Grade 8 Mathematics Sample SR Item

# MAT.08.SR.1.000EE.B.203

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| Sample Item ID: | **MAT.08.SR.1.000EE.B.203** |
| Grade: | 08 |
| Claim(s): | **Claim 1: Concepts and Procedures**<br>Students can explain and apply mathematical concepts and carry out mathematical procedures with precision and fluency. |
| Assessment Target(s): | **1 B:** Work with radicals and integer exponents. |
| Content Domain: | Equations and Expressions |
| Standard(s): | 8.EE.1 |
| Mathematical Practice(s): | 1, 5, 7 |
| DOK: | 1 |
| Item Type: | SR |
| Score Points: | 1 |
| Difficulty: | M |
| Key: | A, C, D |
| Stimulus/Source: | |
| Target-Specific Attributes (e.g., accessibility issues): | Students may not use calculators for this target. |
| Notes: | Multiple correct keys |

Select **all** of the expressions that have a value between 0 and 1.

Ⓐ $8^{7} \cdot 8^{-12}$

Ⓑ $\frac{7^{4}}{7^{-3}}$

Ⓒ $\left(\frac{1}{3}\right)^{2} \cdot \left(\frac{1}{3}\right)^{9}$

Ⓓ $\frac{(-5)^{6}}{(-5)^{10}}$

*Key and Distractor Analysis:*

A. Key. Students may think that a negative exponent means that the number is negative, not that the number is between 0 and 1.
B. The expression is equal to $7^{7}$, so it is greater than 1. Students may make mistakes when finding the exponent of the equivalent expression.
C. Key. Students may think that since the base is raised to such a high exponent it will be greater than 1, but since the base is between 0 and 1, the value of the expression is between 0 and 1.
D. Key. Students may miscalculate the exponent of the equivalent expression or forget that the expression will be positive because the exponent is even.