MSTAR PRACTICE WORKSHEET

Lesson 5-4: Apply Area Concepts to Solve Problems

Grade 6 Mathematics · Standard 6.GR.1

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

An L-shaped room is made of two rectangles: 10 ft × 6 ft and 4 ft × 3 ft. What is the total area?

(A) 12 sq ft

(B) 60 sq ft

(C) 72 sq ft

(D) 72 ft

Question 2 SELECTED RESPONSE · 1 POINT

A rectangular patio is 15 ft × 10 ft with a 5 ft × 4 ft rectangular flower bed cut out. What is the remaining area?

(A) 20 sq ft

(B) 130 sq ft

(C) 150 sq ft

(D) 170 sq ft

Question 3 SELECTED RESPONSE · 1 POINT

Find the area of an L-shape made of a 5×3 rectangle and a 2×4 rectangle.

(A) 8 sq units

(B) 15 sq units

(C) 20 sq units

(D) 23 sq units

Question 4 SELECTED RESPONSE · 1 POINT

When should you subtract areas instead of adding them to find the area of a composite figure?

(A) When the shapes overlap

(B) When one shape is larger than the other

(C) Always subtract — never add

(D) When a piece is cut out or removed from a larger shape

Question 5 SELECTED RESPONSE · 1 POINT

A 7 ft by 5 ft rectangle has a triangle (base 7 ft, height 4 ft) on top. Add the two areas. What is the total area?

(A) 14 sq ft

(B) 35 sq ft

(C) 49 sq ft

(D) 63 sq ft

Question 6 SELECTED RESPONSE · 1 POINT

Plan 2 — L-shaped lobby: decompose the L into two rectangles, one 9 ft by 6 ft and one 7 ft by 3 ft, then ADD. What is the total floor area?

(A) 21 sq ft

(B) 54 sq ft

(C) 63 sq ft

(D) 75 sq ft

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

An L-shaped room splits into two rectangles: one is 12 feet by 8 feet, the other is 6 feet by 5 feet. What is the total floor area?

Fill in the bubble next to the one best answer.

- (A) 30 square feet
- (B) 62 square feet
- (C) 96 square feet
- (D) 126 square feet

Part B

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

Why is decomposing a composite figure into rectangles a valid strategy?

- (A) The areas of the non-overlapping pieces add to the area of the whole figure.
- (B) Rectangles are the only shapes with area.
- (C) Any shape can be turned into one large rectangle.
- (D) The perimeter stays the same after decomposing.

Question 8 WRITTEN RESPONSE · 2 POINTS

Type II Reasoning: Counting a Region Twice

> Nia split a composite figure into a 10 by 4 rectangle and a triangle with base 10 and height 4. She added 40 + 20 = 60 square units — but the triangle sat ON TOP of part of the rectangle she had already counted.

Explain the error in Nia's method and state what she must check before adding areas.

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

A T-shaped room can be decomposed in two different ways. Show both ways and prove they give the same total area. Use a T-shape where the top is 14 ft × 4 ft and the stem is 6 ft × 10 ft.

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.