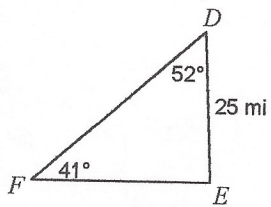


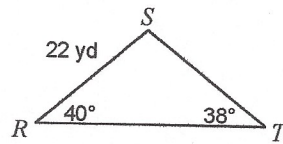
## Section 9.3 Law of Sines

Solve each triangle. Round your answers to the nearest tenth.

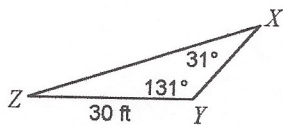
1)



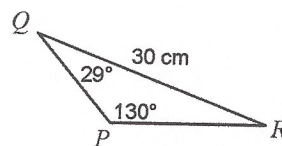
2)



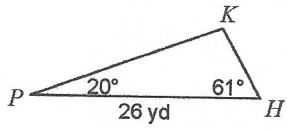
3)



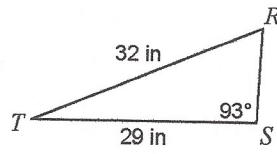
4)



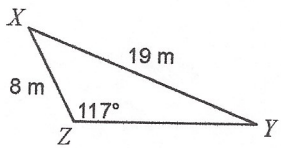
5)



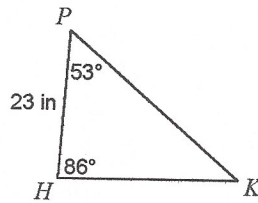
6)



7)



8)



9)  $m\angle A = 87^\circ$ ,  $m\angle B = 51^\circ$ ,  $a = 9$  mi

10)  $m\angle B = 38^\circ$ ,  $a = 10$  ft,  $b = 21$  ft

11)  $m\angle B = 48^\circ$ ,  $m\angle C = 98^\circ$ ,  $b = 12$  in

12)  $m\angle C = 137^\circ$ ,  $m\angle A = 17^\circ$ ,  $c = 28$  km

13)  $m\angle B = 58^\circ$ ,  $m\angle C = 29^\circ$ ,  $b = 28$  in

14)  $m\angle B = 138^\circ$ ,  $a = 24$  km,  $b = 43$  km

15)  $m\angle C = 98^\circ$ ,  $b = 26$  mi,  $c = 37$  mi

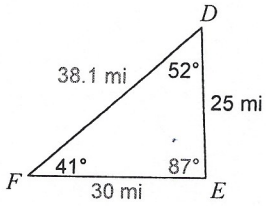
16)  $m\angle A = 91^\circ$ ,  $m\angle B = 28^\circ$ ,  $c = 28$  km

- 17) Juan and Romella are standing at the seashore 10 miles apart. The coastline is a straight line between them. Both can see the same ship in the water. The angle between the coastline and the line between the ship and Juan is 35 degrees. The angle between the coastline and the line between the ship and Romella is 45 degrees. How far is the ship from Juan?
- 18) Tom, Dick, and Harry are camping in their tents. If the distance between Tom and Dick is 153 feet, the distance between Tom and Harry is 201 feet, and the distance between Dick and Harry is 175 feet, what is the angle between Dick, Harry, and Tom?
- 19) Flights 104 and 217 are both approaching O'Hare International Airport from directions directly opposite one another and at an altitude of 2.5 miles. The pilot on flight 104 reports an angle of depression of  $17^{\circ}47'$  to the tower, and the pilot on flight 217 reports an angle of depression of  $12^{\circ}39'$  to the tower. Calculate the distance between the planes.

Section 9.3 Law of Sines

Solve each triangle. Round your answers to the nearest tenth.

