Unit 5
Day 1
3/23/2017

RIGHT TRIANGLE REVIEW
6 Trigonometric Ratios
Special Triangles

Obj: I will be able to:
1. Recall how to solve right triangles.
2. Use trig. ratios to solve right triangles
3. Solve special triangles.
4. Label the angles in the unit circle in degrees.

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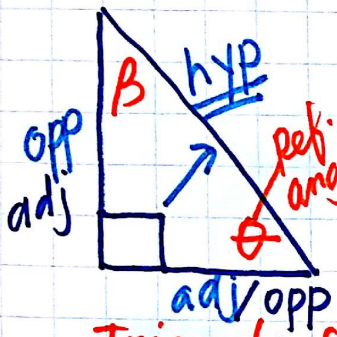
TRIGONOMETRIC RATIOS
SOH-CAH-TOA



sine $\theta = \frac{opp}{hyp}$ cosecant $\theta = \frac{hyp}{opp}$

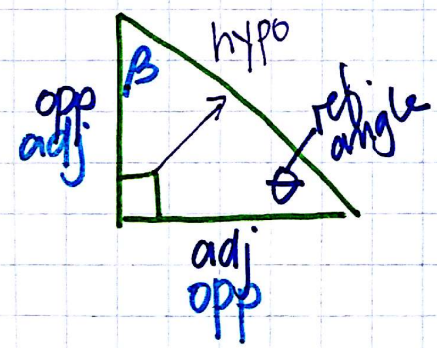
cosine $\theta = \frac{adj}{hyp}$ Secant $\theta = \frac{hyp}{adj}$

tangent $\theta = \frac{opp}{adj}$ cotangent $\theta = \frac{adj}{opp}$

Triangle sum Theorem

sum of all angles = 180

TRIGONOMETRIC RATIOS
SOH-CAH-TOA



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Name: Period: Date:

Practice Worksheet: Right Triangle Trigonometry

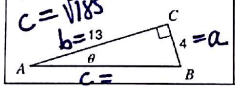
Find the exact value of the trig ratio for θ. Simplify all radicals and rationalize denominators if needed.

1. Find $\cos\theta$. $= \frac{adj}{hyp}$

$\cos\theta = \frac{13}{\sqrt{185}} = \frac{13\sqrt{185}}{185}$

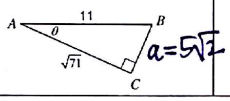
$c^2 = 13^2 + 4^2$

$c = \sqrt{185}$



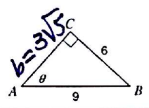
2. Find $\sin\theta$. $= \frac{opp}{hyp}$

$\sin\theta = \frac{5\sqrt{2}}{11}$



3. Find $\tan\theta$. $= \frac{opp}{adj}$

$\tan\theta = \frac{6}{3\sqrt{5}} = \frac{2\sqrt{5}}{5}$



Label the sketch and solve right ΔABC using the given info. Round answers to two decimals.

4. $m\angle A = 39^\circ$, $a =$
$m\angle B = 51^\circ$, $b =$
$m\angle C = 90^\circ$, $c = \sqrt{17}$

Triangle Sum Thm. to find missing angle:

$180 - (90+39) = 51^\circ$

Trig ratio to find missing side:

$\sin 39^\circ = \frac{a}{\sqrt{17}}$

$a = \sqrt{17}\sin 39^\circ$

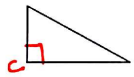
$a = 2.59$

Pythagorean Thm. to find last side:

$\sqrt{17}^2 = 2.59^2 + b^2$

$b = 3.21$

5. $m\angle A = 62^\circ$, $a = 6$
$m\angle B = 28^\circ$, $b = 3.19$
$m\angle C = 90^\circ$, $c = 6.80$

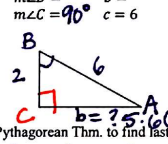


Triangle Sum Thm. to find missing angle:

Trig ratio to find missing side:

Pythagorean Thm. to find last side:

