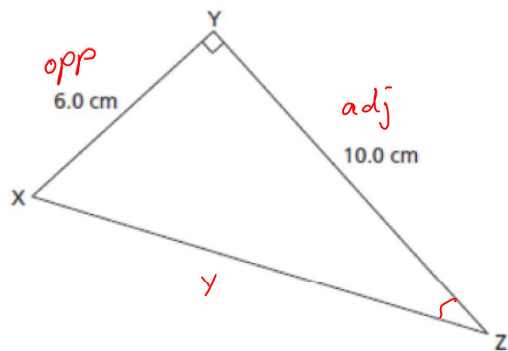


Lesson 4 Applying the Trigonometric Ratios

Solve the Triangle means determine the measures of all unknown sides and angles in the triangle.

Example 1Solve $\triangle XYZ$.

- ① Use Pythagorean Thm to determine length of y

$$6.0^2 + 10.0^2 = y^2$$

$$136 = y^2$$

use exact value $\rightarrow \sqrt{136} = y$

or

or

store in calc $\rightarrow 11.6619\dots$

- ② Use SOH CAH TOA to determine $\angle Z$

$$\tan Z = \frac{6.0}{10.0}$$

$$Z = \tan^{-1}\left(\frac{6.0}{10.0}\right)$$

$$Z = 30.964^\circ$$

- ③ Calculate $\angle X$

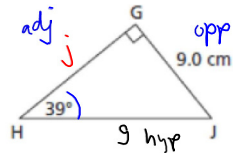
$$X = 90^\circ - 30.964^\circ$$

$$X = 59.036^\circ$$

L4 Applying the Trigonometric Ratios.notebook

Example 2

Solve.



$$\begin{aligned} J &= 90^\circ - 39^\circ \\ &= 51^\circ \end{aligned}$$

$$\tan 39^\circ = \frac{9}{j}$$

$$\begin{aligned} j \tan 39^\circ &= 9 \\ \frac{j \tan 39^\circ}{\tan 39^\circ} &= \frac{9}{\tan 39^\circ} \\ j &= 11.114 \text{ cm} \end{aligned}$$

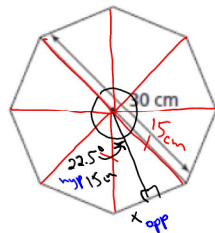
$$\sin 39^\circ = \frac{9}{g}$$

$$g \frac{\sin 39^\circ}{\sin 39^\circ} = \frac{9}{\sin 39^\circ}$$

$$g = 14.301 \text{ cm}$$

Example 3

A small table has the shape of a regular octagon. The distance from one vertex to the opposite vertex, measured through the centre of the table, is approximately 30 cm. There is a strip of wood veneer around the edge of the table. What is the length of this veneer to the nearest centimeter?



$$\frac{360^\circ}{8} = 45^\circ$$

$$\sin 22.5^\circ = \frac{x}{15}$$

$$15 \sin 22.5^\circ = x$$

$$5.7402\dots = x$$

$$\text{Perimeter} = 2(5.7402\dots) \times 8$$

$$= 91.844 \text{ cm}$$

$$\approx 92 \text{ cm}$$

Pg. 335
1-5, 9, 10

Try 6, 8, 11, 16a