MSTAR PRACTICE WORKSHEET

Lesson 5-7: Determine Surface Area of Prisms

Grade 6 Mathematics · Standard 6.GR.4

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 surface area of a rectangular prism with l = 5 cm, w = 4 cm, h = 3 cm?

(A) 47 cm²

(B) 60 cm²

(C) 94 cm²

(D) 94 cm³

Question 2 SELECTED RESPONSE · 1 POINT

How many faces does a triangular prism have?

(A) 3

(B) 4

(C) 5

(D) 6

Question 3 SELECTED RESPONSE · 1 POINT

A triangular prism has two triangular bases each with area 12 cm² and three rectangular faces with areas 30 cm², 40 cm², and 40 cm². What is the total surface area?

(A) 110 cm²

(B) 122 cm²

(C) 134 cm²

(D) 134 cm³

Question 4 SELECTED RESPONSE · 1 POINT

A triangular prism has triangular bases with base 6 in and height 4 in. The prism is 10 in long and the two slant sides of the triangle are each 5 in. What is the surface area?

(A) 124 in²

(B) 160 in²

(C) 184 in²

(D) 184 in³

Question 5 SELECTED RESPONSE · 1 POINT

A rectangular time capsule box measures 3 in by 4 in by 5 in. How much wrapping paper covers its surface (no overlap)?

(A) 47 in²

(B) 60 in²

(C) 94 in²

(D) 94 in³

Question 6 SELECTED RESPONSE · 1 POINT

A rectangular capsule crate is 6 cm long, 5 cm wide, and 4 cm tall. How much cardboard is needed to cover all its faces?

(A) 74 cm²

(B) 120 cm²

(C) 148 cm²

(D) 148 cm³

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

A rectangular prism measures 6 cm long, 4 cm wide, and 2 cm tall. What is its surface area?

Fill in the bubble next to the one best answer.

(A) 24 square centimeters

(B) 44 square centimeters

(C) 48 square centimeters

(D) 88 square centimeters

Part B

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

Why is surface area measured in square units while volume is measured in cubic units?

(A) Surface area covers the outside faces, which are flat regions; volume fills the inside space.

(B) Surface area is always smaller than volume.

(C) Square units are used whenever a shape has straight sides.

(D) Volume uses cubic units only for prisms.

Question 8 WRITTEN RESPONSE · 2 POINTS

Type II Reasoning: Counting Only Three Faces

> Priya found the surface area of a box measuring 5 by 3 by 2 units. She wrote: '5×3 + 5×2 + 3×2 = 15 + 10 + 6 = 31 square units.'

Explain Priya's misconception and give the correct surface area.

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

Part C — Show Your Thinking

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

Question 9 WRITTEN RESPONSE · 2 POINTS

Compare two closed containers: a rectangular prism (8 × 6 × 4 in) and a triangular prism whose ends are right triangles with perpendicular legs 6 in and 8 in and hypotenuse 10 in. The triangular prism is 8 in long. Which uses less protective film to cover every face? Show your work.

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.