6. $m\angle A =$, $a = 2$
$m\angle B =$, $b =$
$m\angle C = 90^\circ$, $c = 6$



Pythagorean Thm. to find last side:

$6^2 = b^2 + 2^2$

$b^2 = 6^2 - 2^2$

$b = 4\sqrt{2} \approx 5.66$

Inverse trig function to find missing angle:

$\cos B^\circ = \frac{2}{6}$

$B^\circ = \cos^{-1}(2/6) = 70.53^\circ$

Triangle Sum Thm. to find missing angle:

$180 - (70.53 + 90)$

$A^\circ = 19.47^\circ$

Label the sketch with the given information. Use your sketch to ***write ONE equation*** to find the missing value indicated. Solve that equation, showing all work. Round to two decimal places where needed.

7. Given $m\angle A = 27^\circ$, and $b = 1$, find c.

$c = 1.12$

8. Given $b = 8$ and $c = 10$, find $m\angle B$.

$m\angle B = 53.13^\circ$

9. Given $m\angle B = 60^\circ$, and $c = 11$, find a.

$a = 5.5$

10. Given $a = 4$ and $b = 13$, find $m\angle A$.

$m\angle A = 17.10^\circ$

11. Given $a = 7$ and $c = 25$, find $m\angle B$.

$B = 73.74^\circ$

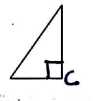
12. Given $m\angle A = 50^\circ$, and $b = 5$, find a.

$a = 5.96$

13. Given $m\angle A = 47^\circ$, and $c = 3$, find a.

$a = 2.19$

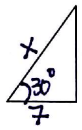
14. Given $m\angle B = 57^\circ$, and $b = 10$, find c.



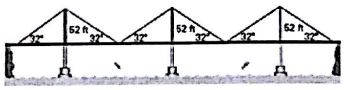
$c = 11.92$

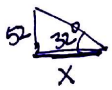
15. A ladder leaning against a house makes an angle of 30° with the ground. The foot of the ladder is 7 feet from the foot of the house. How long is the ladder? Show all work and label the sketch.

$\cos 30^\circ = \frac{7}{x}$ $\quad x = \frac{7}{\cos 30^\circ} = 8.08\text{ ft}$



16. Find the length across the suspension bridge. Show all work.





$\tan 32^\circ = \frac{52}{x}$

$x = \frac{52}{\tan 32^\circ} = 83.22 \times 6 = 499.30\text{ ft}$

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3/23 Day 1 Units

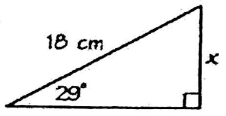
Team Name: _____ Partner A: _____

What Do You Get . . .

1.	2.	3.	4.	5.	6.	7.	8.	9.
when	you	cross	a	baseball	player	with	a	frog ?

Find the measure of the side or angle labeled x, or solve the problem. Write the word next to your answer in the corresponding box above.

1.



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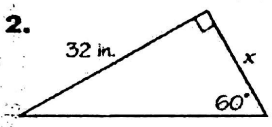
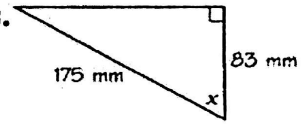
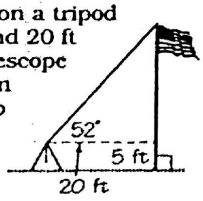


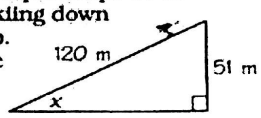
3.



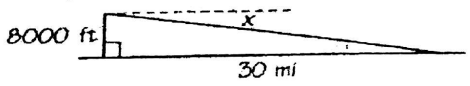
4. A telescope is mounted on a tripod 5 ft above the ground and 20 ft from a flagpole. The telescope must be rotated 52° from horizontal to see the top of the flagpole. How tall is the flagpole?



