

Unit M Review

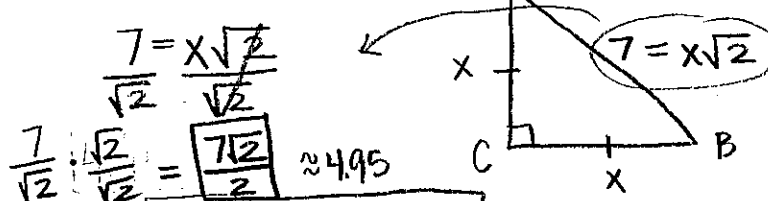
Name KEY!
 Class _____
 Date: May 16, 2007

Solve each problem. Show your work.

1. If $\triangle ABC$ is an isosceles right triangle with $m\angle C = 90$ and $AB = 7$, find

exact value

- a. AC.
 b. BC.

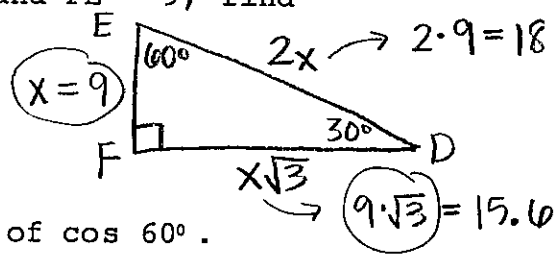


- 1) $\frac{7\sqrt{2}}{2}$
 a) $\frac{7\sqrt{2}}{2}$
 b) $\frac{7\sqrt{2}}{2}$

2. If $\triangle DEF$ is a 30-60-90 triangle with $m\angle F = 90$, $m\angle E = 60$, and $FE = 9$, find

exact value

- a. DE.
 b. DF.



- 2) 18
 a) 18
 b) $9\sqrt{3}$

3. Give the exact value of $\cos 60^\circ$.

use Unit Circle!

- 3) $\frac{1}{2}$

4. Give the exact value of $\tan 30^\circ$.

use Unit Circle! $\frac{\sin 30^\circ}{\cos 30^\circ} = \frac{\frac{1}{2}}{\frac{\sqrt{3}}{2}} = \frac{1}{2} \cdot \frac{2}{\sqrt{3}} = \frac{2}{2\sqrt{3}} = \frac{1}{\sqrt{3}} = \frac{\sqrt{3}}{3}$

- 4) $\frac{\sqrt{3}}{3}$

5. Estimate $\tan 73^\circ$ to the nearest thousandth.

calculator!

- 5) 3.271

6. Estimate $\cos 49^\circ$ to the nearest thousandth.

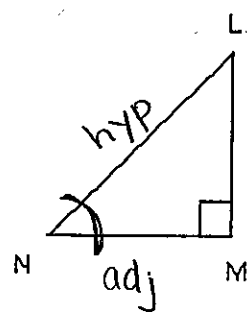
calculator!

- 6) 0.656

7. In $\triangle LMN$ at the right,

$\frac{A}{H} \frac{NM}{LN}$ is the ? of $\angle N$.

CAH
 ↓
 Sin, cos, or tan



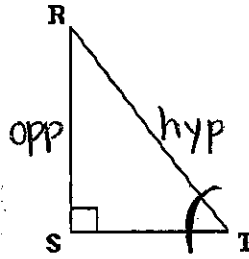
- 7) Cosine

Chapter 13 B Review, Form B

8. In $\triangle RST$ at the right,

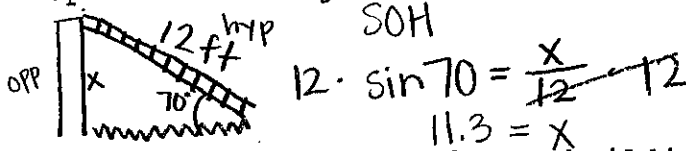
$\frac{\text{opp } RS}{\text{hyp } RT}$ is the ? of $\angle T$.

SOH
 \swarrow
 sin, cos, or tan



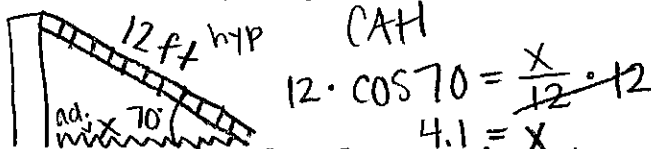
8) sine

9. A 12-foot ladder touches a building and makes a 70° angle with the ground. How far up the building does the ladder reach?



