Trig 1 HW 7 Name:

Three integers that can be measures for three sides of a right triangle are called a Pythagorean triple. Determine whether or not each of the following is a Pythagorean triple.

1. 5, 10, 12

$25+100=144$

$125 \neq 144$

NO

2. 12, 16, 20

yes

(7)

3. 15, 20, 25

yes

(7)

4. 24, 32, 40

yes

(7)

5. 9, 12, 15

yes

(7)

6. 8, 15, 17

$64+225=289$

$289=289$

yes

7. 3, 4, 5

yes

8. 9, 12, 14

NO

$81+144=196$

$225 \neq 196$

9. 9, 40, 41

$81+1600=1681$

$1681=1681$

yes

For each of the following, determine whether or not it is possible to draw a right triangle with sides of the given measures.

10. 1.6, 3.0, 3.4

$2.56+9=11.56$

$11.56=11.56$

yes

11. 2.2, 2.4, 3.3

$4.84+5.76=10.89$

$10.6 \neq 10.89$

NO (obtuse)

12. 3.87, 4.47, 5.91

$14.9769+19.9809=34.9281$

$34.9578 \neq 34.9281$

NO (acute)

13. 0.27, 0.36, 0.45

$0.0729+0.1296=0.2025$

$0.2025=0.2025$

yes

14. $1, \sqrt{2}, \sqrt{3}$

$1+2=3$

$3=3$

yes

15. $\sqrt{3}, \sqrt{4}, \sqrt{5}$

$3+4=5$

$7 \neq 5$

NO (Acute)

16. $\sqrt{5}, \sqrt{6}, \sqrt{7}$

$5+6=7$

$11 \neq 7$

NO

Acute

17. $2, 2\frac{1}{3}, 3\frac{2}{3}$

$4+\frac{49}{9}=\frac{121}{9}$

$\frac{85}{9} \neq \frac{121}{9}$

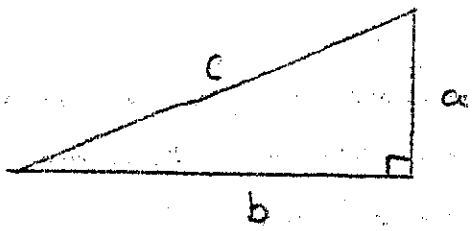
NO (obtuse)

18. $2, 2\frac{2}{3}, 3\frac{1}{3}$

$4+\frac{64}{9}=\frac{100}{9}$

$\frac{100}{9} \quad \frac{100}{9}$

yes



Use the triangle above and the pythagorean theorem to solve the following.

(19) Given $a = 5$ and $b = 12$, find c.

$5^2 + 12^2 = c^2$

$25 + 144 = c^2$

$169 = c^2$ $\quad c = 13$

$13 = c$

20. Given $a = 3$ and $c = 5$, find b.

$3^2 + b^2 = 5^2$

$9 + b^2 = 25$

$b^2 = 16$ $\quad b = 4$

$b = 4$

21. Given $b = 3\sqrt{5}$ and $a = 2$, find c.

$2^2 + 3\sqrt{5}^2 = c^2$

$4 + 45 = c^2$

$49 = c^2$ $\quad c = 7$

(22) Given $c = 1.5$ and $a = .9$, find b.

$.9^2 + b^2 = 1.5^2$ $\quad b = 1.2$

$.81 + b^2 = 2.25$

$b^2 = 1.44$

23. Given $a = 3$ and $b = 7$, find c.

$3^2 + 7^2 = c^2$ $\quad c = \sqrt{58}$

$9 + 49 = c^2$

$58 = c^2$

24. Given $c = 17$ and $a = 8$, find b.

$8^2 + b^2 = 17^2$

$64 + b^2 = 289$ $\quad b = 15$

$b^2 = 225$

25. Given $c = 10$ and $b = 5\sqrt{3}$, find a.

$a^2 + (5\sqrt{3})^2 = 10^2$

$a^2 + 75 = 100$ $\quad a = 5$

$a^2 = 25$

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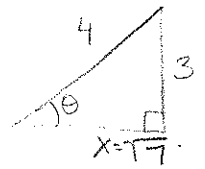
$\sec(x) = \frac{1}{\cos(x)}$ $\quad \csc(x) = \frac{1}{\sin(x)}$ $\quad \cot(x) = \frac{1}{\tan(x)}$ $\quad \tan(x) = \frac{\sin(x)}{\cos(x)}$

Trig 2

Solve each of the following for values between 0° and 90°

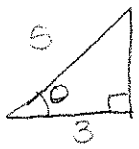
1. If $\sin\theta = \frac{3}{4}$, find $\sec\theta$



$9 + x^2 = 16$, $x^2 = 7$, $x = \sqrt{7}$

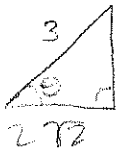
$\sec\theta = \frac{4}{\sqrt{7}} \cdot \frac{\sqrt{7}}{\sqrt{7}} = \frac{4\sqrt{7}}{7}$

