

Mathematics Sample SR Item C1 TA

MAT.HS.SR.1.00NRN.A.152

Sample Item ID:	MAT.HS.SR.1.00NRN.A.152
Grade:	HS
Claim(s):	Claim 1: Concepts and Procedures Students can explain and apply mathematical concepts and carry out mathematical procedures with precision and fluency.
Assessment Target(s):	1 A: Extend the properties of exponents to rational exponents.
Content Domain:	Number and Quantity
Standard(s):	N-RN.2
Mathematical Practice(s):	1, 2, 6
DOK:	2
Item Type:	SR
Score Points:	2
Difficulty:	M
Key:	TTFTF
Stimulus/Source:	
Target-specific attributes (e.g., accessibility issues):	
Notes:	Calculator tool must be turned off for this item.

For items 1a – 1e, determine whether each equation is True or False.

1a. $\sqrt{32} = 2^{\frac{5}{2}}$ True False

1b. $16^{\frac{3}{2}} = 8^2$ True False

1c. $4^{\frac{1}{2}} = \sqrt[4]{64}$ True False

1d. $2^8 = (\sqrt[3]{16})^6$ True False

1e. $(\sqrt{64})^{\frac{1}{3}} = 8^{\frac{1}{6}}$ True False

Scoring Rubric for Multi-part Items:

Responses to this item will receive 0-2 points, based on the following:

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2 points: TTFTF The student has a solid understanding of how to rewrite expressions involving radical and rational exponents to determine equivalent forms.

1 point: TTFTT, TTFFF, TTTTF, TTFFT, TTTFF The student only has a basic understanding of how to rewrite expressions involving radical and rational exponents. The student can evaluate expressions containing square roots and expressions containing integer exponents as well as some simple rational exponents, such as $\frac{1}{2}$ or $\frac{3}{2}$. The student has difficulty evaluating expressions with cube roots or fourth roots and expressions with roots raised to integer or rational exponents. The student must answer parts a and b correctly, as well as at least one of the remaining parts (exception TTTTT would suggest a guessing pattern).

0 points: All other possibilities. The student demonstrates inconsistent understanding of how to rewrite expressions involving radical and rational exponents.