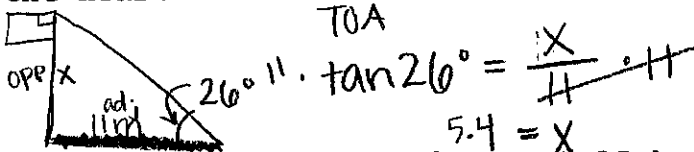
9) 11.3 ft

10. A 12-foot ladder touches a building and makes a 70° angle with the ground. How far from the building is the base of the ladder?



10) 4.1 ft

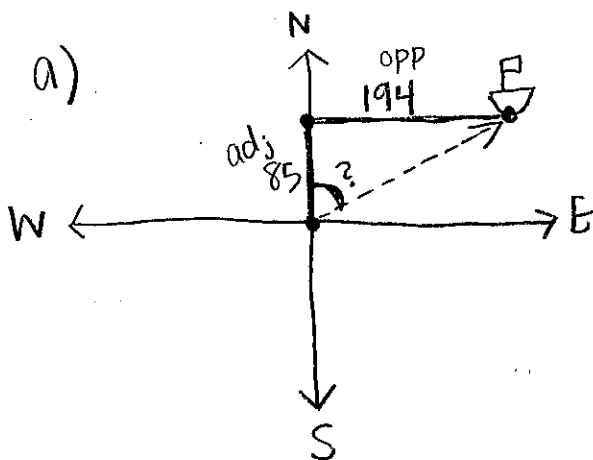
11. A flagpole on level ground casts a shadow 11 meters long when the sun is 26° up from the horizon. How tall is the flagpole, to the nearest tenth of a meter?



11) 5.4 m

12. A ship is headed toward a port 85 km north and 194 km east of its present location.

- What direction should the ship head?
- How far will the ship travel?



$$\tan X = \frac{194}{85}$$

$$X = \tan^{-1}\left(\frac{194}{85}\right)$$

$$X = 66.3$$

b) Pythag: $a^2 + b^2 = c^2$

$$85^2 + 194^2 = c^2$$

$$\sqrt{44861} = \sqrt{c^2}$$

$$211.8 = c$$

12) a) 66.3° NE
 b) 211.8 km

\nearrow or 23.7°

Solve each problem. Show your work.

13. Find the exact value of $\tan 135^\circ$.
Unit Circle! $\frac{\sin 135}{\cos 135} = \frac{\frac{\sqrt{2}}{2}}{-\frac{\sqrt{2}}{2}} = -\frac{1}{1} = -1$

13) $\frac{-1}{1}$

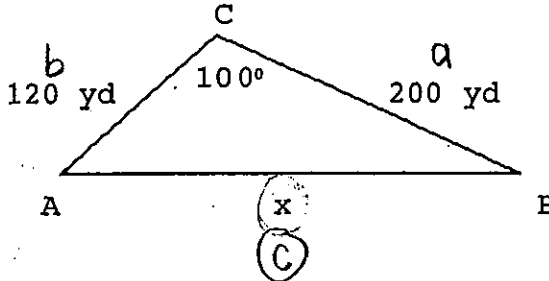
14. Find the exact value of $\sin (-225^\circ)$.
Unit Circle!

14) $\frac{\sqrt{2}}{2}$

15. Find the exact value of $\cos 180^\circ$.
Unit Circle!

15) -1

16. Use the picture below. Two points A and B are on opposite sides of a building. A surveyor chooses a third point C 120 yards from point A and 200 yards from point B, with angle ACB measuring 100° . How far apart are points A and B?



SAS \rightarrow Law of Cosines

$$c^2 = a^2 + b^2 - 2ab \cos C$$

$$c^2 = 200^2 + 120^2 - 2 \cdot 200 \cdot 120 \cdot \cos 100$$

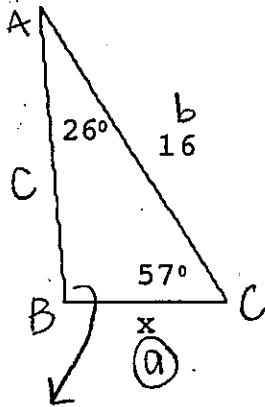
$$\sqrt{c^2} = \sqrt{62,735.1}$$

$$c = 250.5$$

16) ≈ 250.5 yd

17. Find x to the nearest tenth.

ASA
 \downarrow
Law of Sines



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

$$\frac{\sin 26^\circ}{a} = \frac{\sin 97^\circ}{16}$$

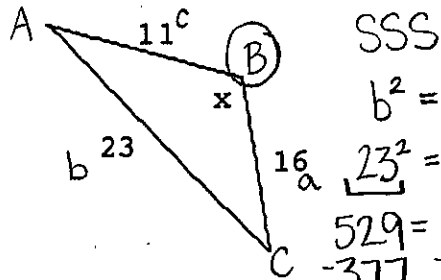
} type in:
 $\sin(26^\circ) \cdot 16 = \frac{7.01}{\sin 97^\circ}$