2. If $\cos\theta = \frac{3}{5}$, find $\sin\theta$.



$\sin(\theta) = \frac{4}{5}$

3. If $\csc\theta = \frac{3}{1}$, find $\sin\theta$

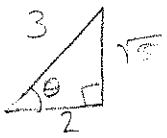


$\sin(\theta) = \frac{1}{3}$

4. If $\cot\theta = \frac{2}{1}$, find $\tan\theta$.

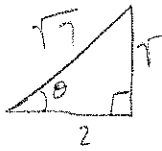
$\tan(\theta) = \frac{1}{2}$

5. If $\cos\theta = \frac{2}{3}$, find $\csc\theta$



$\csc(\theta) = \frac{3}{\sqrt{5}} \cdot \frac{\sqrt{5}}{\sqrt{5}} = \frac{3\sqrt{5}}{5}$

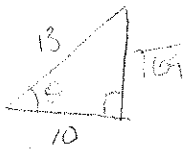
6. If $\tan\theta = \frac{\sqrt{3}}{2}$, find $\sec\theta$.



$\sec(\theta) = \frac{\sqrt{7}}{2}$

7. If $\sec\theta = 1.3$, find $\cos\theta$

$1.3 = \frac{13}{10}$, $\sqrt{69}$



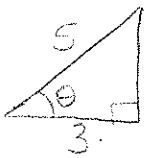
$\cos(\theta) = \frac{10}{13}$

8. If $\cos\theta = .032$, find $\sec\theta$.

$\sec(\theta) = \frac{1}{.032} = 31.25$

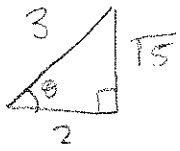
$31\frac{1}{4}$

9. If $\sec\theta = \frac{5}{3}$, find $\tan\theta$



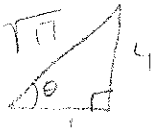
$\tan(\theta) = \frac{4}{3}$

10. If $\cos\theta = \frac{2}{3}$, find $\sin\theta$.



$\sin(\theta) = \frac{\sqrt{5}}{3}$

11. If $\tan\theta = \frac{4}{1}$, find $\sin\theta$



$\sin(\theta) = \frac{4}{\sqrt{17}} \cdot \frac{\sqrt{17}}{\sqrt{17}}$

$\frac{4\sqrt{17}}{17}$

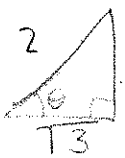
12. If $\cot\theta = 0.85$, find $\csc\theta$.

$0.85 = \frac{17}{20}$

$\csc(\theta) = \frac{\sqrt{41}}{5}$

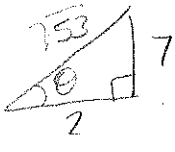
$16\frac{1}{25}$

13. If $\sin\theta = \frac{1}{2}$, find $\cos\theta$.



$\cos(\theta) = \frac{\sqrt{3}}{2}$

14. If $\tan\theta = \frac{7}{2}$, find $\sec\theta$.



$\sec(\theta) = \frac{\sqrt{53}}{2}$

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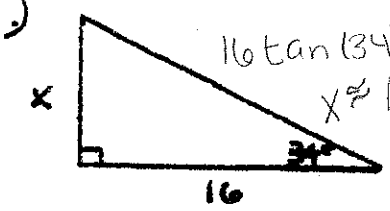
Trig 3

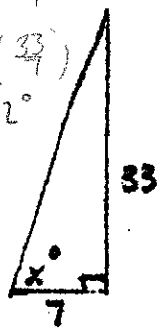
Find the missing part of each right triangle, each 2 ways.

1. 

$\tan(34) = \frac{x}{16}$

$16\tan(34) = x$

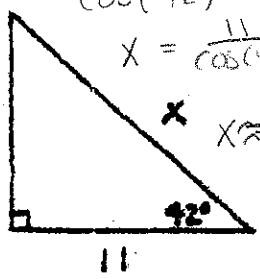
$x \approx 10.79$

2. 

$\tan(x) = \frac{33}{7}$

$x = \tan^{-1}\left(\frac{33}{7}\right)$

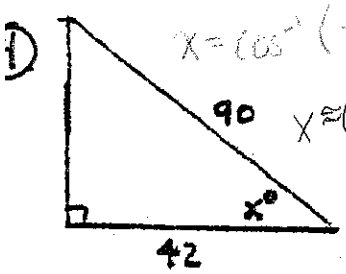
$x \approx 78.02°$

3. 

$\cos(42) = \frac{11}{x}$

$x = \frac{11}{\cos(42)}$

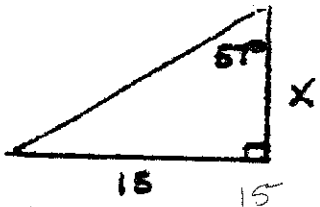
$x \approx 14.80$

4. 

$\cos(x) = \frac{42}{90}$

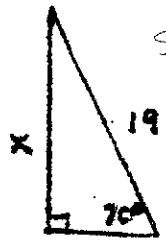
$x = \cos^{-1}\left(\frac{42}{90}\right)$

$x \approx 62.18°$

5. 

