

MCAS Grade 8 Mathematics

Approved Blank Supplemental Reference Sheet for Students with Accommodation A9

INSTRUCTIONS:

The following supplemental reference sheet is **ONLY** for students who have accommodation A9 listed in their IEP or 504 plan.

Before testing:

Schools should print out the following pages and distribute to students who have accommodation A9 so that students can practice using the supplemental reference sheet. Schools should also remind students that during testing they may only use a blank reference sheet that has not yet been filled in.

During testing:

At the start of each test session, test administrators should check that that they are only providing supplemental reference sheets that have not already been filled in, and that they are providing them only to students who have accommodation A9 in their IEP or 504 plan.

Test administrators should remind students that they may not use any sheets that were filled in during previously, nor any other reference materials or notes. Results **may be invalidated** for students who use a supplemental reference sheet that has already been filled in.

MCAS Grade 8 Mathematics

Approved Blank Supplemental Reference Sheet for Students with Accommodation A9

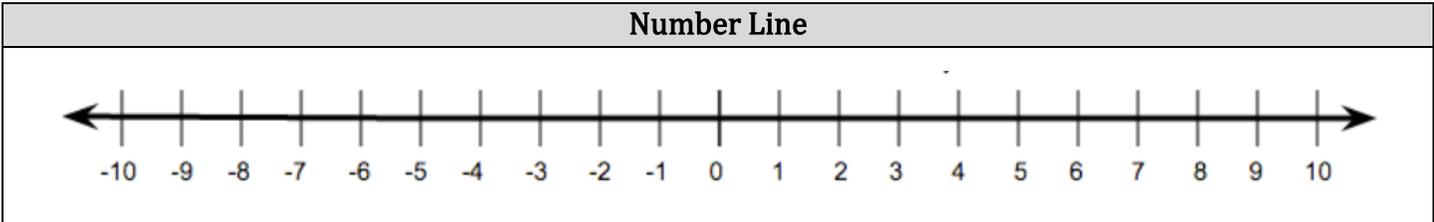
Note: Students may ONLY be provided with a blank reference sheet to use during testing.

General Problem-Solving Process	Order of Operations
<ol style="list-style-type: none"> 1. Read/reread the problem for understanding. 2. Identify what the question is asking. 3. Make a plan to solve the problem. (<i>Choose at least one strategy.</i>) <ul style="list-style-type: none"> • Draw a picture. • Create a table, chart, or list. • Look for a pattern. • Work backwards. • Write a number sentence or an equation. 4. Solve the problem. 5. Reread the problem to see if your solution makes sense. 	<p>PEMDAS</p> <ol style="list-style-type: none"> 1. Parentheses (brackets, etc.) 2. Exponents 3. Multiplication or Division (left to right) 4. Addition or Subtraction (left to right) <hr/> <p>GEMA</p> <ol style="list-style-type: none"> 1. Grouping 2. Exponents 3. Multiplicative operations (multiplication or division — left to right) 4. Additive operations (addition or subtraction — left to right)

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Properties	Fractions
<ul style="list-style-type: none"> • $a(b + c) = ab + ac$ • $a + (b + c) = (a + b) + c$ • $a \cdot (b \cdot c) = (a \cdot b) \cdot c$ • $a \cdot b = b \cdot a$ • $a + b = b + a$ • $a - (-b) = a + b$ • $a + (-b) = a - b$ 	<ul style="list-style-type: none"> • $\frac{a}{b} + \frac{c}{d} = \frac{ad + bc}{bd}$ • $\frac{a}{b} - \frac{c}{d} = \frac{ad - bc}{bd}$ • $\frac{a}{b} \cdot \frac{c}{d} = \frac{ac}{bd}$ • $\frac{a}{b} \div \frac{c}{d} = \frac{ad}{bc}$

Place Value								
Whole Numbers						Decimals		
Hundred-thousands	Ten-thousands	Thousands	Hundreds	Tens	Ones	.	Tenths	Hundredths



Statistics	Coordinate Plane												
<ul style="list-style-type: none"> • Mean—Average • Median—Middle • Mode—Most often • Range—Least to Greatest 	<ul style="list-style-type: none"> • $Ax + By = C$ • Slope or Rate of Change (m) = $\frac{y_2 - y_1}{x_2 - x_1} = \frac{\text{Rise}}{\text{Run}}$ • $y = mx + b$ • $y - y_1 = m(x - x_1)$ <div style="text-align: center;"> </div>												
Percentages and Proportions													
<ul style="list-style-type: none"> • $\frac{\text{is}}{\text{of}} = \frac{\%}{100}$ • $x\% = \frac{x}{100}$ • if $\frac{a}{b} = \frac{c}{d}$, then $ad = bc$ 													
Ratios													
<ul style="list-style-type: none"> • Part:Part • Part:Whole 													
Divisibility Rules	Symbols												
<table border="1" style="width: 100%; border-collapse: collapse;"> <tbody> <tr> <td style="text-align: center;">2</td> <td>If the last digit is even</td> </tr> <tr> <td style="text-align: center;">3</td> <td>If the sum of the digits can be divided by 3</td> </tr> <tr> <td style="text-align: center;">5</td> <td>If the last digit is 0 or 5</td> </tr> <tr> <td style="text-align: center;">6</td> <td>If the number is divisible by both 2 and 3</td> </tr> <tr> <td style="text-align: center;">9</td> <td>If the sum of the digits can be divided by 9</td> </tr> <tr> <td style="text-align: center;">10</td> <td>If the last digit is 0</td> </tr> </tbody> </table>	2	If the last digit is even	3	If the sum of the digits can be divided by 3	5	If the last digit is 0 or 5	6	If the number is divisible by both 2 and 3	9	If the sum of the digits can be divided by 9	10	If the last digit is 0	<ul style="list-style-type: none"> • $>$ is greater than • $<$ is less than • $=$ is equal to • x is absolute value of x • \geq is greater than or equal to • \leq is less than or equal to
2	If the last digit is even												
3	If the sum of the digits can be divided by 3												
5	If the last digit is 0 or 5												
6	If the number is divisible by both 2 and 3												
9	If the sum of the digits can be divided by 9												
10	If the last digit is 0												

Probability

$$\text{Probability} = \frac{\text{favorable outcomes}}{\text{possible outcomes}}$$

Geometry and Measurement Abbreviations

- l = length
- w = width
- h = height
- s = length of a side
- b = length of the base
- d = diameter
- A = area
- B = area of the base
- P = perimeter
- C = circumference
- r = radius

Transformations

- Translation—Slide
- Reflection—Flip
- Rotation—Turn

Multiplication Table

(NOTE: DO NOT COMPLETE THIS TABLE FOR THE STUDENT)

X	1	2	3	4	5	6	7	8	9	10	11	12
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												