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A SUPPLEMENTAL GUIDE FOR SUCCESS
MATHEMATICS
MCAS

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This supplemental guide contains all the MCAS problems featured in the different exams starting with the Spring of 1998 through the March 2004. These problems have been organized according to topics and labeled by year.

YEAR	EXAM	REVISED
1998	SPRING 1998	July 2003
1999	SPRING 1999	July 2003
2000	SPRING 2000	July 2003
2001	SPRING 2001 FALL 2001	July 2003
2002	SPRING 2002 FALL 2002	July 2003
2003	SPRING 2003 November 2003	July 2003 June 2004
2004	March 2004	June 2004

Website for the Mathematics MCAS exams:
<http://www.doe.mass.edu/mcas/>

T A B L E O F C O N T E N T S

TOPIC #	UNIT	MCAS TOPICS	CHECK LIST (X)
1	2	<i>Number line, Irrational Numbers, Square /Cube Roots.</i>	
2	2	<i>Order of Operations</i>	
3	2	<i>Exponents</i>	
4	3	<i>Fractions, Decimals</i>	
5	3	<i>Percents</i>	
6	4	<i>Mean, Median, Mode, Range</i>	
7	4	<i>Probability/Combinations</i>	
8	5	<i>Circle Graphs</i>	
9	5	<i>Stem-and-Leaf</i>	
10	5	<i>Box-and-Whisker plots</i>	
11	5	<i>Line graphs and Rate</i>	
12		<i>Bar graphs</i>	
13	6	<i>Algebraic Expressions and Equations</i>	
14	6	<i>Inequalities & Absolute Value</i>	
15	6	<i>Polynomials (Factoring & Dividing)</i>	
16	6	<i>Quadratic Formula/ Quadratic Equations (FOIL)</i>	
17	7	<i>Ratios & Proportions</i>	
18	7	<i>Translating word problems into mathematical equations/expressions</i>	
19	8	<i>Finding and using Patterns. Interpreting equations. Determining equations for a table of values.</i>	
20	8	<i>Functions: Name the equation represented in the graph.</i>	
21	9	<i>Linear Equations: $y = mx + b$</i>	
22	9	<i>Slope</i>	
23	9	<i>Coordinate System. Midpoint and Distance Formulas.</i>	
24	9	<i>Scatter plots & the best fitting lines</i>	
25	10	<i>Similarity & Congruence</i>	
26	10	<i>Geometric Solids</i>	
27	10	<i>Transformations (Rotation, Reflection, & Translation)</i>	
28	10	<i>IF... THEN... Statements</i>	
29	11	<i>Complementary, Supplementary, Vertical, & Straight Angles</i>	
30	11	<i>Area, Perimeter, Volume. Shaded area-Circles</i>	
31	11	<i>Special Right Triangles-Pythagorean Theorem</i>	
32		<i>Trigonometry (sine, cosine, tangent)</i>	
33		<i>Triangle inequality</i>	
34		<i>Venn Diagrams</i>	
35		<i>Matrices</i>	
36		<i>Circle Geometry</i>	



Massachusetts Comprehensive Assessment System Grade 10 Mathematics Reference Sheet

AREA FORMULAS

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

rectangle $A = bh$

square $A = s^2$

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

CIRCLE FORMULAS

$C = 2\pi r$

$A = \pi r^2$

VOLUME FORMULAS

cube $V = s^3$
(s = length of an edge)

rectangular prism $V = lwh$

OR

$V = Bh$

(B = area of the base)

sphere $V = \frac{4}{3}\pi r^3$

right circular cylinder $V = \pi r^2h$

right circular cone $V = \frac{1}{3}\pi r^2h$

right square pyramid $V = \frac{1}{3}s^2h$

LATERAL SURFACE AREA FORMULAS

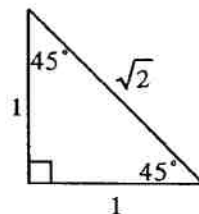
rectangular prism $LA = 2(hw) + 2(lh)$

right circular cylinder $LA = 2\pi rh$

right circular cone $LA = \pi r\ell$

right square pyramid $LA = 2s\ell$

(ℓ = slant height)



TOTAL SURFACE AREA FORMULAS

cube $SA = 6s^2$

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

sphere $SA = 4\pi r^2$

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

right circular cone $SA = \pi r^2 + \pi r\ell$

right square pyramid $SA = s^2 + 2s\ell$

(ℓ = slant height)