$\tan(57) = \frac{15}{x}$

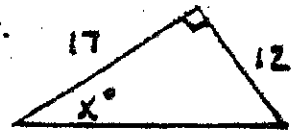
$x = \frac{15}{\tan(57)}$ $x \approx 9.74$

6. 

$\sin(70) = \frac{x}{19}$

$x = 19\sin(70)$

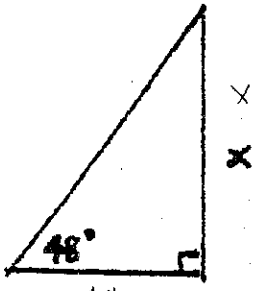
$x \approx 17.85$

7. 

$\tan(x) = \frac{12}{17}$

$x = \tan^{-1}\left(\frac{12}{17}\right)$

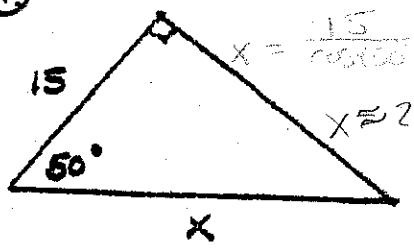
$x \approx 35.22°$

8. 

$x = 10\tan(48)$

$x \approx 11.11$

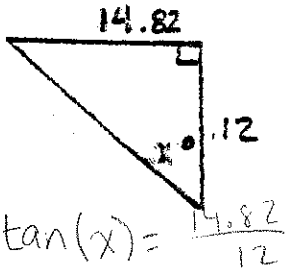
$\tan(48) = \frac{x}{10}$

9. 

$\cos(50) = \frac{15}{x}$

$x = \frac{15}{\cos(50)}$

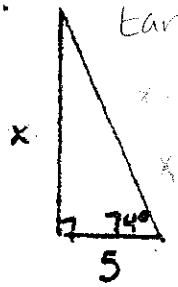
$x \approx 23.34$

10. 

$\tan(x) = \frac{14.82}{12}$

$x = \tan^{-1}\left(\frac{14.82}{12}\right)$

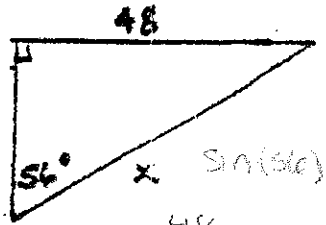
$x \approx 51$

11. 

$\tan(74) = \frac{x}{5}$

$x = 5\tan(74)$

$x \approx 17.44$

12 

$\sin(56) = \frac{48}{x}$

$x = \frac{48}{\sin(56)}$

$x \approx 57.90$

Trig #4 HW 15 Name _____

Change each measure to degrees, minutes, and seconds.

18. $-16.75°$ 19. $168.35°$ 20. $-183.47°$

21. $286.88°$ 22. $27.465°$ 23. $246.876°$

Write each measure as a decimal to the nearest thousandth.

24. $23° 14' 30''$ 25. $-14° 5' 20''$ 26. $233° 25' 15''$

27. $173° 24' 35''$ 28. $-405° 16' 18''$ 29. $1002° 30' 30''$

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Write an equation that would enable you to solve for the indicated measures. Do *not* solve.

4. If $A = 20°$ and $c = 35$, find a. $\sin(20) = \frac{a}{35}$

5. If $b = 13$ and $A = 76°$, find a. $\tan(76) = \frac{a}{13}$

6. If $a = 6$ and $c = 12$, find B. $\cos(B) = \frac{6}{12}$

7. If $a = 21.2$ and $b = 9$, find A. $\tan(A) = \frac{21.2}{9}$

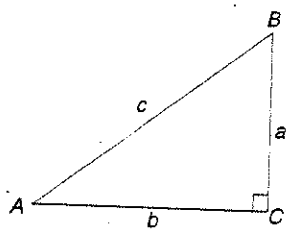
8. If $B = 16°$ and $c = 13$, find a. $\cos(16) = \frac{a}{13}$

9. If $A = 49°13'$ and $a = 10$, find b. $\tan(49°13') = \frac{10}{b}$

10. If $c = 16$ and $a = 7$, find b. $b^2 = 16^2 - 7^2$

11. If $a = 7$ and $b = 12$, find A. $\tan(A) = \frac{12}{7}$

12. If $a = 5$ and $b = 6$, find c. $5^2 + 6^2 = c^2$



Solve each of the following problems. Draw a picture w/ labels.

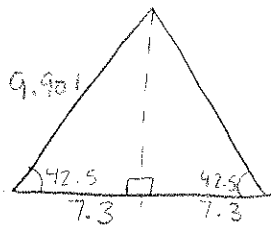
21. **Geometry** Each base angle of an isosceles triangle measures ~~42°30'~~ 42.5°. The base is 14.6 meters long.

a. Find the length of a leg of the triangle. 9.901 m

b. Find the altitude of the triangle. 6.689 m

c. What is the area of the triangle? $48.8297\ m^2$

$\frac{1}{2}(14.6)(6.689) = 48.8297$



$\tan(42.5) = \frac{x}{7.3}$

$7.3\tan(42.5) = x = 6.689$

$7.3^2 + 6.689^2 = c^2$

$53.29 + 44.743 = c^2$

$98.033 = c^2$

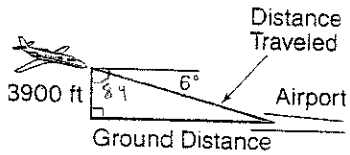
9.901

23. **Engineering** The escalator at St. Petersburg Metro in Russia has a vertical rise of 195.8 feet. If the angle of elevation of the escalator is ~~10°21'36''~~ 10.36°, find the length of the escalator.