1)



$\angle E = 87^\circ$

---

$d = 30$

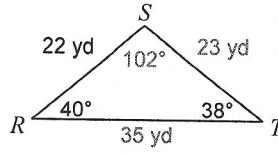
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$e = 38.1$

$$\frac{\sin 41}{25} = \frac{\sin 52}{d}$$

$$\frac{\sin 41}{25} = \frac{\sin 87}{e}$$

2)

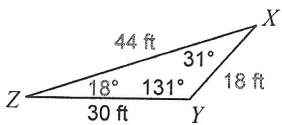


$\angle S = 102^\circ$

$$\frac{\sin 38}{22} = \frac{\sin 40}{r} \quad | \quad r = 23$$

$$\frac{\sin 38}{22} = \frac{\sin 102}{s} \quad | \quad s = 35$$

3)



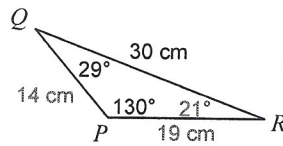
$\angle Z = 18^\circ$

$$\frac{\sin 31}{30} = \frac{\sin 131}{y}$$

$y = 44$

$$\frac{\sin 31}{30} = \frac{\sin 18}{z} \quad | \quad z = 18$$

4)



$\angle R = 21^\circ$

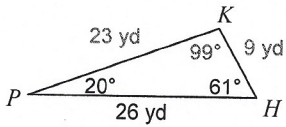
$$\frac{\sin 130}{30} = \frac{\sin 29}{q}$$

$q = 19$

$$\frac{\sin 130}{30} = \frac{\sin 21}{r}$$

$r = 14$

5)

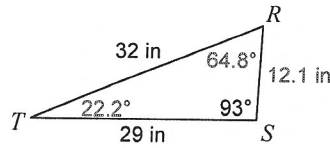


$$\angle K = 99^\circ$$

$$\frac{\sin 99}{26} = \frac{\sin 20}{p} \quad | \quad p = 9$$

$$\frac{\sin 99}{26} = \frac{\sin 61}{h} \quad | \quad h = 23$$

6)



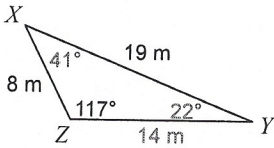
$$\frac{\sin 93}{32} = \frac{\sin R}{29}$$

$$\frac{\sin 93}{32} = \frac{\sin 22.2}{t} \quad | \quad \angle R \approx 65^\circ$$

$$\angle T \approx 22^\circ$$

$$t = 12$$

7)

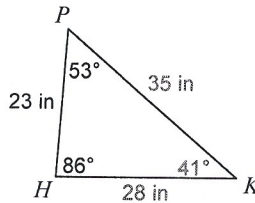


$$\frac{\sin 117}{19} = \frac{\sin Y}{8} \quad | \quad \angle Y \approx 22^\circ$$

$$\angle X \approx 41^\circ$$

$$\frac{\sin 117}{19} = \frac{\sin 41}{x} \quad | \quad x \approx 14$$

8)