$$180^\circ - 26 - 57 = 97^\circ$$

$$a = 7.1$$

17) 7.1

18. Find x to the nearest tenth.



SSS

$$b^2 = a^2 + c^2 - 2ac \cdot \cos B$$

$$23^2 = 11^2 + 16^2 - 2 \cdot 11 \cdot 16 \cdot \cos B$$

$$529 = 377 - 352 \cos B$$

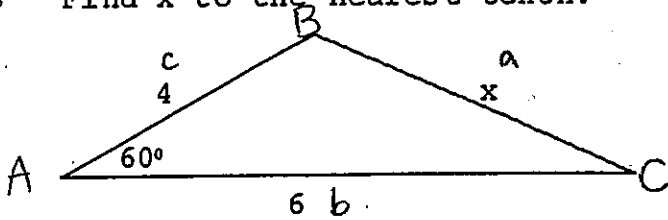
$$\frac{152}{-352} = \frac{-352 \cos B}{-352}$$

$$-.4318 = \cos B$$

$$\cos^{-1}(-.4318) = B$$

18) 115.5°

19. Find x to the nearest tenth.



SAS

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

$$a^2 = 6^2 + 4^2 - 2 \cdot 6 \cdot 4 \cos 60^\circ$$

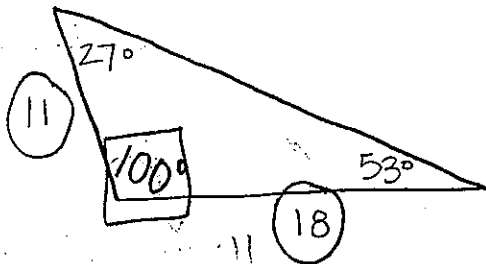
$$a^2 = 28$$

$$\sqrt{a^2} = \sqrt{28}$$

$$a = 5.3$$

19) 5.3

20. Find the area of the triangle.



SAS

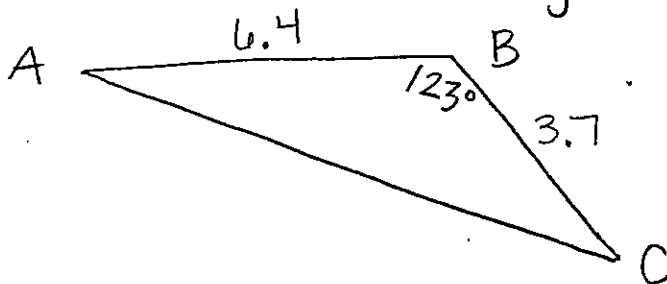
$$\frac{1}{2} \cdot a \cdot b \cdot \sin C$$

$$\frac{1}{2} \cdot 11 \cdot 18 \cdot \sin 100$$

$$97.5$$

20) 97.5

21. Find the area of the triangle.



SAS

$$\frac{1}{2} \cdot a \cdot b \cdot \sin C$$

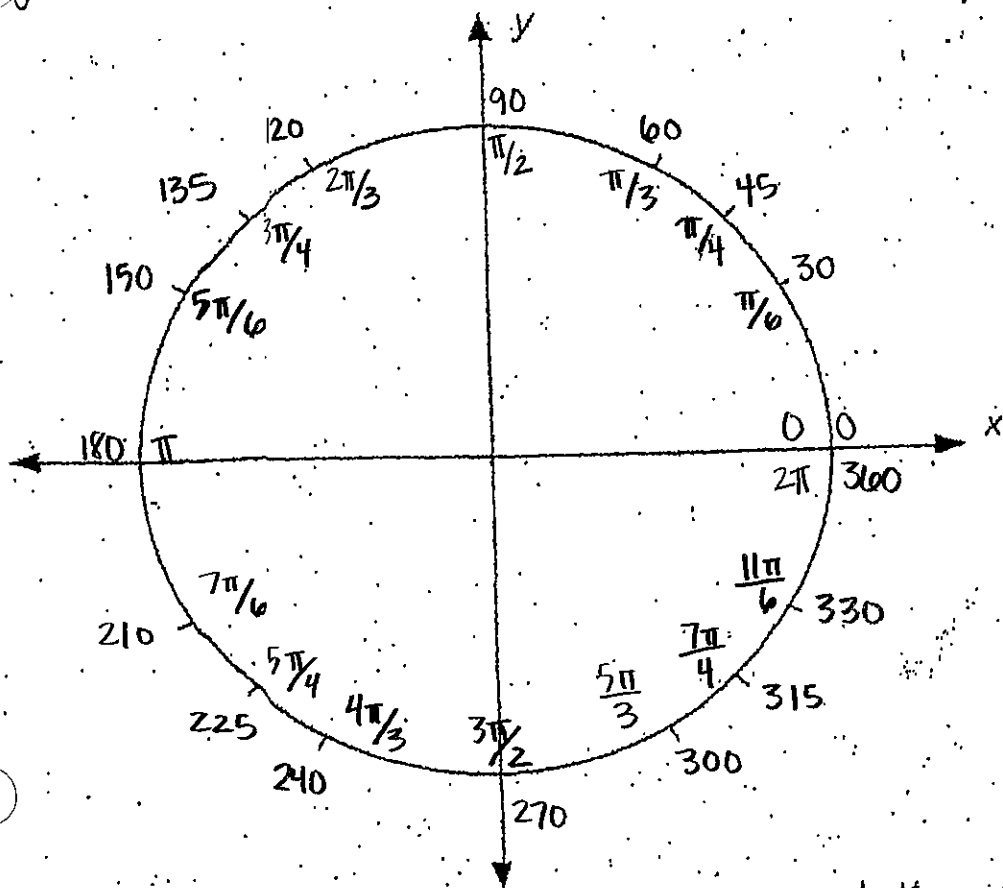
$$\frac{1}{2} \cdot 6.4 \cdot 3.7 \sin 123$$