$\sin(10.36) = \frac{195.8}{H}$

$H = \frac{195.8}{\sin(10.36)} = 1088.791\ ft$

26. **Aviation** When a 757 passenger jet begins its descent to the Ronald Reagan International Airport in Washington, D.C., it is 3900 feet from the ground. Its angle of descent is 6°.

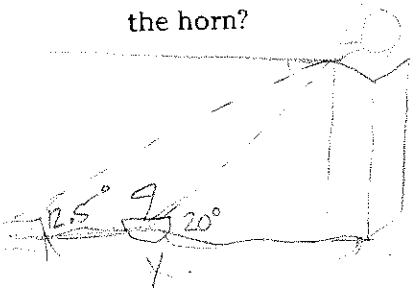


a. What is the plane's ground distance to the airport? $\tan(84) = \frac{x}{3900}$ $x = 37106.02\ ft$

b. How far must the plane fly to reach the runway?

$\cos(84) = \frac{3900}{H}$ $H = \frac{3900}{\cos(84)} = 37310.41\ ft$

27. **Boat Safety** The Cape Hatteras lighthouse on the North Carolina coast was built in 1870 and rises 208 feet above sea level. From the top of the lighthouse, the lighthouse keeper observes a yacht and a barge along the same line of sight. The angle of depression for the yacht is 20°, and the angle of depression for the barge is ~~12° 30'~~ 12.5°. For safety purposes, the keeper thinks that the two sea vessels should be at least 300 feet apart. If they are less than 300 feet, she plans to sound the horn. How far apart are these vessels? Does the keeper have to sound the horn?



Yacht
$\tan(20) = \frac{208}{x}$
$x = \frac{208}{\tan(20)}$
$= 571.47$

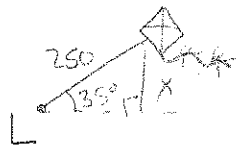
Barge
$\tan(12.5) = \frac{208}{z}$
$z = \frac{208}{\tan(12.5)}$
$= 938.23$

$938.23 - 571.47 = 366.76$

Does not sound the horn

$366.76 > 300$

29. **Recreation** Latasha and Markisha are flying kites on a windy spring day. Latasha has released 250 feet of string, and Markisha has released 225 feet of string. The angle that Latasha's kite string makes with the horizontal is 35°. The angle that Markisha's kite string makes with the horizontal is 42°. Which kite is higher and by how much?

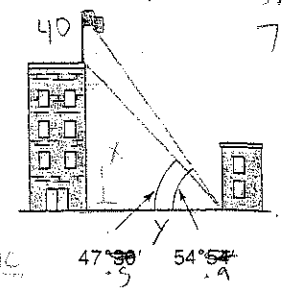


L: $\sin(35) = \frac{x}{250}$
$250\sin(35) = x$
$143.39 = x$

M: $\sin(42) = \frac{y}{225}$
$225\sin(42) = y$
$150.55 = y$

Markisha is higher by
7.16 ft

30. **Architecture** A flagpole 40 feet high stands on top of the Wentworth Building. From a point in front of Bailey's Drugstore, the angle of elevation for the top of the pole is ~~54° 54'~~ 54.9°, and the angle of elevation for the bottom of the pole is ~~47° 30'~~ 47.5°. How high is the building?



$\tan(47.5) = \frac{x}{y}$
$y = \frac{x}{\tan(47.5)}$

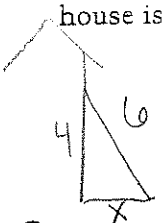
$\tan(54.9) = \frac{x+40}{y}$
$y = \frac{x+40}{\tan(54.9)}$

$(x+40)\tan(47.5) = x\tan(54.9)$
$40\tan(47.5) = x(\tan(54.9) - \tan(47.5))$

$x = \frac{40\tan(47.5)}{(\tan(54.9) - \tan(47.5))}$

$x = 131.66$ ft

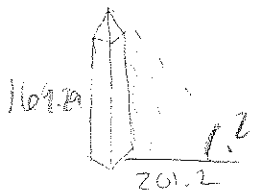
29. **Home Maintenance** Mrs. James is using a 6-meter ladder to clean the windows on her second floor. Her ladder stands on level ground and rests against the side of her house at a point 4 meters from the ground. How far from the side of her house is the foot of the ladder? Round your answer to the nearest hundredth.



