Name_____ Date_____ Period_____

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

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 10 cm, apothem 7 cm ___ cm²

b. side 16 in, apothem 11 in ___ in²

c. side 7 m, apothem 8 m ___ m²

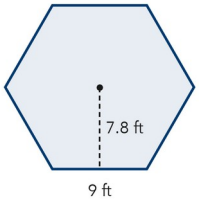
d. side 6 ft, apothem 9 ft ___ ft²

2. **Gazebo Floor.** A gazebo floor is a regular hexagon with sides of 9 ft. The apothem is about 7.8 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 16 in and an apothem of about 11 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 7 cm and an apothem of about 8 cm. Find its area.

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

Show your work.

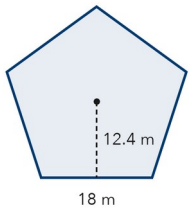
Answer_____ cm²

5. Flower Bed. A flower bed is a regular hexagon with sides of 24 ft. Each center triangle has a height of about 21 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. Jamal's Tile. A tile is a regular hexagon with sides of 10 cm and an apothem of about 9 cm. Jamal says the tile's area is 45 cm². Is Jamal 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 8 cm and an apothem of 6.9 cm.

a. Find the area of one tile. _____ cm²

b. Find the area covered by 25 tiles. _____ cm²

Show your work.

FIND THE ERROR

explain the mistake, then fix it

9. Lena's Work. A regular pentagon has sides of 22 in and an apothem of 15 in. Lena wrote: "A = 22 × 15 × 5 = 1,650 in²." Explain the mistake and find the correct area.

_____

_____

_____

TEST PRACTICE

choose the best answer

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

A 4 **B** 5 **C** 6 **D** 8

11. One center triangle of a regular pentagon has an area of 20 cm². The pentagon's area is –

A 25 cm² **B** 40 cm² **C** 100 cm² **D** 120 cm²

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

440 O	45 Q	1,512 Y	1,116 Z	558 G	224 L	4,140 N	210.6 P	270 O	880 X

#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 #___