

Which expressions are equivalent to  $2^3 + 3^2$ ?

- A.  $6 + 6$
- B.  $8 + 9$
- C.  $5 + 5$
- D.  $2.3 + 3.2$
- E.  $(2+2+2) + (3+3)$
- F.  $(2 \cdot 2 \cdot 2) \cdot (3 \cdot 3)$
- G.  $(2 \cdot 3) + (3 \cdot 2)$
- H.  $(2 \cdot 2 \cdot 2) + (3 \cdot 3)$

**Scoring**

2 points: If selected only B and H as equivalent responses.

1 point: If selected either B or H as an equivalent response or B or H and one incorrect answer.

0 points: If selected any other response.

**Key and Distractor Analysis**

- A. Students incorrectly multiplied the base number times the exponent number and then added.
- B. **Key:** Students correctly multiplied the base, the exponent number of times and then added.
- C. Students incorrectly added the base and exponent.
- D. Students used the base and exponent numbers to create a decimal.
- E. Students incorrectly showed adding the bases instead of multiplying them.
- F. : Students correctly show the bases multiplied the exponent number of times and but then incorrectly multiply instead of adding them together.
- G. Students incorrectly show the base number multiplied by the exponent number and then add them.
- H. **Key:** Students correctly show the bases multiplied the exponent number of times and then added together.

**Expressions and Equations****6.EE**

Apply and extend previous understandings of arithmetic to algebraic expressions.

1. Write and evaluate numerical expressions involving whole-number exponents.