

5. If  $n = 2$ , then which of the following expressions yields the largest result?

A.  $\frac{n^5 \times n^2}{n^4}$

B.  $\frac{n^2 \times n^3}{n}$

C.  $\frac{(n^2)^3}{n}$

D.  $\frac{(n^5)^2}{n^4}$

7. Which one of the following statements is correct?

A.  $4^5 + 4^7 = 4^{12}$

B.  $4^{12} - 4^4 = 4^8$

C.  $4^2 \times 4^5 = 4^7$

D.  $4^6 \div 4^3 = 4^2$

14. The expression  $(3^2 \times 2)^3$  can be simplified to

A.  $3^2 \times 2^3$

B.  $3^6 \times 2$

C.  $3^5 \times 2^3$

D.  $3^6 \times 2^3$

14. Which of the following expressions represents the addition of  $7^2$  and  $7^3$ ?

A.  $(7 + 7)^{2+3}$

B.  $(7 + 7)^{2 \times 3}$

C.  $(7 \times 7) + (7 \times 7 \times 7)$

D.  $(7 + 7) \times (7 + 7 + 7)$

Use the following information to answer question 20.

The expression  $\left(\frac{(n^3)^4}{n^2}\right)(n^{10} \div n^5 \times n^2)$  can be simplified to the form  $n^p$ .

20. The value of  $p$  is

A. 20

B. 17

C. 14

D. 13

### Numerical Response

3. If  $(x^3)^2 \div x^4 = 144$ , then what is the whole number value of  $x$ ?

Answer: \_\_\_\_\_

(Record your answer in the numerical-response section on the answer sheet.)

When simplified, the expression  $\left[(a^2b)(a^3b^2)\right]^3$  can be written in the form  $a^m b^n$ .

37. Which of the following rows correctly identifies the values of  $m$  and  $n$ ?

Row	$m$	$n$
A.	8	6
B.	9	5
C.	15	9
D.	18	6

An incorrect simplification of the expression  $(2^3)(2^5)^2 \div (4 \times 2)^2$  is shown below.

$$(2^3)(2^5)^2 \div (4 \times 2)^2$$

**Step 1**  $(2^3)(2^5)^2 \div (8)^2$

**Step 2**  $(2^3)(2^7) \div (8)^2$

**Step 3**  $(2^3)(2^7) \div (2^3)^2$

**Step 4**  $(2^3)(2^7) \div (2^5)$

**Step 5**  $2^{10} \div 2^5$

**Step 6**  $2^2$

### Numerical Response

8. In which step is the **first** recorded error?

Answer: Step \_\_\_\_\_

(Record your answer in the numerical-response section on the answer sheet.)

1. Another representation of the expression  $\left(\frac{2}{3}\right)^4$  is

- A.  $\frac{2+4}{3+4}$
- B.  $\frac{2 \times 4}{3 \times 4}$
- C.  $\frac{2+2+2+2}{3+3+3+3}$
- D.  $\frac{2 \times 2 \times 2 \times 2}{3 \times 3 \times 3 \times 3}$

Use the following information to answer question 4.

$(3^4)^2$	$\frac{3^{12}}{3^4}$	$3^5 + 3^3$	$[(3^{10})^0]^2$	$\frac{(3 \times 2)^6}{2^6}$	$3^8 - 3^4$
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4. How many of the expressions shown above have a value that is larger than  $3^7$ ?

- A. 2
- B. 3
- C. 4
- D. 5

Use the following information to answer question 30.

<b>Expression 1</b>	$(2^2)^3 + 2^2$
<b>Expression 2</b>	$4^2 + 4^3 - (4^3)^0$
<b>Expression 3</b>	$3^4 - 3^2$

30. Which of the following rows correctly identifies the expression with the lowest value and the expression with the highest value?

Row	Lowest Value	Highest Value
A.	Expression 1	Expression 3
B.	Expression 1	Expression 2
C.	Expression 3	Expression 2
D.	Expression 3	Expression 1