$4^2 + x^2 = 6^2$
$x^2 = 6^2 - 4^2$
$x^2 = 36 - 16$
$x^2 = 20$

$x = \sqrt{20}$
$x = 2\sqrt{5}$ m
$x \approx 4.47$ m

31. **National Landmarks** The Washington Monument is 169.29 meters tall and, at a particular time, casts a shadow 201.2 meters long. Find the approximate angle of elevation of the sun at that time.

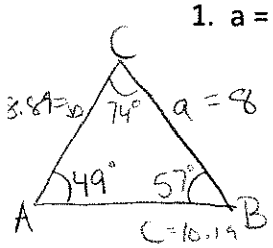


$\tan(x) = \frac{169.29}{201.2}$
$x = \tan^{-1}\left(\frac{169.29}{201.2}\right)$
$x \approx 40.08$

FAT Law of Sines Name: Key Period: _____

Draw a triangle for each problem and label. Determine the number of solutions for each triangle. If a solution exists, solve for the triangle. 1 or ∅ solutions

1. a = 8 A = 49° B = 57°



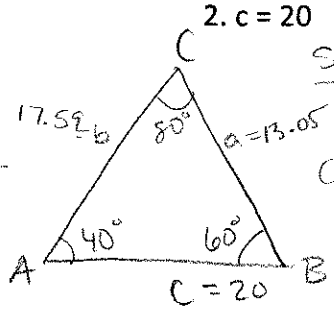
$\frac{\sin(49)}{8} = \frac{\sin(57)}{b}$

$\frac{b\sin(49)}{\sin(49)} = \frac{8\sin(57)}{\sin(49)}$

$b = \frac{8\sin(57)}{\sin(49)} \approx 8.89$

$C = \frac{8\sin(74)}{\sin(49)} \approx 10.19$

2. c = 20 A = 40° B = 60°



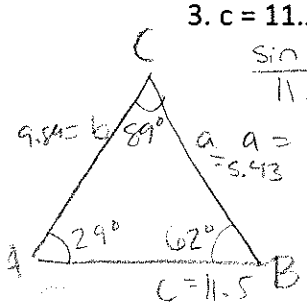
$\frac{\sin(80)}{20} = \frac{\sin(40)}{a}$

$a = \frac{20\sin(40)}{\sin(80)} \approx 13.05$

$\frac{\sin(80)}{20} = \frac{\sin(60)}{c}$

$C = \frac{20\sin(60)}{\sin(80)} \approx 17.59$

3. c = 11.5 A = 29° B = 62°



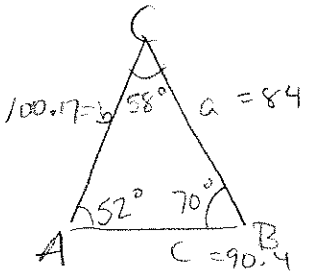
$\frac{\sin(89)}{11.2} = \frac{\sin(29)}{a}$

$a = \frac{11.2\sin(29)}{\sin(89)} \approx 5.43$

$\frac{\sin(89)}{11.2} = \frac{\sin(62)}{b}$

$b = \frac{11.2\sin(62)}{\sin(89)} \approx 9.89$

4. a = 84 C = 58° B = 70°



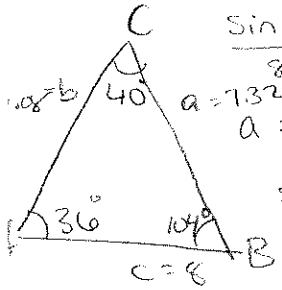
$\frac{\sin(52)}{84} = \frac{\sin(70)}{b}$

$b = \frac{84\sin(70)}{\sin(52)} \approx 100.17$

$\frac{\sin(52)}{84} = \frac{\sin(58)}{c}$

$C = \frac{84\sin(58)}{\sin(52)} \approx 90.4$

5. c = 8 C = 40° A = 36°



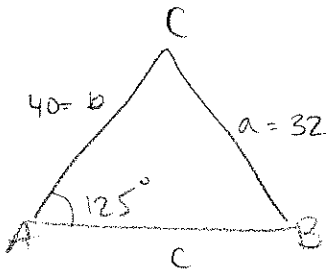
$\frac{\sin(40)}{8} = \frac{\sin(36)}{a}$

$a = \frac{8\sin(36)}{\sin(40)} \approx 7.32$

$\frac{\sin(40)}{8} = \frac{\sin(104)}{b}$

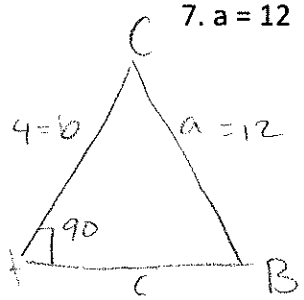
$b = \frac{8\sin(104)}{\sin(40)} \approx 12.08$

