

6th Grade Math Reference Sheet

Data Analysis, Statistics, and Probability

DATA ANALYSIS	DSP 1	GRAPHS	DSP 2	PROBABILITY	DSP 3
Mean: Average		Line Graph: changes over time		Probability =	
Median: 1 middle number or average of 2 middle number		Bar Graph: compares data		$\frac{\text{\# of favorable outcomes}}{\text{\# of total possible outcomes}}$	
Mode: Most		Circle (Pie) Graph: parts of a whole		Make a tree diagram	
Range: largest # – smallest #					

Patterns, Relations, and Algebra

SOLVING EQUATIONS	PRA 1	FIND THE VALUE	PRA 2
<ol style="list-style-type: none"> Get the variable by itself by using inverse operations Keep it balanced (what you do to one side, you must do to the other) Rewrite the problem so the variable is by itself Solve — do the math 		Solve	
		Answer	
		Simplify	
		Evaluate	

Number Sense

SIGNAL WORDS IN WORD PROBLEMS				NS 1	ROUNDING	NS 2
Addition	Subtraction	Multiplication	Division			
Increased by	Decreased by	Fraction of	Equal parts		1. Find and circle the place you must round	
Sum	Difference	Percent of	Quotient		2. Look to the digit on the right.	
Total	How much more	Times	Average		3. It is 0, 1, 2, 3, or 4 it does nothing to the circled digit	
In all	How much less	Product	Divided by		4. If it is 5, 6, 7, 8, or 9 it bumps the circled digit up	
Added to	How much left	Multiplied by	Shared equally		Whole # - all numbers to the right become 0	
Altogether	Minus	Twice	Split evenly		Decimal # - all digits to the right are dropped	
More than	Fewer	Each	Half of			
Plus	Fewer than		Per (unit)			
			Size / cost of each			

ORDER OF OPERATIONS	NS 3
<p>(P) lease E²xcuse My Dear (fltr) Aunt Sally (fltr)</p>	

	NS 4
<p>St an dard Form E²xponent Form E+X+P+A+N+D+E+D</p>	

PLACE VALUE							NS 5
<p>PLACE Value: Where it lives . . . street Name, Place only VALUE of a Number: How much is it worth? Think \$\$\$</p>							
← MILLIONS	THOUSANDS		ONES		THOUSANDTHS	MILLIONTHS →	
H T O	H T O	H T	0	T H	O T H	O T H	

		NS 6
<p>Division – The dividend is the first one in the house locking the door on the divisor!</p>		
<p><u>Division Steps</u></p> <p>D ÷ M x S - C √ B Repeat</p>		<p><u>Dividend ÷ Divisor = Quotient</u></p> <p style="margin-left: 100px;"> <div style="display: inline-block; border-left: 1px solid black; border-right: 1px solid black; border-bottom: 1px solid black; padding: 5px;"> quotient divisor dividend </div> </p>

DIVISIBILITY RULES							NS 7
2	3	4	5	6	9	10	
if it ends in 0, 2, 4, 6, 8	if the sum of the digits is divisible by 3	if the last two digits form a number that is divisible by 4	if it ends in 0 or 5	if it ends in 0 or 5	if the sum of the digits is divisible by 9	if it ends in 0	

DECIMALS

NS 8

Order and Compare Numbers

1. Rewrite and line up digits and decimals
2. Compare digits: move to the right until digits are not the same (mark)
3. Rewrite numbers using less than (<) or greater than (>)

4	.	0	9	2
4	.	0	8	9
4	.	0	9	

$$4.089 < 4.09 < 4.092$$

ADDITION AND SUBTRACTION

NS 9

1. Line up **decimal points**
2. Add/subtract numbers
3. Bring down the decimal point

MULTIPLICATION

NS 9

1. Line up the **numbers**
2. Multiply
3. Count the total number of decimal places
4. Insert the decimal point from the right up into the answer

DIVISION

NS 9

1. Move decimal point out of divisor
2. Move dividend decimal the same number of places
3. Move the decimal point straight
4. Divide