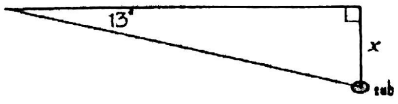
5. An Olympic ski jumper drops 51 m vertically while skiing down a 120-meter ramp. What is the angle of elevation of the ramp?



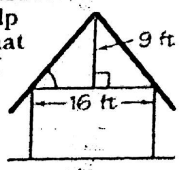
6. A plane is 8000 feet above the ground when it begins its final approach to an airport runway. If the ground distance to the runway is 30 miles, what is the angle of descent. (1 mi = 5280 ft)



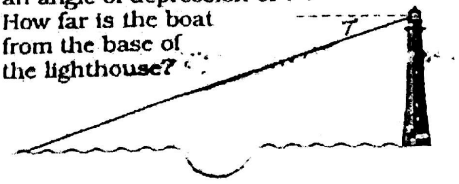
7. A submarine dives at an angle of 13° to the surface of the water. The submarine travels at a speed of 720 feet per minute. About how deep is the sub after 5 min?



8. The roof of a ski cabin has a steep pitch to help snow slide off. What angle does the roof make with the horizontal?



9. From a lighthouse deck 90 ft above the water, a capsized boat is observed at an angle of depression of 7°. How far is the boat from the base of the lighthouse?



Answers

- 810 ft WITH
- 5° GAME
- 25° BASEBALL
- 8.4 cm ON
- 18.5 in. YOU
- 50° BIG
- 30.6 ft A
- 825 ft WHO
- 8.7 cm WHEN
- 733 ft FROG
- 3° PLAYER
- 17.8 in. SMOKE
- 23° HIT
- 680 ft UNICORN
- 48° A
- 62° CROSS
- 28.5 ft OVER

Triangles: Solving Problems Using Trigonometric Ratios (A)

16.8

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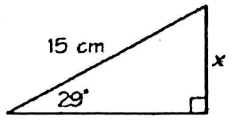
Team Name: _____ Partner B: _____

What You Get Is . . .

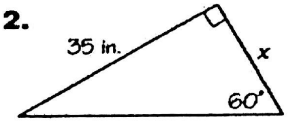
1. AN	2. outfielder	3. who	4. catches	5. flies	6. and	7. then	8. eats	9. them.

Find the measure of the side or angle labeled x, or solve the problem. Write the word next to your answer in the corresponding box above.

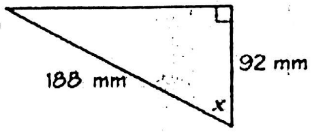
1.



2.



3.



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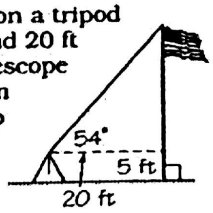
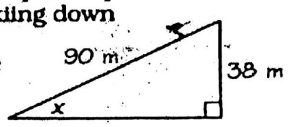


5. An Olympic ski jumper drops 38 m vertically while skiing down a 90-meter ramp. What is the angle of elevation of the ramp?



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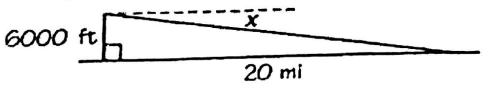

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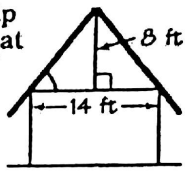
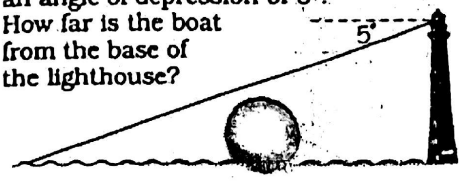


9. From a lighthouse deck 80 ft above the water, a capsized boat is observed at an angle of depression of 5°. How far is the boat from the base of the lighthouse?