6. b = 40 a = 32 A = 125°



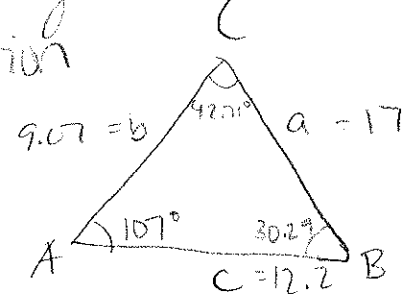
NO Solution

7. a = 12 b = 14 A = 90° Right



NO Solution

8. a = 17.2 c = 12.2 A = 107°



$\frac{\sin(107)}{17.2} = \frac{\sin(C)}{12.2}$

$C = \sin^{-1}\left(\frac{12.2\sin(107)}{17.2}\right)$

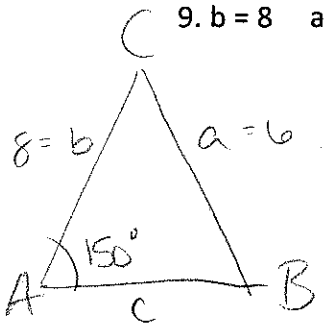
$\approx 42.71°$

$\frac{\sin(107)}{17.2} = \frac{\sin(30.29)}{b}$

$b = \frac{17.2\sin(30.29)}{\sin(107)} \approx 9.07$

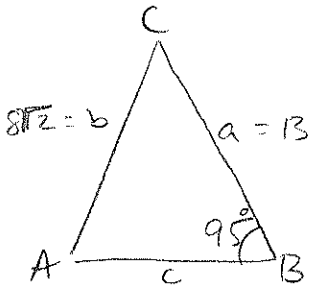
FAT Law of Sines Name: _____ Period: _____

9. b = 8 a = 6 A = 150°



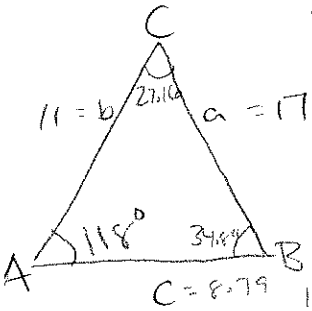
No Solution

10. b = $8\sqrt{2}$ a = 13 B = 95°



No Solution

11. b = 11 a = 17 A = 118°



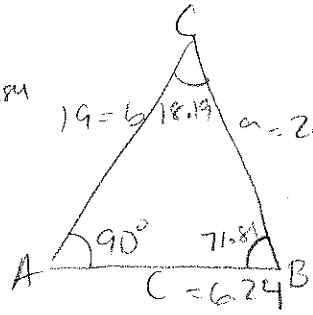
$\frac{\sin(118)}{17} = \frac{\sin(B)}{11}$

$B = \sin^{-1}\left(\frac{11\sin(118)}{17}\right) = 34.84$

$\frac{\sin(118)}{17} = \frac{\sin(27.16)}{c}$

$C = \frac{17\sin(27.16)}{\sin(118)} = 8.79$

12. b = 19 a = 20 A = 90°



$19^2 + x^2 = 20^2$

$361 + x^2 = 400$

$x^2 = 39$

$x = \sqrt{39} \approx 6.24$

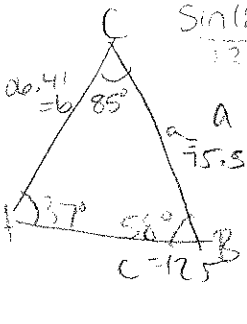
$\sin(B) = \frac{19}{20}$

$B = \sin^{-1}\left(\frac{19}{20}\right) = 71.81$

$\cos(C) = \frac{19}{20}$

$C = (\cos^{-1}\frac{19}{20}) = 18.19$

13. c = 125 A = 37° B = 58°



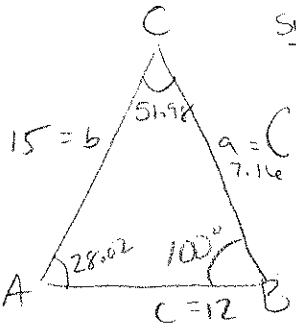
$\frac{\sin(85)}{125} = \frac{\sin(37)}{a}$

$A = \frac{125\sin(37)}{\sin(85)} \approx 75.51$

$\frac{\sin(85)}{125} = \frac{\sin(58)}{b}$

$b = \frac{125\sin(58)}{\sin(85)} \approx 106.41$

14. b = 15 c = 12 B= 100°



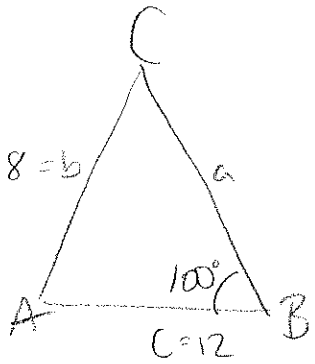
$\frac{\sin(100)}{15} = \frac{\sin(C)}{12}$

$C = \sin^{-1}\left(\frac{12\sin(100)}{15}\right) = 51.98$

$\frac{\sin(100)}{15} = \frac{\sin(28.02)}{a}$

$a = \frac{15\sin(28.02)}{\sin(100)} = 7.16$

15. b = 8 c = 12 B= 100°



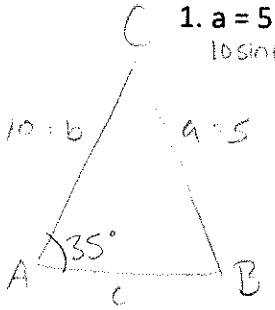
No Solution

FAT Law of Sines Ambiguous Case Name: _____ Period: _____

Draw a triangle for each problem and label. Determine the number of solutions for each triangle. If a solution exists, solve for the triangle.

