

Blake Middle School Math Reference Sheet

Adding Integers

Same Sign:

1. Add absolute value of the numbers
2. Keep the sign

Different Sign:

1. Subtract absolute value of the numbers
2. Keep the sign of the number with the larger absolute value

Order of Operations - PEMDAS

1. Parenthesis
2. Exponent
3. Multiplication and Division (left to right)
4. Addition and Subtraction (left to right)

Subtracting Integers (Change to an addition problem)

1. Keep the first number the same
2. Change subtraction to addition
3. Change the sign of the second number to be its opposite
4. Add using addition rules above

Prime Factorization

1. Choose two factors
2. Make a factor tree
3. Circle prime numbers
4. Write prime numbers, using exponents, as a product

Multiplying and Dividing Numbers

$+$	\cdot	$+$	$=$	$+$	$+$	\div	$+$	$=$	$+$
$-$	\cdot	$-$	$=$	$+$	$-$	\div	$-$	$=$	$+$
$+$	\cdot	$-$	$=$	$-$	$+$	\div	$-$	$=$	$-$
$-$	\cdot	$+$	$=$	$-$	$-$	\div	$+$	$=$	$-$

Absolute Value

$$|+ \text{ number} | = + \text{ number}$$

$$|- \text{ number} | = + \text{ number}$$

Comparing and Ordering Numbers

$$\underline{\hspace{2cm}} < \underline{\hspace{2cm}}$$

Smaller number < Larger number

$$\underline{\hspace{2cm}} > \underline{\hspace{2cm}}$$

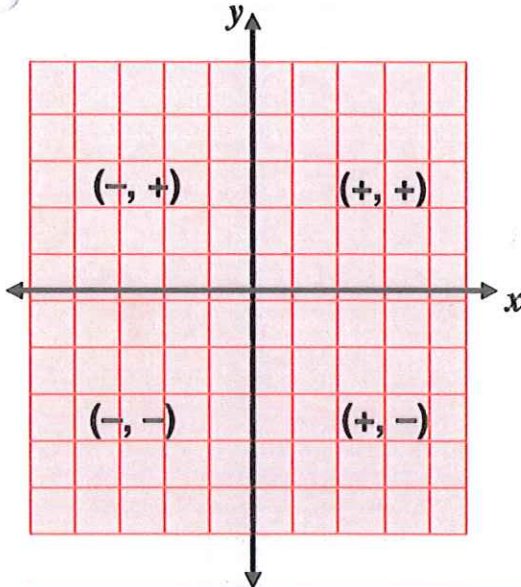
Larger Number > Smaller Number

How to Plot a Point

(x, y)

Use x axis first: move left or right

Use y axis next: move up or down



Divisibility Rules

A number is able to be divided by...

2	If the last digit is even
3	If the sum of the digits can be divided by 3.
4	If the last two digits can be divided by 4.
5	If the last digit is 0 or 5.
6	If the number can be divided by both 2 and 3.
8	If the number is divisible by 4 and result is even
9	If the sum of the digits can be divided by 9.
10	If the last digit is 0.
12	If the number can be divided by 3 and 4
15	If the number can be divided by 3 and 5.

Metric Conversions
 1 kilometer (km) = 1,000 meters (m)
 1 meter (m) = 100 centimeter (cm)
 1 centimeter (cm) = 10 millimeters (mm)

King Henry Died Unwillingly Drinking Chocolate Milk

Measurements
 1 foot = 12 inches
 1 yard = 3 feet
 1 mile = 5280 feet
 1 year = 52 weeks
 1 year = 365 days
 1 minute = 60 seconds

