**
A. Variables and Expressions: Represent and analyze mathematical situations and structures using algebraic symbols.		
1. Simplify expressions using order of operations.	Parenthesis Exponents Multiplication or division Addition or subtraction 8 - (4 + 2) = 8 – 6 = 2	
2. Find the missing factor in a multiplication expression.	12 · N = 60 N = 5	

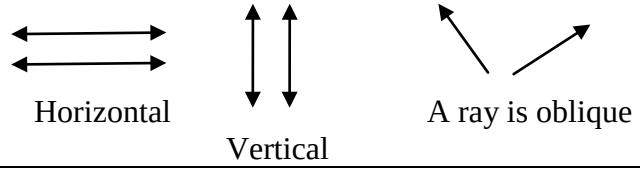
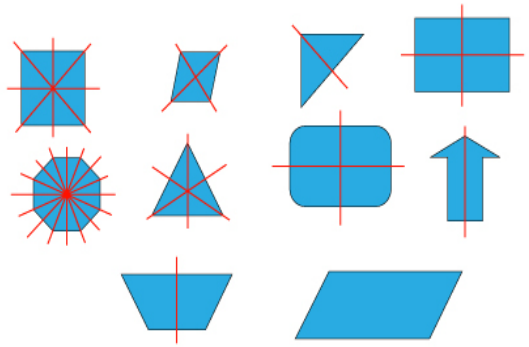
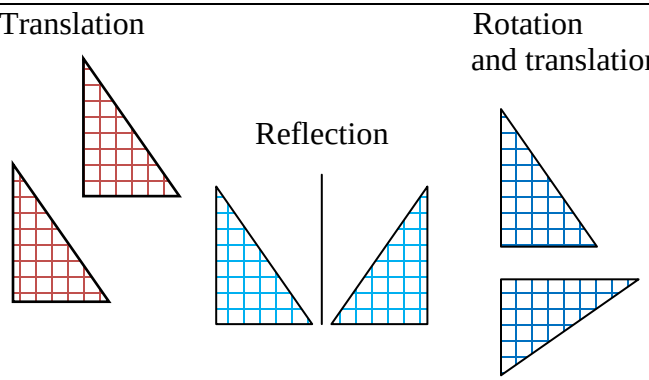
3. Read exponents	4^2 = four squared 4 × 4 4^3 = four cubed 4 × 4 × 4 4^4 = four to the 4th power 4 × 4 × 4 × 4	
4. Write a power as a whole number	$2^4 = 2 \times 2 \times 2 \times 2 = 16$	
B. Equations: **Use mathematical models to represent and understand quantitative relationships.**		
1. Create and solve an equation from a world problem.	• Tammy wants to buy a camera. She has $24. The Camera cost $41. How much more money does Tammy need? $24 + m = $41 m = $17 • Thirty desks were arranged in 6 equal rows. How many desks are in each row? 6N = 30 N = 5 desks	
2. Determine the value of a variable in a simple equation.	8 + w = 15 w = 7 24 + m = 37 m = 13 n - 73 = 800 n = 873	
C. Inequality: **Represent and analyze mathematical situations and structures using algebraic symbols.**		
1. Compare two integers on a number line (+ and – numbers).	 -1 < 3	
2. Compare whole numbers to 100,000 using the inequality symbols.	23,465 < 23,654 365 + 366 > 365 + 365	
3. Compare fractions, decimals, and negative numbers using inequality symbols.	¼ < ½ , 2/3 > 2/6 0.12 = 0.120, 1.1 < 2.0 -5 > -7, -2 < 0	
D. Patterns, Sequences and Functions: **Understand change in various contexts.**		

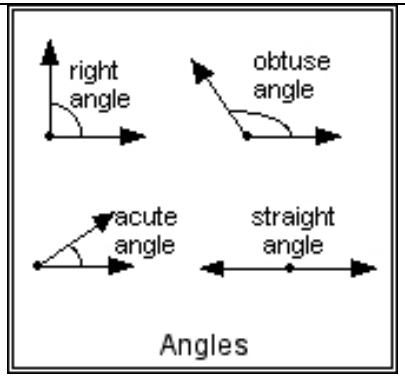
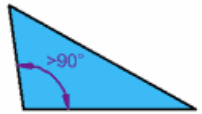
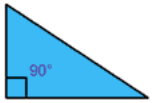
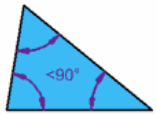
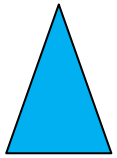
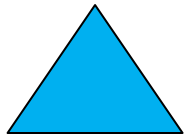
<table>
<tr><td>1. Complete a pattern and identify the rule of the pattern.</td><td>