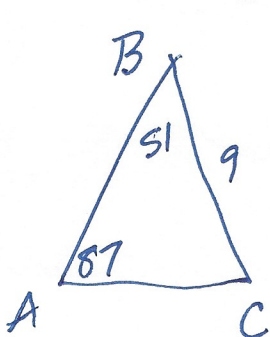
$$\angle K \approx 41^\circ$$

$$\frac{\sin 41}{23} = \frac{\sin 53}{p} \quad | \quad p = 28$$

$$\frac{\sin 41}{23} = \frac{\sin 86}{h} \quad | \quad h = 35$$

9)  $m\angle A = 87^\circ$ ,  $m\angle B = 51^\circ$ ,  $a = 9$  mi

$m\angle C = 42^\circ$ ,  $b = 7$  mi,  $c = 6$  mi



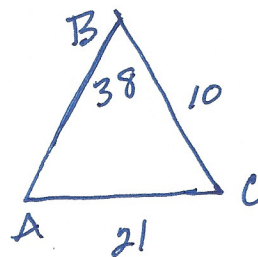
$$\angle C = 42^\circ$$

$$\frac{\sin 87}{9} = \frac{\sin 51}{b} \quad | \quad b = 7$$

$$\frac{\sin 87}{9} = \frac{\sin 42}{c} \quad | \quad c = 6$$

10)  $m\angle B = 38^\circ$ ,  $a = 10$  ft,  $b = 21$  ft

$m\angle C = 125^\circ$ ,  $m\angle A = 17^\circ$ ,  $c = 27.9$  ft



$$\frac{\sin 38}{21} = \frac{\sin A}{10}$$

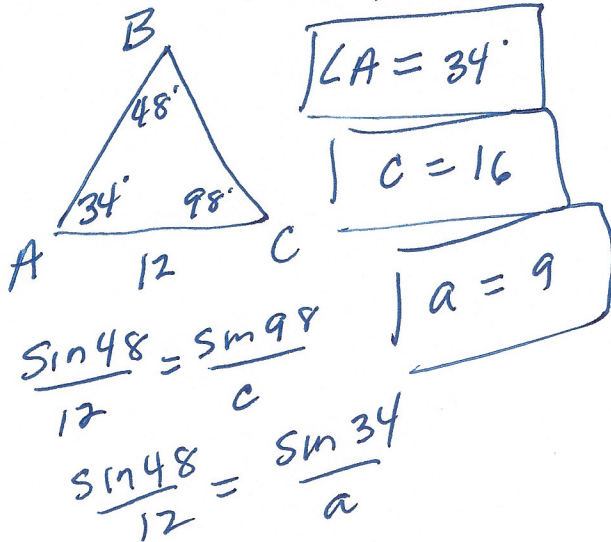
$$\angle A \approx 17^\circ$$

$$\angle C \approx 125^\circ$$

$$\frac{\sin 125}{c} = \frac{\sin 38}{21} \quad | \quad c = 27.9$$

