

Watch. Practice. Understand. | Lesson 061

2022 Geometry The Secret of Finding The Area of A Regular Polygon (Geometry 11.3)

Watch the matching video: <https://www.youtube.com/watch?v=fkplZLYcbeY>

Practice focus: Area and perimeter

Original extra practice matched to the listed lesson topic.

Name: _____ Date: _____ Show your reasoning and check units.

01 Find the area of a triangle with base 14 and perpendicular height 9.

02 A regular polygon has perimeter 40 and apothem 6. Find its area.

03 Use Heron's formula for a triangle with sides 5, 5 and 6.

04 Use Brahmagupta's formula for a cyclic quadrilateral with sides 3, 4, 3, 4.

Worked answers | Lesson 061

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01 Find the area of a triangle with base 14 and perpendicular height 9.

$$A = bh/2 = 14(9)/2 = 63 \text{ square units.}$$

02 A regular polygon has perimeter 40 and apothem 6. Find its area.

$$A = ap/2 = 6(40)/2 = 120 \text{ square units.}$$

03 Use Heron's formula for a triangle with sides 5, 5 and 6.

$$\text{Semiperimeter } s = 8. A = \sqrt{(8 \cdot 3 \cdot 3 \cdot 2)} = 12 \text{ square units.}$$

04 Use Brahmagupta's formula for a cyclic quadrilateral with sides 3, 4, 3, 4.

$$s = 7. A = \sqrt{((7-3)(7-4)(7-3)(7-4))} = 12. \text{ The cyclic condition is necessary.}$$