Next number is 6 then 5 circles.
Use even numbers and continue to add one circle after each.</td><td></td></tr>
<tr><td>2. Find the missing number in a sequence and describe the rule for each.</td><td>84, 77, 70, n n = 63 subtract 7
9, 18, 27, n n = 36 add 9</td><td></td></tr>
<tr><td>E. Functions:</td><td></td><td></td></tr>
<tr><td>1. Complete a function table using addition, subtraction, multiplication and division.</td><td>x + 7 = y
<table><tr><td>Input (x)</td><td>Output (y)</td></tr><tr><td>1</td><td>8</td></tr><tr><td>5</td><td>12</td></tr><tr><td>7</td><td>14</td></tr></table>
x - 3 = y
<table><tr><td>Input (x)</td><td>Output (y)</td></tr><tr><td>10</td><td>7</td></tr><tr><td>8</td><td>5</td></tr><tr><td>5</td><td>2</td></tr></table>
x(2) = y
<table><tr><td>Input (x)</td><td>Output (y)</td></tr><tr><td>2</td><td>4</td></tr><tr><td>4</td><td>8</td></tr><tr><td>6</td><td>12</td></tr></table>
x ÷ 5 = y
<table><tr><td>Input (x)</td><td>Output (y)</td></tr><tr><td>50</td><td>10</td></tr><tr><td>25</td><td>5</td></tr><tr><td>5</td><td>1</td></tr></table></td><td></td></tr>
</table>

Archdiocese of Santa Fe Standard 4: **Geometry:**
Students analyze characteristics and properties of two-and-three dimensional geometric shapes and develop mathematical arguments about geometric relationships; specify locations and describe spatial relationships using coordinate geometry and other representational systems; apply transformations and use symmetry to analyze mathematical situations; and use visualization, spatial reasoning, and geometric modeling to solve problems. NCTM

Critical for Mastery in Grade 5

LEARNING OUTCOMES (What students will be able to do, know, understand and value)	**SAMPLE ASSESSMENTS/STRATEGIES** (What evidence will demonstrate that students have achieved the Learning Outcome)	**BEST PRACTICES**
A. Geometric Terms: **Specify locations and describe spatial relationships using coordinate geometry and other representational systems.**		
1. Classify lines, rays, and line segments as horizontal, vertical, or oblique.		
2. Identify line of symmetry in simple geometric figures.		
3. Manipulate figures in three kinds of moves (translating, reflecting, rotating).		

B. Identify and Classify Shapes: Analyze characteristics and properties of 2-D and 3-D shapes and development mathematical arguments.		
1. Identify and draw acute, obtuse, right and straight angles.		
2. Classify triangles by size of angle (acute, right, obtuse) and by length of sides (isosceles, obtuse, equilateral).	**Obtuse Triangle** Has an angle greater than 90°  **Right Triangle** Has a right angle 90°  **Acute Triangle** All angles are less than 90°  **Isosceles** 2 equal sides  **Equilateral** equal sides  **Scalene** No equal Sides 	

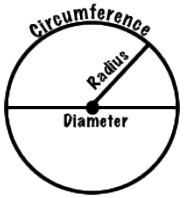
3. Identify different types of quadrilaterals (parallelogram, trapezoid, trapeziums).

Classification of Quadrilaterals

Shape	Characteristic	Name
	No sides parallel	Trapezium
	Exactly one pair of parallel sides	Trapezoid
	Two pairs of parallel sides	Parallelogram
	Parallelogram with congruent sides	Rhombus
	Parallelogram with right angles	Rectangle
	Rectangle with congruent sides	Square

Note that squares, rectangles, and rhombuses are types of parallelograms and that a square is a type of rectangle and a type of rhombus.

4. Identify properties of a circle (radius, diameter, circumference).



5. Identify 3-dimensional figures by their faces, vertices, and edges (geometric solids).

Figure	Faces	Edges	Vertices
Cube	6	12	8
Rectangular Prism	6	12	8
Pyramid	5	8	5
Sphere	0	0	0
Cylinder	2	0	0
Cone	1	0	1

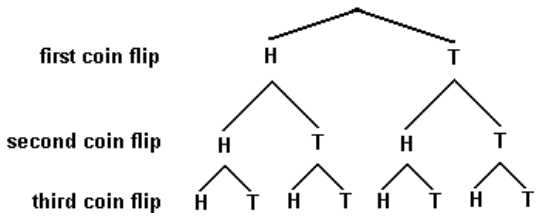
C. Geometric Formulas:
Use visualization, spatial reasoning, and geometric modeling to solve problems.

1. Identify and use formulas for area and perimeter for regular polygons.	Rectangle: Area = l × w, Perimeter = 2l + 2w Square: Area = s^2, Perimeter = 4(S)	
2. Identify radius when given diameter and identify diameter when given radius.	Radius = ½ Diameter r = ½ d Diameter = 2(radius) d = 2(r)	
3. Compute area of a triangle.	Area = $\frac{bh}{2}$ Perimeter = A + B + C	

Archdiocese of Santa Fe Standard 5: **Data Analysis, Statistics and Probability:**
Students formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them; select and use appropriate statistical methods to analyze data; develop and evaluate inferences and predictions based on data; and understand and apply basic concepts of probability. NCTM

Critical for Mastery in Grade 5

LEARNING OUTCOMES (What students will be able to do, know, understand and value)	**SAMPLE ASSESSMENTS/STRATEGIES** (What evidence will demonstrate that students have achieved the Learning Outcome)	**BEST PRACTICES**
A. Statistics: **Select and use appropriate statistical methods to analyze data.**		
1. Compute the mean, median, range, and mode of a data set.	Student Ages: 13,10,10,11,11,10,11 Arrange from least to greatest 10,10,10,11,11,11,13 Mean:10+10+10+11+11+11+13 = 76 76÷7 = 10 6/7 Median: 11 Range: 13-10 = 3 Mode: bimodal 10 and 11	
B. Probability: **Understand and apply basic concepts of probability.**		
1. Use the word chance to express likelihood of an event happening, not happening, or equally happening or not happening.	50% chance of rain-equally happening or not happening.	