$$9.93$$

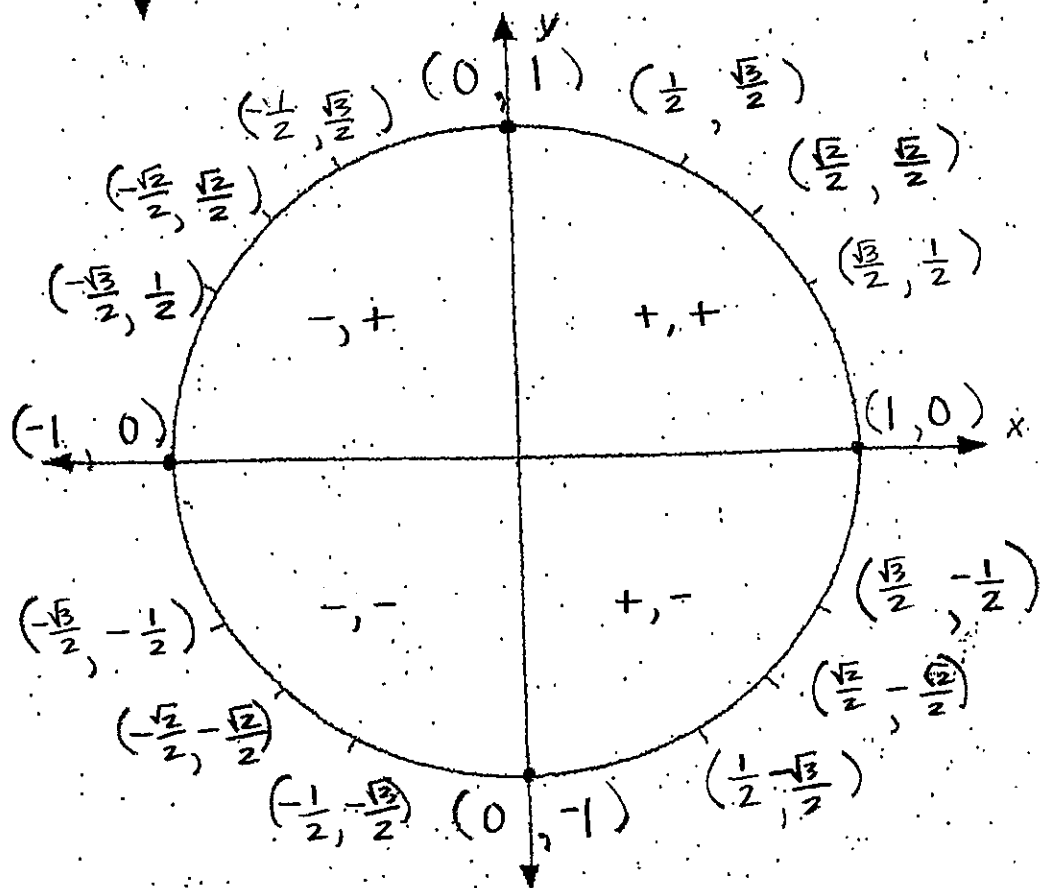
21) 9.9

Unit Circle Notes

Degrees & Radians



Exact Values





2