Adding/Subtracting Fractions 1. If mixed, change to improper 2. Find common denominator - Multiply top and bottom by same number 3. Add/subtract numerators 4. Keep denominator 5. Simplify and reduce	Multiplying Fractions 1. If mixed, change to improper 2. Multiply numerators 3. Multiply denominators 4. Simplify and reduce	Dividing Fractions 1. If mixed, change to improper 2. Flip second fraction, keep first fraction 3. Multiply numerators 4. Multiply denominators 5. Simplify and reduce
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Mixed Number to Improper Fraction 1. Multiply the whole number by the denominator 2. Add the numerator 3. Answer becomes numerator 4. Denominator stays the same as original	Improper Fraction to a Mixed number 1. How many times does denominator go into numerator? 2. Answer becomes whole number 3. Remainder becomes numerator 4. Denominator stays the same as original
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Comparing Fractions 1. Find least common denominator (LCD) of the fractions 2. Rewrite each fraction as an equivalent fraction using the LCD 3. Compare the numerators
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Decimal Operations	Operation	+ or -	x or ·	÷ by whole # (W)	÷ by decimal (D)
	Memory CUE	Line up $\begin{array}{r} \\ +/- \\ \hline \end{array}$	Multiply then count $\begin{array}{r} \\ x \\ \hline \end{array}$	Up $\begin{array}{r} \\ w) \\ \hline \end{array}$	Over, over, up $\begin{array}{r} \\ d) \\ \hline \end{array}$
	You need to :	1. Line up decimals 2. Fill empty places to the right of the decimal point with zeros 3. Add or subtract	1. Multiply as normal 2. Move decimal to the left in the answer the number of spaces from right in problem	1. Move the decimal to the answer line 2. Divide as normal	1. Move the decimal on the outside all the way to the right 2. Move the decimal inside the same number of places (Add zeros if needed) 3. See steps to the left

Percent to Decimal 1. Trade percent sign for decimal point. 2. Move two places to the left. Decimals to Percent 1. Move decimal two places to the right. 2. Add percent sign. Percent to Fraction 1. Place number over 100. 2. Reduce if possible. Fraction to Percent 1. Find an equivalent fraction with a denominator of 100. 2. Or change the fraction to a decimal and follow decimal to percent rules.	Percent Calculations $\frac{\text{Part}}{\text{Whole}} = \% \quad \frac{\text{is}}{\text{of}} = \frac{\%}{\text{total}}$ Discount (% off, decrease) Price - (% · Price) Mark-Ups (tips, increase) Price + (% · Price)
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Fraction to Decimal Put the numerator inside and the denominator outside of the division box and divide $\frac{x}{y} = y \overline{)x}$ Decimal to Fraction Read decimal aloud and write as fraction

Hundred Millions	Ten Millions	Millions	Hundred thousands	Place value chart				Ten thousands	Thousands	Hundreds	Tens	Ones	.	Tenths	Hundredths	Thousandths	Ten-thousandths
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Scientific Notation number $\times 10^n$; Move decimal n spaces to right number $\times 10^{-n}$; Move decimal n spaces to left *number in front must be between 1 and 10



Massachusetts Comprehensive Assessment System Grade 7 Mathematics Reference Sheet

PERIMETER FORMULAS

square $P = 4s$

rectangle $P = 2b + 2h$

OR

$$P = 2l + 2w$$

triangle $P = a + b + c$

AREA FORMULAS

square $A = s^2$

rectangle $A = bh$

OR

$$A = lw$$

parallelogram $A = bh$

triangle $A = \frac{1}{2}bh$

trapezoid $A = \frac{1}{2}h(b_1 + b_2)$

circle $A = \pi r^2$

TOTAL SURFACE AREA FORMULAS

rectangular prism $SA = 2(lw) + 2(hw) + 2(lh)$

cylinder $SA = 2\pi r^2 + 2\pi rh$

VOLUME FORMULAS

rectangular prism $V = lwh$

OR

$$V = Bh$$

(B = area of a base)

cube $V = s^3$

(s = length of an edge)

cylinder $V = \pi r^2 h$

CIRCLE FORMULAS

$$C = 2\pi r$$

OR

$$C = \pi d$$

$$A = \pi r^2$$