1. a = 5 b = 10 A = 35°

$10\sin(35) = 5.7 > 5$



NO SOLUTION

2. a = 11 b = 10 A = 35°

1 Sol.

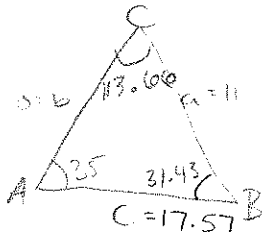
$10\sin(35) = 5.7 < 11 > 10$

$\frac{\sin(35)}{11} = \frac{\sin(B)}{10}$

$B = \sin^{-1}\left(\frac{10\sin(35)}{11}\right) = 31.43$

$\frac{\sin(35)}{11} = \frac{\sin(113.64)}{c}$

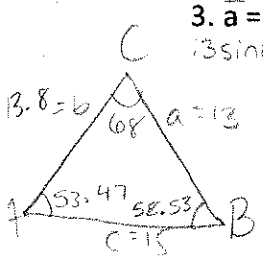
$C = \frac{11\sin(113.64)}{\sin(35)} = 17.57$



3. a = 13 c = 15 C = 68°

1 Sol.

$13\sin(68) = 12.05 < 15 > 13$



$\frac{\sin(68)}{15} = \frac{\sin(A)}{13}$

$A = \sin^{-1}\left(\frac{13\sin(68)}{15}\right) = 53.47$

$\frac{\sin(68)}{15} = \frac{\sin(58.53)}{b}$

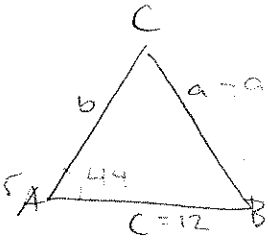
$b = \frac{15\sin(58.53)}{\sin(68)} = 13.8$

4. a = 9 c = 12 A = 44°

2 Sol.

$12\sin(44) = 8.3 < 9 < 12$

Big △	Little △
$\frac{\sin(44)}{9} = \frac{\sin(C)}{12}$	$\angle C = 180 - 67.85 = 112.15$
$C = \sin^{-1}\left(\frac{12\sin(44)}{9}\right) = 67.85$	$\angle B = 23.85$
$B = 68.15$	$\frac{\sin(44)}{9} = \frac{\sin(23.85)}{b}$
$\frac{\sin(44)}{9} = \frac{\sin(68.15)}{b}$	$b = \frac{9\sin(23.85)}{\sin(44)} = 5.24$
$b = \frac{9\sin(68.15)}{\sin(44)} \approx 12.03$	



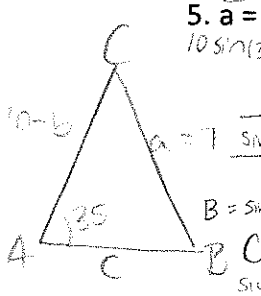
5. a = 7 b = 10 A = 35°

2 Sol.

$10\sin(35) = 5.7 < 7 < 10$

Big △	Little △
$\frac{\sin(35)}{7} = \frac{\sin(B)}{10}$	$B = 124.98$
$B = \sin^{-1}\left(\frac{10\sin(35)}{7}\right) = 55.02$	$C = 20.02$
$C = 89.98$	$\frac{\sin(35)}{7} = \frac{\sin(20.02)}{c}$
$\frac{\sin(35)}{7} = \frac{\sin(89.98)}{c}$	$c = \frac{7\sin(20.02)}{\sin(35)} = 4.18$
$c = \frac{7\sin(89.98)}{\sin(35)} = 12.2$	

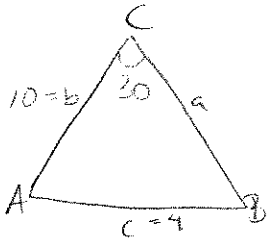
1 Sol.



6. c = 4 b = 10 C = 30°

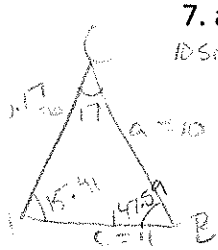
$10\sin(30) = 5 > 4$

NO SOLUTION



7. a = 10 c = 11 C = 17°

$10\sin(17) = 2.9 < 11 > 10$



$\frac{\sin(17)}{11} = \frac{\sin(A)}{10}$

$A = \sin^{-1}\left(\frac{10\sin(17)}{11}\right) = 15.41$

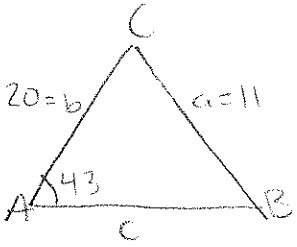
$\frac{\sin(147.59)}{b} = \frac{\sin(17)}{11}$

