MSTAR PRACTICE WORKSHEET

Lesson 5-9: Area of Regular Polygons

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

A regular hexagon is divided into 6 equal triangles from the center. Each triangle has a base of 6 ft and a height of 5.2 ft. What is the area of one triangle? Use the given heights; nonsquare heights are rounded, so their areas are estimates.

(A) 11.2 sq ft

(B) 15.6 sq ft

(C) 15.6 ft

(D) 31.2 sq ft

Question 2 SELECTED RESPONSE · 1 POINT

A regular hexagonal skylight has 6 central triangles, each with base 6 ft and rounded height 5.2 ft. Using those measurements, what is the approximate total area?

(A) 15.6 sq ft

(B) 62.4 sq ft

(C) 93.6 sq ft

(D) 187.2 sq ft

Question 3 SELECTED RESPONSE · 1 POINT

A regular hexagon is split into 6 triangles, each with base 4 cm and height 3.5 cm. What is the total area? Use the given heights; nonsquare heights are rounded, so their areas are estimates.

(A) 14 sq cm

(B) 21 sq cm

(C) 42 sq cm

(D) 84 sq cm

Question 4 SELECTED RESPONSE · 1 POINT

How many triangles can you make from the center of a regular pentagon?

(A) 3

(B) 5

(C) 6

(D) 10

Question 5 SELECTED RESPONSE · 1 POINT

A regular hexagonal floor tile splits from its center into 6 congruent triangles, each with an area of 12 cm^2. What is the total area of the tile?

(A) 12 cm^2

(B) 18 cm^2

(C) 36 cm^2

(D) 72 cm^2

Question 6 SELECTED RESPONSE · 1 POINT

A regular pentagonal tile splits into 5 congruent triangles. Each triangle has a base of 4 in and a height of about 2.8 in. What is the total area of the tile? Use the given heights; nonsquare heights are rounded, so their areas are estimates.

(A) 5.6 in^2

(B) 11.2 in^2

(C) 28 in^2

(D) 56 in^2

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 regular hexagon is decomposed from its center into 6 identical triangles. Each triangle has a base of 8 cm and a height of 7 cm. What is the area of the hexagon? Use the given rounded height to estimate the area.

Fill in the bubble next to the one best answer.

(A) 28 square centimeters

(B) 56 square centimeters

(C) 168 square centimeters

(D) 336 square centimeters

Part B

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

Why can a regular polygon be decomposed into identical triangles from its center?

(A) Every polygon can be split into identical triangles.

(B) Triangles are the only shape with a known area formula.

(C) All its sides are equal and all its angles are equal, so each center-to-side triangle is congruent.

(D) The center of a polygon is always a vertex.

Question 8 SELECT ALL THAT APPLY

Select ALL statements that are true about the area of a regular polygon:

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

[A] It equals the number of sides times the area of one center triangle.

[B] Each center triangle has the same height for a regular polygon.

[C] Only regular polygons with an even number of sides can be decomposed this way.

[D] A regular polygon has all sides equal and all angles equal.

[E] The height of each center triangle is measured perpendicular to a side.

Part C — Show Your Thinking

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

Question 9 WRITTEN RESPONSE · 2 POINTS

A regular hexagon and a regular pentagon are each divided into congruent central triangles. In both polygons, each central triangle has area 15 sq ft. Which polygon has greater total area? Explain why the triangle count matters. The two polygons have different side lengths.

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.