Answers

- 19.5 in. ELEPHANT
- 3° AND
- 32.5 ft CATCHES
- 27° BALLS
- 892 ft PEANUTS
- 49° EATS
- 7.3 cm AN
- 840 ft RUNS
- 25° FLIES
- 47° HITS
- 20.2 in. OUTFIELDER
- 7.8 cm SOME
- 855 ft THEN
- 33.8 ft PLAYS
- 914 ft THEM
- 61° WHO
- 5° WITH

Triangles: Solving Problems Using Trigonometric Ratios (B)

16.9

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what do you get

1. $\sin 29° = \frac{x}{18}$

$18 \sin 29° = \boxed{x = 8.7 \text{ cm}}$

2. $\tan 60° = \frac{32}{x}$

$x = \frac{32}{\tan 60°} = \boxed{18.5 \text{ in} = x}$

3. $\cos x = \frac{83}{175}$

$x = \cos^{-1}\left(\frac{83}{175}\right) = \boxed{62° = x}$

4. $\tan 52° = \frac{x}{20}$

$20 \tan 52° = \boxed{x = 25.6 \text{ ft}}$

$25.6 + 5 = \boxed{30.6 \text{ ft}}$

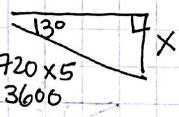
5. $\sin x = \frac{51}{120}$

$x = \sin^{-1}\left(\frac{51}{120}\right) = \boxed{25° = x}$

6. $\tan x = \frac{8000 \text{ ft}}{158400}$

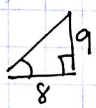
30×5280

$x = \tan^{-1}\left(\frac{8000}{158400}\right) = \boxed{3° = x}$

7. 

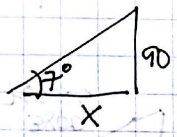
$\sin 13° = \frac{x}{3600}$

$3600 \sin 13° = x = 809.8 = \boxed{810 \text{ ft}}$

8. 

$\tan x = \frac{9}{8}$

$x = \tan^{-1}\left(\frac{9}{8}\right) = \boxed{48°}$

9. 

$\tan 7° = \frac{90}{x}$

$x = \frac{90}{\tan 7°} = 733 \text{ ft}$

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What You Get Is...

1. $\sin 29° = \frac{X}{15}$

$X = 7.27 = \boxed{7.3\text{ cm} = X}$

2. $\tan 60° = \frac{35}{X}$

$X = \frac{35}{\tan 60°} = \boxed{20.2\text{ in} = X}$

3. $\cos X = \frac{92}{188}$

$X = \cos^{-1}(92/188) = \boxed{60.7 = X}$

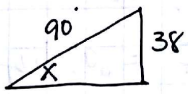
$\boxed{61° = X}$

4.

$\tan 54° = \frac{X}{20}$

$20 \tan 54° = X = 27.5\text{ ft} = X$

$X + 5 = 27.5 + 5 = \boxed{32.5\text{ ft} = X}$

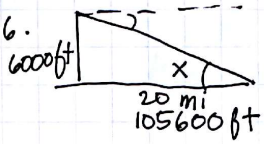
5. 

$\sin X = \frac{38}{90}$

$X = \sin^{-1}(\frac{38}{90})$

$X = 24.97$

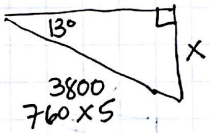
$X = 25°$

6. 

$\tan X = \frac{6000}{105600}$

$X = \tan^{-1}(\frac{6000}{105600})$

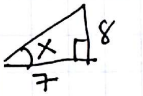
$X = 3.25° = \boxed{3° = X}$

7. 

$\sin 13° = \frac{X}{3800}$

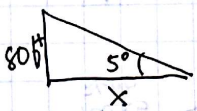
$3800 \sin 13° = X = 854.8\text{ ft}$

$\boxed{855\text{ ft}}$

8. 

$\tan X = \frac{8}{7}$

$X = \tan^{-1}(8/7) = 48.8° = \boxed{49° = X}$

9. 

$\tan 5° = \frac{80}{X}$

$X = \frac{80}{\tan 5°} = \boxed{914.4\text{ ft} = X}$

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