MCAP Maryland Comprehensive Assessment Program

Practice Test Answer and Alignment Document
Mathematics – Grade 7
Pencil-and-Paper

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.	B	7.RP.A.2d
2.	D	7.NS.A.1d
3.	D	7.EE.A.1
4.	3	7.RP.A.2b
5.	C	7.NS.A.3
6.	B	7.EE.B.4b
7.	A, C	7.NS.A.2b-1
8.	C	7.EE.B.4a-1
9.	A	7.RP.A.2c
10.	C	7.EE.A.2
11.	–1	7.NS.A.1b-1
12.	A	7.RP.A.2b

Section 2

Item Number	Answer Key	Evidence Statement Key/ Content Scope
1.	C	7.RP.A.2a
2.	D	7.G.A.2
3.	12	7.RP.A.3-2
4.	B	7.R.3b 7.EE.B.4a-2
5.	**Sample Top Score Response** Pump *p* is the slowest. It pumps 40 gallons in 8 minutes, so the unit rate is 5 gallons per minute. Pump *m* is neither the fastest nor the slowest. It pumps 90 gallons in 9 minutes, so the unit rate is 10 gallons per minute. Pump *k* is the fastest. It pumps 90 gallons in 3 minutes, so the unit rate is 30 gallons per minute. Pump *k* is 6 times as fast as pump *p*, so it will take $\frac{1}{6}$ of 90 minutes, which is 15 minutes to fill the hot tub with water. **Refer to the Holistic Rubric for 4-Point Reasoning Constructed Response Items for score point information.**	7.R.1a 7.RP.A.1 7.RP.A.2b
6.	A	7.M.3 7.G.B.6
7.	C	7.M.5 7.RP.A.2d
8.	D	7.SP.A.2

Section 3

Item Number	Answer Key	Evidence Statement Key/ Content Scope
1.	B	7.G.B.5
2.	C	7.SP.B.3
3.	**Sample Top Score Response** $3.5n+4\left(5\frac{1}{4}n-1.5\right)=3.5n+4\left(5\frac{1}{4}n\right)+4(-1.5)$ $=3.5n+4\left(\frac{21}{4}n\right)-6$ $=3.5n+4\left(\frac{21}{4}\right)n-6$ $=3.5n+21n-6=24.5n-6$ $-21\left(\frac{2}{7}-\frac{7}{6}n\right)=(-21)\left(\frac{2}{7}\right)-21\left(-\frac{7}{6}n\right)$ $=(-3)\left(\frac{2}{1}\right)+21\left(\frac{7}{6}n\right)$ $=-6+21\left(\frac{7}{6}\right)n$ $=-6+7\left(\frac{7}{2}\right)n$ $=-6+\frac{49}{2}n=-6+24\frac{1}{2}n$ The two expressions are equivalent because $-6+24\frac{1}{2}n=24\frac{1}{2}n-6=24.5n-6$. **Refer to the Holistic Rubric for 3-Point Reasoning Constructed Response Items for score point information.**	7.R.3a 7.EE.A.1
4.	C	7.R.2b 7.NS.A.2c

Item Number	Answer Key	Evidence Statement Key/ Content Scope
5.	**Sample Top Score Response** The tank is represented by two connected rectangular prisms. The volume, in cubic feet, of the tank is the combined volume of both prisms. The volume of the large rectangular prism is $\left(2\frac{4}{5}\right)\left(4\frac{4}{5}\right)\left(2\frac{1}{2}\right)=\left(\frac{14}{5}\right)\left(\frac{24}{5}\right)\left(\frac{5}{2}\right)=\left(\frac{14}{5}\right)\left(\frac{12}{1}\right)\left(\frac{1}{1}\right)$ $=\frac{168}{5}=33\frac{3}{5}$ cubic feet. The volume of the smaller rectangular prism is $\left(2\frac{2}{5}\right)\left(2\frac{1}{2}\right)\left(5\frac{3}{5}-2\frac{4}{5}\right)=\left(\frac{12}{5}\right)\left(\frac{5}{2}\right)\left(4\frac{8}{5}-2\frac{4}{5}\right)=6\left(2\frac{4}{5}\right)$ $=6\left(\frac{14}{5}\right)=\frac{84}{5}=16\frac{4}{5}$ cubic feet. The total volume of the tank is $33\frac{3}{5}+16\frac{4}{5}=49\frac{7}{5}=50\frac{2}{5}$ cubic feet. Using the conversion, $50\frac{2}{5}$ cubic feet would be approximately equal to $50\frac{2}{5}\times 7\frac{1}{2}=378$ gallons, so the tank can hold about 378 gallons of water. To fill the tank to 80% of its capacity, approximately 0.8 × 378 = 302.4 gallons of water are needed. **Refer to the Holistic Rubric for 3-Point Modeling Constructed Response Items for score point information.**	7.M.1 7.RP.A.3-2 7.G.B.6
6.	D	7.M.2 7.EE.B.4b
7.	B	7.RP.A.1

Section 4

<table>
<tr><th>Item Number</th><th>Answer Key</th><th>Evidence Statement Key/ Content Scope</th></tr>
<tr><td>1.</td><td>C</td><td>7.G.A.3</td></tr>
<tr><td>2.</td><td>B</td><td>7.R.1c
7.RP.A.3-1</td></tr>
<tr><td>3.</td><td>The response is between 214 and 215 inclusive.</td><td>7.M.4
7.G.B.4-1</td></tr>
<tr><td>4.</td><td>A</td><td>7.SP.C.5</td></tr>
<tr><td>5.</td><td><u>Sample Top Score Response</u>
The 16 possible outcomes for this situation are represented in the table.
<table>
<tr><th>First Spinner</th><th>Second Spinner</th><th>Sum</th></tr>
<tr><td>1</td><td>-1</td><td>0</td></tr>
<tr><td>1</td><td>0</td><td>1</td></tr>
<tr><td>1</td><td>1</td><td>2</td></tr>
<tr><td>1</td><td>2</td><td>3</td></tr>
<tr><td>2</td><td>-1</td><td>1</td></tr>
<tr><td>2</td><td>0</td><td>2</td></tr>
<tr><td>2</td><td>1</td><td>3</td></tr>
<tr><td>2</td><td>2</td><td>4</td></tr>
<tr><td>3</td><td>-1</td><td>2</td></tr>
<tr><td>3</td><td>0</td><td>3</td></tr>
<tr><td>3</td><td>1</td><td>4</td></tr>
<tr><td>3</td><td>2</td><td>5</td></tr>
<tr><td>4</td><td>-1</td><td>3</td></tr>
<tr><td>4</td><td>0</td><td>4</td></tr>
<tr><td>4</td><td>1</td><td>5</td></tr>
<tr><td>4</td><td>2</td><td>6</td></tr>
</table>
Player A needs to move at least 6 spaces to win the game. Of the 16 possible outcomes, 1 will result in a win. The probability that Player A will win is $\frac{1}{16}$.

Player B needs to move at least 3 spaces to win the game. Of the 16 possible outcomes, 10 will result in a win. The probability that Player B will win is $\frac{10}{16}$ or $\frac{5}{8}$.

Refer to the Holistic Rubric for 4-Point Modeling Constructed Response Items for score point information.</td><td>7.M.1
7.SP.C.7a</td></tr>
</table>

Item Number	Answer Key	Evidence Statement Key/ Content Scope
6.	D	7.R.2e 7.NS.A.3
7.	C	7.RP.A.1
8.	A	7.EE.B.3