MCAP Maryland Comprehensive Assessment Program

Practice Test Answer and Alignment Document
Mathematics: Geometry
Online

The following pages include the answer keys for all machine-scored items. A sample student response for the top score is included for all hand-scored constructed response items.

- Some answer keys include one possible sample student response. Other valid methods for solving the problem can earn full credit unless a specific method is required by the item.
- In items where the scores are awarded for full and partial credit, the definition of partial credit will be confirmed during range-finding (reviewing sets of real student work).
- If students make a computation error, they can still earn points for reasoning or modeling.

Section 1

Item Number	Answer Key	Evidence Statement Key/ Content Scope
1.	C	G-GPE.A.1
2.	The reason for step 2 is "Consecutive angles of a parallelogram are supplementary." The reason for step 5 is "Subtraction Property of Equality." The reason for step 6 is "Opposite angles of a parallelogram are congruent." The reason for step 9 is "Definition of a right angle."	G-CO.C.11
3.	The student should select the circles around vertex labels *K* and *R*.	G-SRT.C.7

Item Number	Answer Key	Evidence Statement Key/ Content Scope
4.	The length of each side of $\Delta R'S'T'$ is [equal to] the length of the corresponding side of ΔRST. The area of $\Delta R'S'T'$ is [equal to] the area of ΔRST. The location of each vertex of $\Delta R'S'T'$ [must] be the same as the location of the corresponding vertex of ΔRST.	G-CO.B.6
5.	The reason for step 2 is "AA similarity." The reason for step 3 is "Corresponding sides of similar triangles are proportional."	G-SRT.B.5
6.	40	G-CO.C.10
7.	B	G-SRT.B.5
8.	A	G-CO.D.12
9.	$\frac{5}{4}$	G-SRT.A.1.b
10.	The triangle, square, and trapezoid are possible cross-sections. The hexagon and rectangle are not possible cross-sections.	G-GMD.B.4-1
11.	C	G-CO.C.10
12.	D	G-GPE.B.4
13.	C	G-CO.C.9

Section 2

Item Number	Answer Key	Evidence Statement Key/ Content Scope
1.	A	G-GPE.B.5
2.	XY = [51] XZ = [68]	G-SRT.C.8
3.	C	G-M.6-1 G-GMD.A.3
4.	**Sample Top Score Response** Calculating the slopes: The slope of side PQ: $\frac{10-7}{4-10}=\frac{3}{-6}=-\frac{1}{2}$ The slope of side RS: $\frac{5-4}{4-6}=\frac{1}{-2}$ The slope of side PS: $\frac{10-5}{4-4}=\frac{5}{0}$ which is undefined The slope of side QR: $\frac{7-4}{10-6}=\frac{3}{4}$ $PQRS$ is a trapezoid because sides PQ and RS are parallel and sides PS and QR are not parallel. Calculating the side lengths: $PS=\sqrt{(10-5)^2+(4-4)^2}=5$ $QR=\sqrt{(7-4)^2+(10-6)^2}=5$ Since the side lengths are equal, $PQRS$ is an isosceles trapezoid. **Refer to the Holistic Rubric for 4-Point Reasoning Constructed Response Items for score point information.**	G-R.6 G-GPE.B.7
5.	B	G-M.1 G-SRT.C.8
6.	B	G-R.3 G-GMD.A.3
7.	D	G-C.B.5

Item Number	Answer Key	Evidence Statement Key/ Content Scope
8.	B	G-MG.A.3

Section 3

Item Number	Answer Key	Evidence Statement Key/ Content Scope
1.	D	G-SRT.C.6
2.	$0.01\left(\frac{2}{3}\pi(x-1)^3\right)$ or equivalent expression	G-M.6 G-GMD.A.3 G-MG.A.2
3.	**Sample Top Score Response** The student's mistake was using a slope of $\frac{1}{3}$ instead of $-\frac{1}{3}$ since side *YZ* points down and to the right. The opposite of the reciprocal of $-\frac{1}{3}$ is 3. The perpendicular bisector of side *YZ* passes through the midpoint of side *YZ*. The coordinates of the midpoint are $x = 2 + \frac{6}{2} = 5$ $y = 3 + \frac{2}{2} = 4$ The equation of the perpendicular bisector is $x - 4 = 3(x - 5)$ $y = 3x - 15 + 4$ $y = 3x - 11$ **Refer to the Holistic Rubric for 4-Point Reasoning Constructed Response Items for score point information.**	G-R.7 G-CO.C.9 G-GPE.B.5
4.	B, D, E	G-R.1 G-CO.C.11

Item Number	Answer Key	Evidence Statement Key/ Content Scope
5.	**Sample Top Score Response** The least height for the flagpole will be when the shadow is longest (7.5 feet or 90 inches) and the distance between the student and the flag is shortest (21 feet or 252 inches). The following proportion can be solved to arrive at the least height of the flagpole, in inches. $\frac{62}{90} = \frac{x}{90+252}$ $62(342) = 90x$ x = 235.6 inches or 19.63 feet. The greatest height for the flagpole will be when the shadow is shortest (7 feet or 84 inches) and the distance between the student and the flag is longest (22 feet or 264 inches). The following proportion can be solved to arrive at the greatest height of the flagpole, in inches. $\frac{62}{84} = \frac{x}{84+264}$ $62(348) = 84x$ x = 256.9 inches or 21.4 feet **Refer to the Holistic Rubric for 4-Point Modeling Constructed Response Items for score point information.**	G-M.6-2 G-SRT.B.5
6.	17	G-C.A.2

Section 4

Item Number	Answer Key	Evidence Statement Key/ Content Scope
1.	B	G-C.A.2
2.	A point should be plotted at (2, 3).	G-CO.A.5
3.	A, B, E	G-R.8 G-GPE.B.6
4.	**Sample Top Score Response** Volume of the box: $6 \times 4 \times 10 = 240$ cubic inches. Volume of the bottle: $\pi\left(\frac{2.4}{2}\right)^2(7) + \pi\left(\frac{1}{2}\right)^2(1) = 10.33\pi$ cubic inches. Empty space in the box: $240 - 2 \times (10.33\pi) \approx 175.09$ cubic inches. A total of 175.09 cubic inches of packing material will be needed to fill the empty space in the box. **Refer to the Holistic Rubric for 4-Point Modeling Constructed Response Items for score point information.**	G-M.6-1 G-GMD.A.3
5.	If $\overline{LM} \cong \overline{YZ}$, then $\Delta KLM \cong \Delta XYZ$ by the [SAS] postulate. If $\angle M \cong \angle Z$, then $\Delta KLM \cong \Delta XYZ$ by the [AAS] postulate.	G-R.5 G-CO.B.8
6.	The area of the garden shaped like an equilateral triangle is less than 225 square feet. The area of the garden shaped like a rectangle with dimensions 18 feet by 12 feet is less than 225 square feet.	G-M.3 G-MG.A.3

Item Number	Answer Key	Evidence Statement Key/ Content Scope
7.	Step 2: When two parallel lines are cut by a transversal, [corresponding] angles are congruent. Step 4: Corresponding sides of [similar] triangles are [proportional].	G-SRT.B.4
8.	$\sin(Q)$ is equivalent to $\sin(L)$ $\cos(Q)$ is equivalent to $\cos(L)$ $\sin(R)$ is equivalent to $\cos(L)$	G-SRT.C.7