CHANGE A DECIMAL ⇒ FRACTION

NS 10

1. “Say” the decimal
2. “Write” the fraction
3. Simplify the fraction

CHANGE A FRACTION ⇒ DECIMAL

NS 10

1. Turn denominator into a divisor
2. Numerator goes into the house

PRIME FACTORIZATION

NS 11

Use the Factor Tree

1. Break numbers into all prime factors
2. Write the exponents in order

Factors – the #s multiply to get a product

Prime – only two factors

Composite – more than two

LADDER METHOD

NS 12

GCF = factors + evenly

1. 3.Divide evenly into ALL #s
2. Multiple the SIDE numbers only

		1	4	6
1		1	4	6
x		3	12	18
3		3	12	18

$$\text{GCF} = 3 \times 1 = 3$$

LCM = multiples

1. Divide evenly into at least 2 numbers
2. Multiply all outside numbers

		1	x	2	x	3
1		1	4	6	6	6
x		3	12	18	18	18
3		3	12	18	18	18

$$\text{LCM} = 3 \times 2 \times 1 \times 2 \times 3 = 36$$

FRACTIONS		NS 13
ADDITION AND SUBTRACTION	MULTIPLICATION	DIVISION
<ol style="list-style-type: none"> 1. Find common denominator 2. Make equivalent fractions 3. Add/subtract numerators only 4. Simplify 	<ol style="list-style-type: none"> 1. Do NOT need a common denominator 2. Change Mixed Numbers to Improper Fractions 3. Cross Simplify 4. Multiply numerators and multiply denominators 5. Simplify 	<ol style="list-style-type: none"> 1. Change Mixed Numbers to Improper Fractions 2. Flip the second fraction (Reciprocal) 3. Multiply numerators and multiply denominators 4. Simplify

Simply = Lowest Terms = Simplest Form Use the Ladder Method Is it Improper? Make it Mixed!

FRACTIONS	NS 14
Order and Comparing <ol style="list-style-type: none"> 1. Try rounding 2. Make equivalents with common denominators 3. Rewrite the <u>original</u> fraction using < or > 	

ADDITION OF INTEGERS (Positives and Negatives)	NS 16		
<table style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> <u>Same Signs</u> <ol style="list-style-type: none"> 1. Add 2. Keep the sign </td> <td style="width: 50%; vertical-align: top;"> <u>Different Signs</u> <ol style="list-style-type: none"> 1. Find the <i>difference</i> 2. Use the sign of the integer farthest from zero </td> </tr> </table> <p><i>Negative integers are less than positive integers</i></p>	<u>Same Signs</u> <ol style="list-style-type: none"> 1. Add 2. Keep the sign 	<u>Different Signs</u> <ol style="list-style-type: none"> 1. Find the <i>difference</i> 2. Use the sign of the integer farthest from zero 	
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PERCENTS	NS 15
Out of (per 100) <p>Change Decimal to a Percent Move decimal two places to the RIGHT</p> <p>Change Percent to a Decimal Move decimal two places to the LEFT</p> <p>Change Percent to Fraction Percent amount over 100</p> <p>Percent OF a Number</p> <ol style="list-style-type: none"> 1. Change the percent to a decimal or fraction 2. Multiply 	

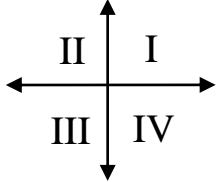
Geometry and Measurement

ANGLES		GM 1
Acute $< 90^\circ$	Obtuse $> 90^\circ$	
Right = 90°	Straight = 180°	
Complimentary = 90°	Supplementary = 180°	

TRIANGLES		GM 2
Angles	= 180°	
Isosceles:	2 equal sides and angles	
Equilateral:	3 equal sides and angles	
Scalene:	no equal sides	

POLYGONS		GM 3
Quadrilaterals: Angles = 360°		
Trapezoid Parallelogram Square Rhombus Rectangle		
<i>Remember number of sides = number of angles</i>		
Pentagon (5) Hexagon (6) Octagon (8) Decagon (10)		

COMMON TERMS			GM 4
Point •k	Ray →	Line Segment —	
Line ↔	Parallel 	Perpendicular ⊥	

COORDINATE PLANE		GM 5
	<p>x-axis – horizontal axis</p> <p>y-axis – vertical axis</p>	
Plotting Points	Ordered Pair	
1. Start at zero	(x ↔ , y ↑↓)	
2. Plot the first number across		
3. Plot the second number up or down		

CIRCLES		GM 6
Radius is half the diameter		
Diameter is twice the radius		
Circumference is around the outside		