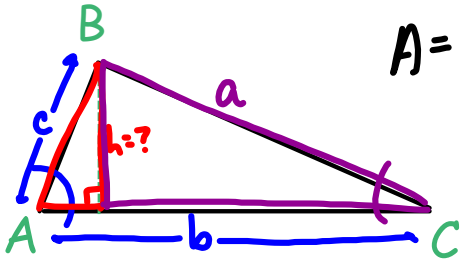
GO COUGARS!

Homework Questions

Feb 2-9:51 PM

6.1 Area and the Law of Sines

Suppose you want to find the area of this triangle, but you only know m<A and length b and c. How would you find the height?



$A = \frac{1}{2} b \cdot h$

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

$h = c \sin A$

$K = \frac{1}{2} bc \sin A$

$K = \frac{1}{2} ab \sin C$

$K = \frac{1}{2} ac \sin B$

$\sin C = \frac{h}{a}$

$a \sin C = h$

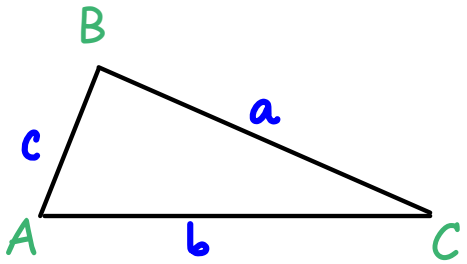
Page 9

AREA of a TRIANGLE given SAS

$$\text{Area} = \frac{1}{2} ab \sin C$$

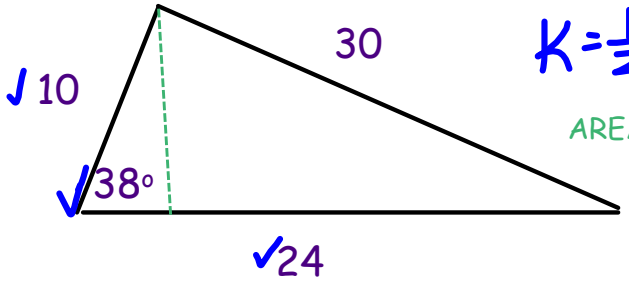
or $$\frac{1}{2} ac \sin B$$

or $$\frac{1}{2} bc \sin A$$



Page 9

1) Find the area of this triangle, to the nearest hundredth.



$K = \frac{1}{2}(10)(24)\sin 38$

AREA = 73.88 units²

Using the three equations for the area of a triangle we can derive the

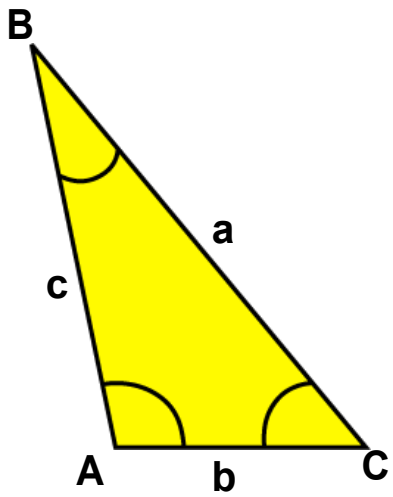
Law of Sines

$$2\left(\frac{1}{2}bc\sin A = \frac{1}{2}ac\sin B = \frac{1}{2}ab\sin C\right)2$$

$$\frac{bc\sin A}{abc} = \frac{ac\sin B}{abc} = \frac{ab\sin C}{abc}$$

$$\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$$

Law of Sines



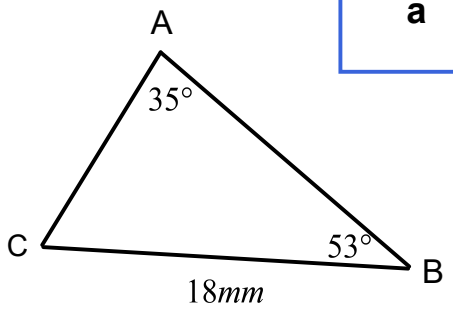
$$\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$$

HINT

Page 3

Use the law of sines to find the missing pieces

$$\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$$



A = 35° a = 18mm

B = 53° b = 25.06

C = 92° c = 31.36mm

180 - 53 - 35

Side b: $\frac{\sin 35}{18} = \frac{\sin 53}{b}$

$b \sin 35 = 18 \sin 53$

$b = \frac{18 \sin 53}{\sin 35}$

$b = 25.06$

Side c: $\frac{\sin 35}{18} = \frac{\sin 92}{c}$

$c \sin 35 = 18 \sin 92$

$c = \frac{18 \sin 92}{\sin 35}$

$c = 31.36$

INSTRUCTIONS

Page 6

Use the law of sines to find a missing pieces

$A = 24.3°$ a =

B = b =

$C = 54.6°$ $c = 2.68$

INSTRUCTIONS

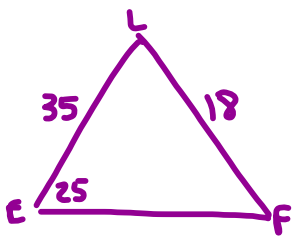
Page 6

Use the law of sines to find a missing pieces

$E = 25°$ $e = 18in$

L = 99.74 l =

F = 55.26 $f = 35in$



$\frac{\sin 25}{18} = \frac{\sin F}{35}$

$35 \sin 25 = 18 \sin F$

$\frac{35 \sin 25}{18} = \sin F$

$\sin^{-1}\left(\frac{35 \sin 25}{18}\right) = F$

$\frac{\sin 25}{18} = \frac{\sin 99.74}{l}$

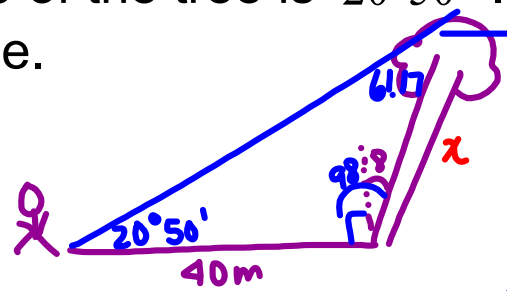
$l = \frac{18 \sin 99.74}{\sin 25}$

INSTRUCTIONS

Page 6

Word Problems

You are standing 40 meters from the base of a tree that is leaning $8°$ from vertical away from you. The angle of elevation from your feet to the top of the tree is $20°50'$. Find the height of the tree.



$180 - 20°50' - 98$

$61°$

$\frac{\sin 20°50'}{x} = \frac{\sin 61°}{40}$

$\frac{40 \sin 20°50'}{\sin 61°} = x$

$x = 16.24$

Homework

p. 414 #1, 5, 7, 19-29 odd
Workbook 149