MSTAR PRACTICE WORKSHEET

Lesson 6-3: Explore Numerical Expressions with Exponents

Grade 6 Mathematics · Standard 6.AT.5

Name: _____ Date: _____

These are MSTAR-style questions written for this curriculum to rehearse the format. They are not official Maryland assessment items. MSTAR — Maryland's new state test, first given in spring 2027 — uses the same kinds of questions you see here: selected response, select-all, two-part evidence questions, and written responses.

Part A — Skills Check

Warm up with the lesson's core skills — one best answer each.

Question 1 SELECTED RESPONSE · 1 POINT

What is the value of 4^3?

(A) 7

(B) 12

(C) 43

(D) 64

Question 2 SELECTED RESPONSE · 1 POINT

What is the value of 6^2?

(A) 8

(B) 12

(C) 36

(D) 62

Question 3 SELECTED RESPONSE · 1 POINT

Which expression shows 5^3 as repeated multiplication?

(A) $3 \times 3 \times 3 \times 3 \times 3$

(B) $5 \times 5 \times 5$

(C) 5×3

(D) $5 + 5 + 5$

Question 4 SELECTED RESPONSE · 1 POINT

Evaluate: $3 \times (4 + 2)^2$

(A) 36

(B) 54

(C) 108

(D) 144

Question 5 SELECTED RESPONSE · 1 POINT

The drum loop plays 3^4 beats. What is the value of 3^4?

(A) 7

(B) 12

(C) 27

(D) 81

Question 6 SELECTED RESPONSE · 1 POINT

A synth pattern repeats $7 \times 7 \times 7$. How do you write that as a power?

(A) 3^7

(B) 7^3

(C) 7×3

(D) 21^3

Part B — Test-Format Questions

These match the state test's formats: two-part questions, select-all, and written responses.

Question 7 TWO-PART QUESTION

Part A

Which value is equal to the power 3^4?

Fill in the bubble next to the one best answer.

(A) 7

(B) 12

(C) 64

(D) 81

Part B

Answer Part A before Part B — Part B asks about your reasoning.

Which reasoning shows why your answer to Part A is correct?

(A) Multiply the base by the exponent: $3 \times 4 = 12$.

(B) Add the base and the exponent: $3 + 4 = 7$.

(C) The exponent 4 tells how many times to use the base 3 as a factor: $3 \times 3 \times 3 \times 3 = 81$.

(D) Use the exponent as the base and the base as the exponent: $4 \times 4 \times 4 = 64$.

Question 8 SELECT ALL THAT APPLY

Select ALL statements that are true about the power 2^5.

Mark the box next to EVERY answer that is true. More than one is correct.

[A] The base is 2.

[B] The exponent is 5.

[C] It means $2 \times 2 \times 2 \times 2 \times 2$.

[D] Its value is 10.

[E] Its value is 32.

[F] It means 5×5.

Part C — Show Your Thinking

Answer in writing, the way the state test's constructed responses work.

Question 9 WRITTEN RESPONSE · 2 POINTS

A bacteria colony doubles every hour. Starting with 1 bacterium, write a power expression for the number after 6 hours. Explain why exponential growth is so much faster than adding the same number each hour.

Write your answer in complete sentences. Show or explain your mathematical thinking.

When you finish, check your reasoning with your teacher or family. Your teacher has the scoring guide for the written responses.