

Geometry

Chapter 10

Section 10-5

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An isosceles triangle has a vertex angle of 36° and a base of 4m. What is the area of the triangle?

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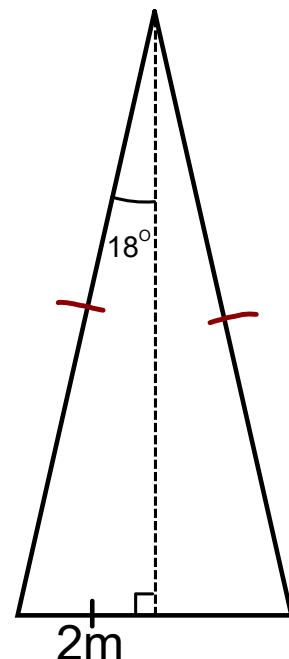
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tangent

$$\frac{2}{\tan 18}$$

$$A \approx 12.31 \text{ m}^2$$



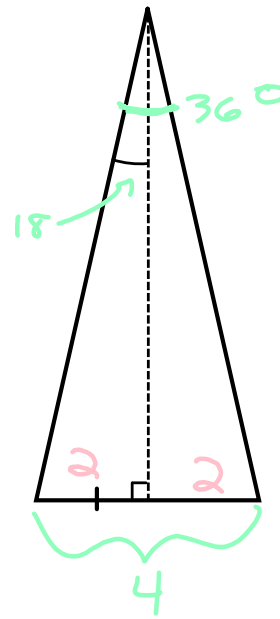
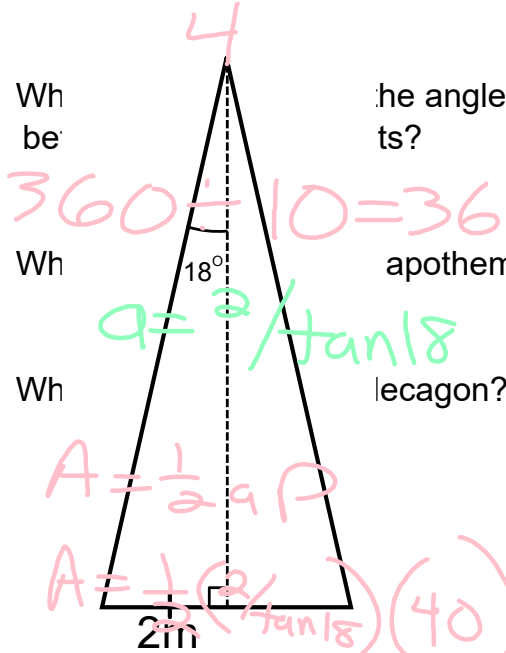
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A regular decagon has a perimeter of 40 yd.

- What is the length of each side?

- What is the angle between two sides?
- What is the apothem?

- What is the area of the decagon?

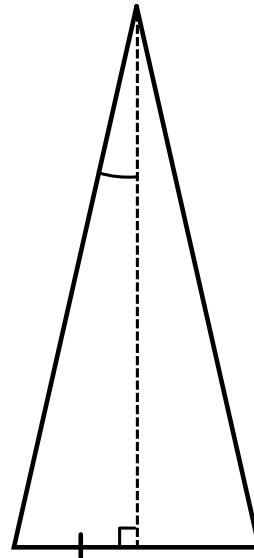


$$A = \frac{1}{2} \left(\frac{r}{\tan 18} \right) (40) \approx 123.11 \text{ yd}^2$$

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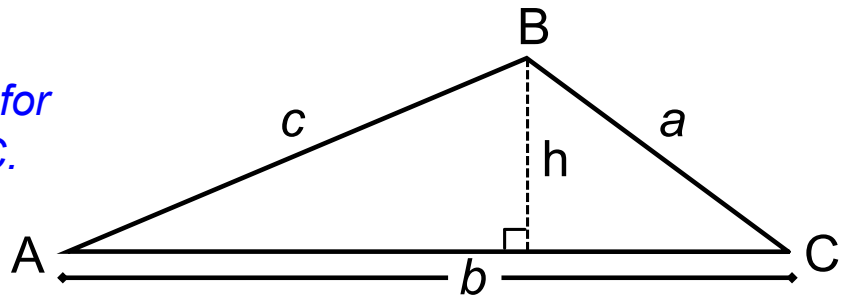
To the right is a regular nonagon.
(radius 8cm)

- What is the angle between two radius segments?
- What is the apothem?
- Find a side length.
- What is the area?



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Write an equation for the area of $\triangle ABC$.

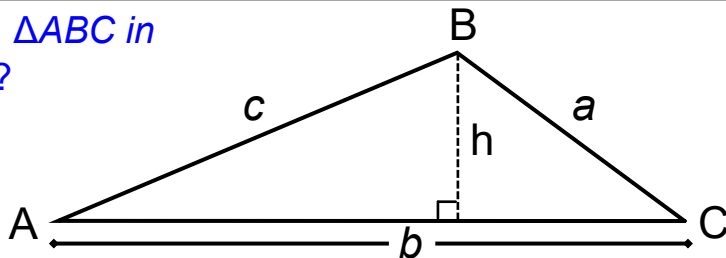


$$A = \frac{1}{2}bh$$

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What is the area of $\triangle ABC$ in terms of A , b and c ?

Show the work that led to your answer.



$$\sin(A) = \frac{h}{c}$$

$$\underline{c \cdot \sin A = h}$$

$$A = \frac{1}{2}bh$$

$$A = \frac{1}{2}bc \sin A \quad \star$$

SAS

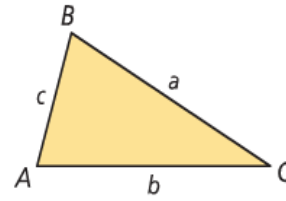
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take note

Theorem 10-8 Area of a Triangle Given SAS

The area of a triangle is half the product of the lengths of two sides and the sine of the included angle.

$$\text{Area of } \triangle ABC = \frac{1}{2}bc(\sin A)$$



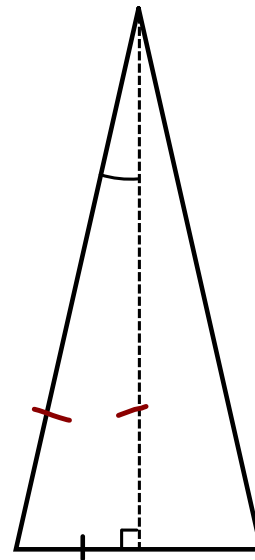
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To the right is a regular nonagon.
(radius 8cm)

- What is the angle of the triangle?
- What is the area of the nonagon?

$$A = 9 \cdot \frac{1}{2} (8)^2 \sin\left(\frac{360}{9}\right)$$

$$\approx 185.12 \text{ cm}^2$$



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What is the area of a triangle with an angle of 49° between two sides that measure 4 cm and 6 cm?

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What is the area of a triangle with an angle of 76° between two sides that measure 8.1 ft and 3.5 ft?

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What is the area of a triangle with side lengths
14, 16, and 21?

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Homework

Pages 646 - 647

11-19 odd, 28, 29, 34, 35, 36

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