11)  $m\angle B = 48^\circ, m\angle C = 98^\circ, b = 12$  in

$m\angle A = 34^\circ, c = 16$  in,  $a = 9$  in

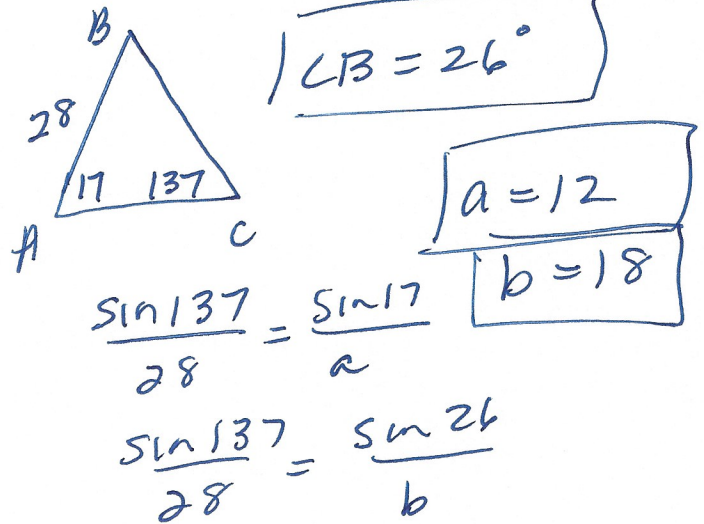


$$\frac{\sin 48}{12} = \frac{\sin 98}{c}$$

$$\frac{\sin 48}{12} = \frac{\sin 34}{a}$$

12)  $m\angle C = 137^\circ, m\angle A = 17^\circ, c = 28$  km

$m\angle B = 26^\circ, b = 18$  km,  $a = 12$  km

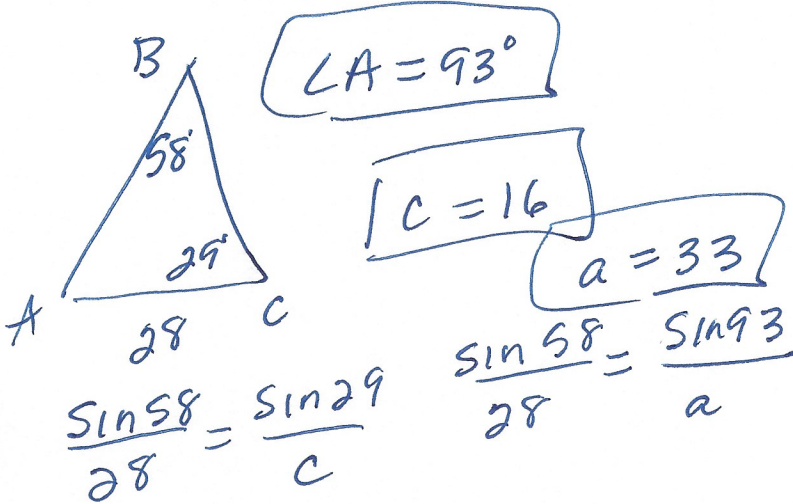


$$\frac{\sin 137}{28} = \frac{\sin 17}{a}$$

$$\frac{\sin 137}{28} = \frac{\sin 26}{b}$$

13)  $m\angle B = 58^\circ, m\angle C = 29^\circ, b = 28$  in

$m\angle A = 93^\circ, c = 16$  in,  $a = 33$  in

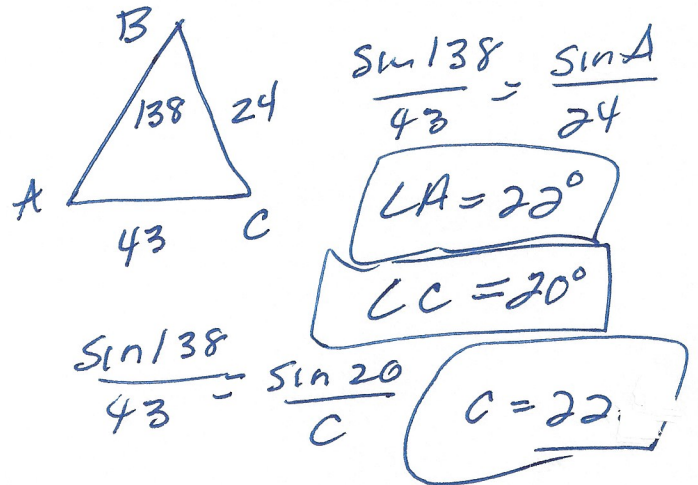


$$\frac{\sin 58}{28} = \frac{\sin 29}{c}$$

$$\frac{\sin 58}{28} = \frac{\sin 93}{a}$$

14)  $m\angle B = 138^\circ, a = 24$  km,  $b = 43$  km

$m\angle C = 20.1^\circ, m\angle A = 21.9^\circ, c = 22.1$  km