<table>
<tr>
<td>2. Make and justify valid inferences, predictions and arguments of a possible outcome set.</td>
<td> 
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<tr>
<td>3. Use fractions and percents to compare data sets of different sizes.</td>
<td>If 10 of the 50 pieces of candy are green what fraction and percent of candy is green? 1/5 and 20% are green.
30 out of 50 is what fraction and percent?
3/5 and 60%</td>
<td></td>
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<tr>
<td>C. Data Analysis:
Develop and evaluate inferences and predictions that are based on data.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Design investigations and represent collected data using tables (Frequency Table).</td>
<td>Number of Students per Classroom
<table>
<tr><th>Students</th><th>Tally</th><th>Frequency</th></tr>
<tr><td>26</td><td>|</td><td>1</td></tr>
<tr><td>27</td><td>||</td><td>2</td></tr>
<tr><td>29</td><td>||||</td><td>4</td></tr>
<tr><td>30</td><td>||</td><td>2</td></tr>
<tr><td>31</td><td>|</td><td>1</td></tr>
<tr><td>33</td><td>|</td><td>1</td></tr>
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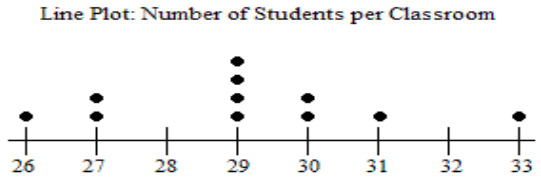
<tr>
<td>2. Interpret and create line plots.</td>
<td> 
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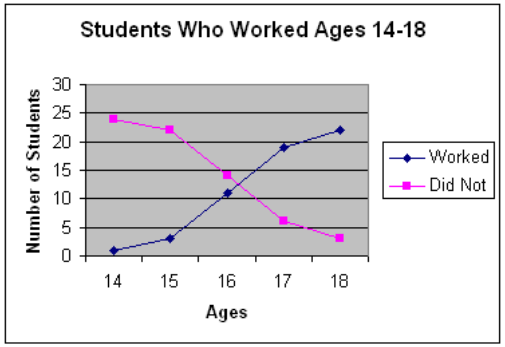
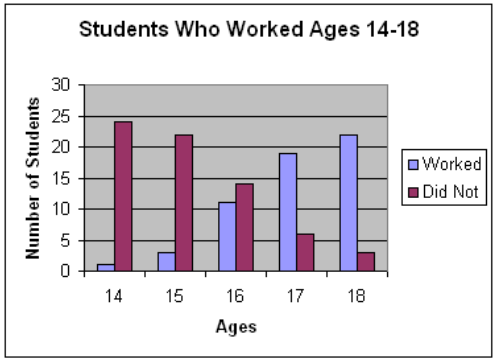
<tr>
<td>3. Identify clusters and outliers in a set of data.</td>
<td>Cluster: 26 and 27 also 29, 30, 31
Outliers: 33</td>
<td></td>
</tr>
<tr>
<td>4. Interpret and display data in a line graph, pictograph, stem-and-leaf plot, circle graph, bar graph, and Venn diagram.</td>
<td>Stem-and-leaf
2 | 6 7 7 9 9 9 9
3 | 0 0 1 3</td>
<td></td>
</tr>
</table>

5. Create double-line and double bar graphs to compare two sets of similar data.	 	
6. Interpret double line and double bar graphs.	• More students worked when they were older. • The largest increase in students working was at 18 years old.	

Archdiocese of Santa Fe Standard 6: **Mathematical Processes:**

With opportunities integrated throughout the curriculum, students develop mathematical practices and processes such as solving problems, making connections, understanding multiple representations of mathematical ideas, communicating their thought processes, and justifying their reasoning appropriate to grade level. **NCTM**

Mathematical Processes and Practices:	**Teacher Notes:**
1. Students make sense of problems and persevere in solving them.	
2. Students select and use various types of reasoning and methods of proof.	
3. Students construct viable arguments and critique the reasoning of others.	
4. Students evaluate the reasonableness of predictions, estimations and solutions.	
5. Students use a variety of tools and strategies in problem solving.	
6. Students attend to accuracy and precision and proof their work.	
7. Students use a variety of mathematical representations to organize, record and communicate mathematical ideas.	
8. Students apply mathematical knowledge and skills routinely in other content areas and practical situations.	