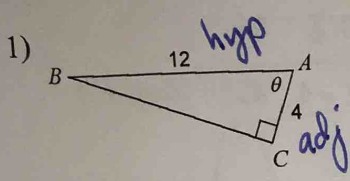


AFM UNIT 3A MIDTERM REVIEW

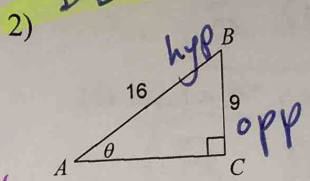
Name key 2017

Find the measure indicated.

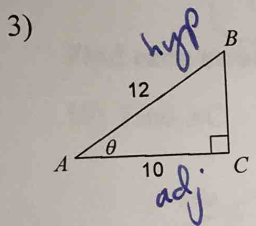
**\*Make sure you are in DEGREE MODE!\***



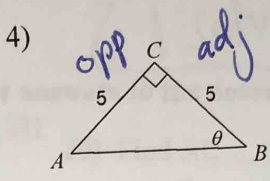
$\cos \theta = \frac{4}{12}$   
 $\theta = \cos^{-1}(\frac{4}{12})$   
 $\theta = 70.5^\circ$



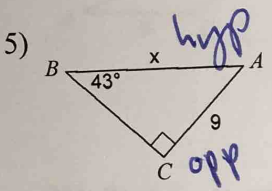
$\sin \theta = \frac{9}{16}$   
 $\theta = \sin^{-1}(\frac{9}{16})$   
 $\theta = 34.2^\circ$



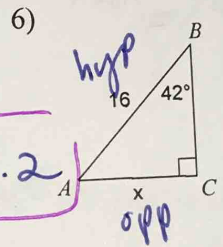
$\cos \theta = \frac{10}{12}$   
 $\theta = \cos^{-1}(\frac{10}{12})$   
 $\theta = 33.6^\circ$



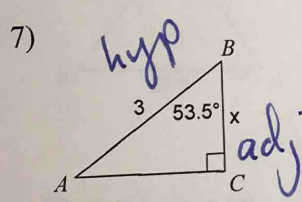
$\tan \theta = \frac{5}{5}$   
 $\theta = \tan^{-1}(5/5)$   
 $\theta = 45^\circ$



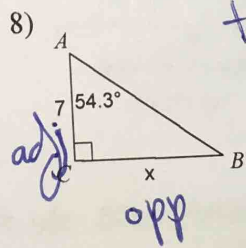
$\sin 43 = \frac{9}{x}$   
 $x \sin 43 = 9$   
 $x = \frac{9}{\sin 43}$   
 $x = 13.2$



$\sin 42 = \frac{x}{16}$   
 $16 \sin 42 = x$   
 $x = 10.7$



$\cos 53.5 = \frac{x}{3}$   
 $3 \cos 53.5 = x$   
 $x = 1.8$

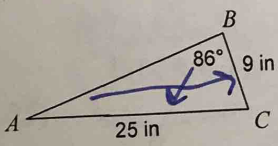


$\tan 54.3 = \frac{x}{7}$   
 $7 \tan 54.3 = x$   
 $x = 9.7$

Find each measurement indicated. Round your answers to the nearest tenth.

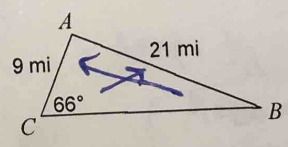
**use Law of Sines**

9) Find  $m\angle A$



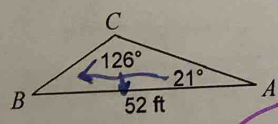
$\frac{\sin 86}{25} = \frac{\sin A}{9}$   
 $A = 21^\circ$

10) Find  $m\angle B$



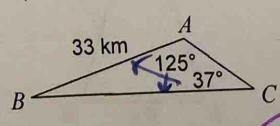
$\frac{\sin B}{9} = \frac{\sin 66}{21}$   
 $B = 23^\circ$

11) Find BC



$\frac{\sin 21}{52} = \frac{\sin 126}{BC}$   
 $BC = 23 \text{ ft}$

12) Find BC



$\frac{\sin 37}{33} = \frac{\sin 125}{BC}$   
 $BC = 44.9 \text{ km}$

State the number of possible triangles that can be formed using the given measurements.

