Name_____ Date_____ Period_____

LESSON 5-4 · SESSION 1 · PRACTICE · FORM B

Area of Regular Polygons

Learning target – I can find the area of a regular polygon by finding the area of one triangle and multiplying. · 6.G.A.1

REMEMBER

- A **regular polygon** has equal sides and equal angles. Lines from the center make **congruent triangles**.
- Each triangle's base is one side. Its height is the **apothem**.
- **Area = n × (½ × side × apothem)**. Use ≈ when the apothem is rounded.

WORKED EXAMPLE

Regular pentagon: sides 10 cm, apothem about 7 cm.

Step 1 5 sides make 5 triangles.

Step 2 One triangle: ½ × 10 × 7 = 35 cm².

Step 3 Five triangles: 5 × 35 = 175.

Answer **Area ≈ 175 cm²**

WORDS **regular polygon** *(polígono regular)* · **apothem** *(apotema)* · **congruent** *(congruente)*

PRACTICE

show your work · label units

1. Find the area of one center triangle: ½ × side × apothem.

a. side 12 cm, apothem 8 cm ___ cm²

b. side 14 in, apothem 9 in ___ in²

c. side 5 m, apothem 6 m ___ m²

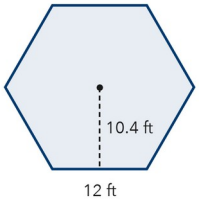
d. side 9 ft, apothem 10 ft ___ ft²

2. **Gazebo Floor.** A gazebo floor is a regular hexagon with sides of 12 ft. The apothem is about 10.4 ft.

a. How many center triangles? _____

b. Area of one triangle _____ ft²

c. Area of the floor _____ ft²



3. **Pentagon Sign.** A regular pentagon road sign has sides of 14 in and an apothem of about 9.6 in. Find its area.

Hint *A pentagon has 5 center triangles.*

Show your work.

Answer_____ in²

4. **Stepping Stone.** A stepping stone is a regular octagon with sides of 6 cm and an apothem of about 7.2 cm. Find its area.

Hint *Find one triangle, then multiply by the number of sides.*

Show your work.

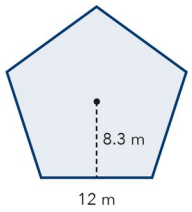
Answer_____ cm²

5. Flower Bed. A flower bed is a regular hexagon with sides of 20 ft. Each center triangle has a height of about 17.3 ft. Find the area of the flower bed.

Show your work.

Answer_____ ft²

6. Pentagon Patio. A patio is a regular pentagon. Decompose it into center triangles and find its area.



Hint *All the triangles share the same base and height.*

Show your work.

Answer_____ m²

7. Keisha's Tile. A tile is a regular hexagon with sides of 8 cm and an apothem of about 7 cm. Keisha says the tile's area is 28 cm². Is Keisha right? Explain.

Hint *How many triangles make up the whole tile?*

Show your work.

True area_____

8. Tile Design. A floor uses regular hexagon tiles with sides of 6 cm and an apothem of 5.2 cm.

a. Find the area of one tile. _____ cm²

b. Find the area covered by 30 tiles. _____ cm²

Show your work.

FIND THE ERROR

explain the mistake, then fix it

9. Mateo's Work. A regular octagon has sides of 10 in and an apothem of 12 in. Mateo wrote: "A = 10 × 12 × 8 = 960 in²." Explain the mistake and find the correct area.

_____

_____

_____

TEST PRACTICE

choose the best answer

10. A regular octagon splits into how many congruent center triangles?

A 6 **B** 7 **C** 8 **D** 10

11. To find a regular polygon's area, multiply one triangle's area by the –

A apothem **B** number of sides **C** side length **D** perimeter

SELF-CHECK CODE *find your answer · copy its letter into that problem's box · spell a math word*

28 Q	1,038 A	336 E	374.4 H	172.8 X	672 J	168 O	249 G	2,808 N	498 Z

#2c	#3	#4	#5	#6	#7	#8b

CHECK YOURSELF ☐ I can do this on my own ☐ I need a little help ☐ I have a question about #___