$b = \frac{11\sin(147.59)}{\sin(17)} \approx 20.17$

8. a = 11 b = 20 A = 43°

$20\sin(43) = 13.6 > 11$

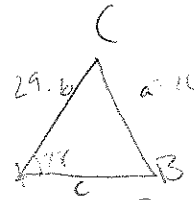
NO SOLUTION



FAT Law of Sines Ambiguous Case Name: _____ Period: _____

9. a = 26 b = 29 A = 28°

2 Sol.



$29\sin(28) = 13.6 < 26 < 29$

Big Δ

$\frac{\sin(28)}{26} = \frac{\sin(B)}{29}$

$B = \sin^{-1}\left(\frac{29\sin(28)}{26}\right) = 31.58$

$C = 120.42$

$\frac{\sin(28)}{26} = \frac{\sin(120.42)}{c}$

$c = \frac{26\sin(120.42)}{\sin(28)} = 47.76$

Little Δ

$B = 148.42$

$C = 3.58$

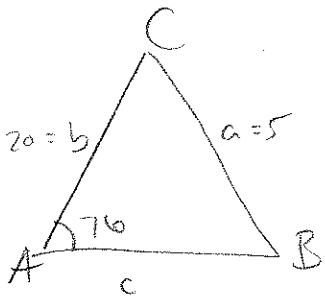
$\frac{\sin(28)}{26} = \frac{\sin(3.58)}{c}$

$c = \frac{26\sin(3.58)}{\sin(28)} = 3.49$

10. a = 5 b = 20 A = 76°

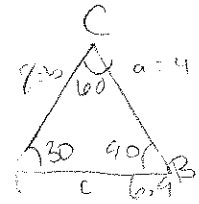
$20\sin(76) = 19.4 > 5$

NO SOLUTION



11. a = 4 b = 8 A = 30°

$8\sin(30) = 4 = 4$ Right Δ



$\frac{\sin(30)}{4} = \frac{\sin(B)}{8}$

$B = \sin^{-1}\left(\frac{8\sin(30)}{4}\right) = 90$

$4^2 + c^2 = 8^2$

$16 + c^2 = 64$

$c^2 = 48$

$c = \sqrt{48} = 6.9$

2 Sol.

12. a = 125 b = 150 A = 25°

$150\sin(25) = 63.4 < 125 < 150$

Big Δ

$\frac{\sin(25)}{125} = \frac{\sin(B)}{150}$

$B = \sin^{-1}\left(\frac{150\sin(25)}{125}\right) = 30.47$

$C = 124.53$

$\frac{\sin(25)}{125} = \frac{\sin(124.53)}{c}$

$c = \frac{125\sin(124.53)}{\sin(25)} = 243.67$

Little Δ

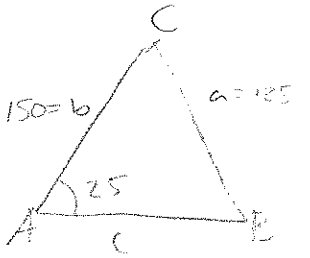
$B = 149.53$

$C = 5.47$

$\frac{\sin(25)}{125} = \frac{\sin(5.47)}{c}$

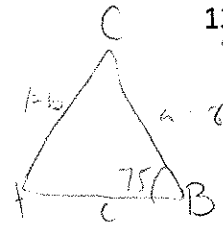
$c = \frac{125\sin(5.47)}{\sin(25)} = 28.19$

ASS 2 Sol.



13. a = 8 b = 7 B = 75°

$8\sin(75) = 7.7 > 7$



NO SOLUTION

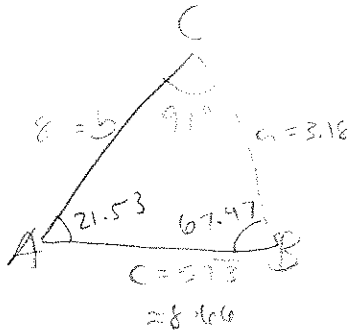
14. c = $5\sqrt{3}$ b = 8 C = 91°

$\frac{\sin(91)}{5\sqrt{3}} = \frac{\sin(B)}{8}$

$B = \sin^{-1}\left(\frac{8\sin(91)}{5\sqrt{3}}\right) = 67.47$

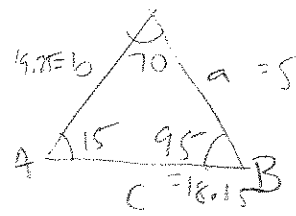
$\frac{\sin(91)}{5\sqrt{3}} = \frac{\sin(21.53)}{a}$

$a = \frac{5\sqrt{3}\sin(21.53)}{\sin(91)} = 3.18$



ASA 1 Sol.

15. a = 5 B = 95° C = 70°



$\frac{\sin(15)}{5} = \frac{\sin(95)}{b}$

$b = \frac{5\sin(95)}{\sin(15)} = 19.25$

$\frac{\sin(15)}{5} = \frac{\sin(70)}{c}$

$b = \frac{5\sin(70)}{\sin(15)} = 18.15$