13)  $m\angle B = 48^\circ, a = 28 \text{ ft}, b = 11 \text{ ft}$

No solution

15)  $m\angle C = 128^\circ, b = 30 \text{ cm}, c = 34 \text{ cm}$

1 solution

17)  $m\angle A = 20^\circ, c = 13 \text{ in}, a = 4 \text{ in}$

No solution

14)  $m\angle B = 38^\circ, a = 31 \text{ yd}, b = 20 \text{ yd}$

2 solutions

16)  $m\angle A = 39^\circ, c = 24 \text{ mi}, a = 23 \text{ mi}$

2 solutions

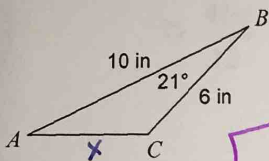
18)  $m\angle A = 76^\circ, a = 28 \text{ yd}, c = 25 \text{ yd}$

1 solution

Find each measurement indicated. Round your answers to the nearest tenth. use Law of Cosines:

19) Find AC

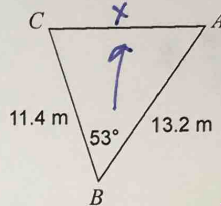
$$x^2 = b^2 + 10^2 - 2 \cdot b \cdot 10 \cdot \cos 21^\circ$$



$$x^2 = 23.97$$

$x = 4.9 \text{ in}$

20) Find AC



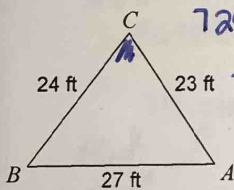
$$x^2 = 11.4^2 + 13.2^2 - 2 \cdot 11.4 \cdot 13.2 \cdot \cos 53^\circ$$

$$x^2 = 123.08$$

$x = 11.1 \text{ m}$

$a^2 = b^2 + c^2 - 2bc \cdot \cos A$

21) Find  $m\angle C$



$$27^2 = 24^2 + 23^2 - 2 \cdot 24 \cdot 23 \cdot \cos C$$

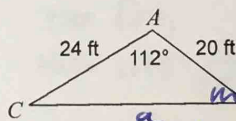
$$729 = 1105 - 1104 \cos C$$

$$-376 = -1104 \cos C$$

$$\frac{47}{138} = \cos C$$

$C = 70.1^\circ$

22) Find  $m\angle B$



$$a^2 = 24^2 + 20^2 - 2 \cdot 24 \cdot 20 \cdot \cos 112^\circ$$

$$a^2 = 1335.62 \rightarrow a = 36.5$$

$$24^2 = 20^2 + 36.5^2 - 2 \cdot 20 \cdot 36.5 \cdot \cos B$$

$$576 = 1732.25 - 1460 \cos B$$

\*Must find a first\*

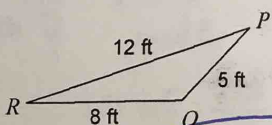
$$-1156.25 = -1460 \cos B$$

$$\frac{925}{1168} = \cos B$$

$B = 37.6^\circ$

Find the area of each triangle to the nearest tenth. use Area Formula:  $\text{Area} = \frac{1}{2} \cdot b \cdot c \cdot \sin A$  or Heron's Formula:  $S = \frac{a+b+c}{2}$

23)

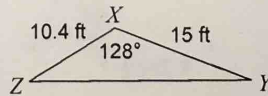


$$S = \frac{12+8+5}{2} \quad S = 12.5$$

$$\text{Area} = \sqrt{12.5(12.5-12)(12.5-8)(12.5-5)}$$

$$\text{Area} = 14.5 \text{ ft}^2$$

24)

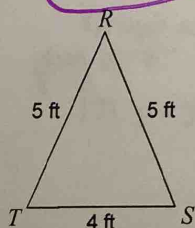


$$\text{Area} = \sqrt{S(S-a)(S-b)(S-c)}$$

$$\text{Area} = \frac{1}{2} \cdot 10.4 \cdot 15 \cdot \sin 128^\circ$$

$$\text{Area} = 61.5 \text{ ft}^2$$

25)

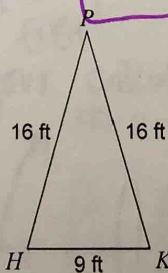


$$S = \frac{5+5+4}{2} \quad S = 7$$

$$\text{Area} = \sqrt{7(7-5)(7-5)(7-4)}$$

$$\text{Area} = 9.2 \text{ ft}^2$$

26)



$$S = \frac{16+16+9}{2} \quad S = 20.5$$

$$\text{Area} = \sqrt{20.5(20.5-16)(20.5-16)(20.5-9)}$$

$$\text{Area} = 69.1 \text{ ft}^2$$