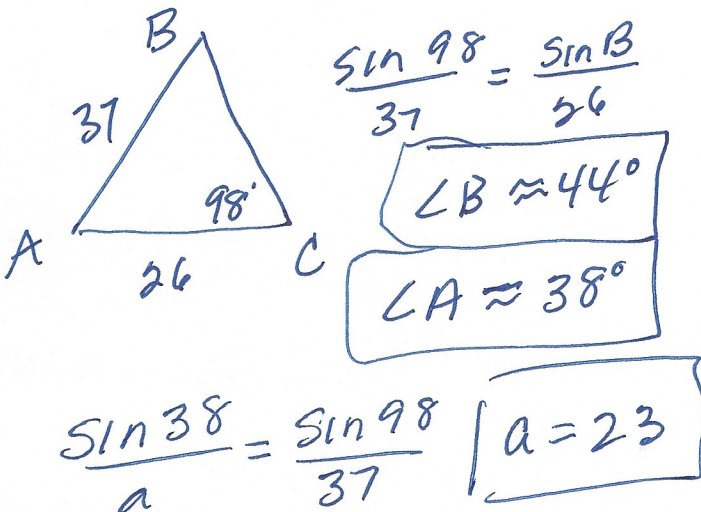


$$\frac{\sin 138}{43} = \frac{\sin A}{24}$$

$$\frac{\sin 138}{43} = \frac{\sin 20}{c}$$

15)  $m\angle C = 98^\circ, b = 26$  mi,  $c = 37$  mi

$m\angle A = 37.9^\circ, m\angle B = 44.1^\circ, a = 23$  mi



$$\frac{\sin 98}{37} = \frac{\sin B}{26}$$

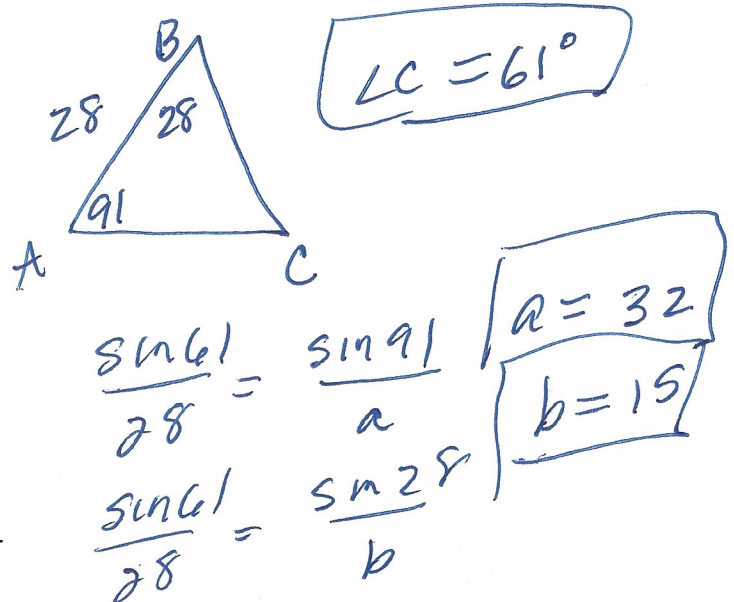
$$\angle B \approx 44^\circ$$

$$\angle A \approx 38^\circ$$

$$\frac{\sin 38}{a} = \frac{\sin 98}{37} \quad | \quad a = 23$$

16)  $m\angle A = 91^\circ, m\angle B = 28^\circ, c = 28$  km

$m\angle C = 61^\circ, a = 32$  km,  $b = 15$  km



$$\angle C = 61^\circ$$

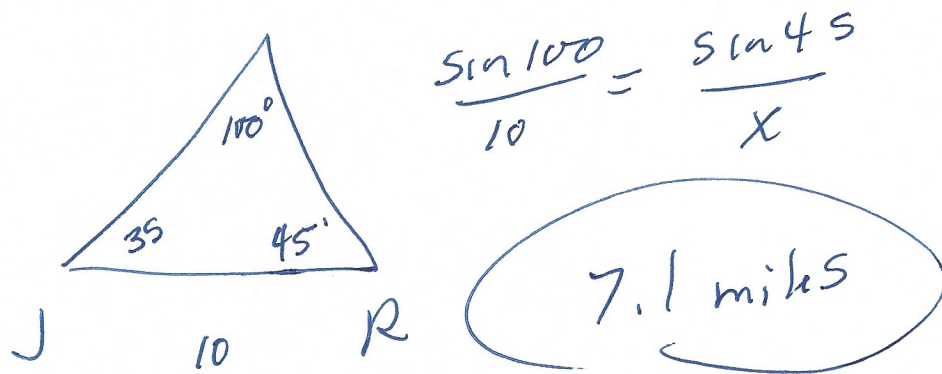
$$\frac{\sin 61}{28} = \frac{\sin 91}{a}$$

$$\frac{\sin 61}{28} = \frac{\sin 28}{b}$$

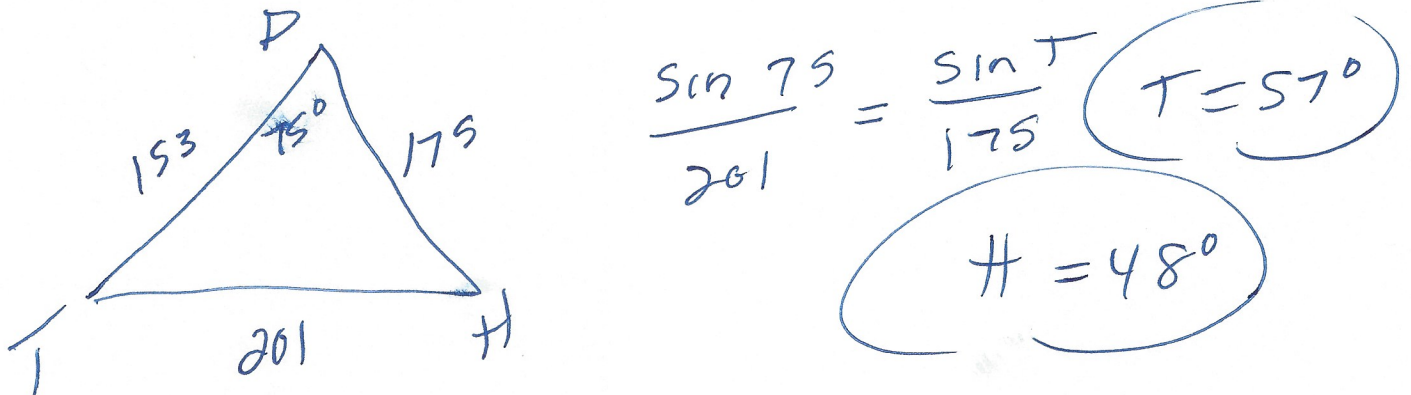
$$a = 32$$

$$b = 15$$

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