Student: _____ **Date:** _____	**Instructor:** Joe Betters **Course:** Pre-Calculus Pre AP (Master Course)	**Assignment:** 8.2 Classwork Day 1

1. Solve the following triangle.

$A = 40^\circ$, $B = 40^\circ$, $c = 6$

Determine the value of C.

$C =$ _____ $^\circ$
(Round to the nearest whole number as needed.)

Determine the value of a.

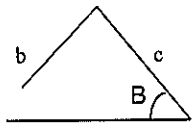
$a =$ _____
(Round to two decimal places as needed.)

Determine the value of b.

$b =$ _____
(Round to two decimal places as needed.)

ID: 8.2.23

2. Two sides and an angle are given below. Determine whether the given information results in one triangle, two triangles, or no triangle at all. Solve any triangle(s) that results.



$b = 7$, $c = 9$, $B = 20^\circ$

Select the correct choice below and, if necessary, fill in the answer boxes to complete your choice.
(Type an integer or decimal rounded to two decimal places as needed.)

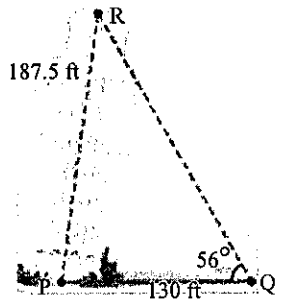
○ **A.** A single triangle is produced, where $C \approx$ _____ $^\circ$, $A \approx$ _____ $^\circ$, and $a \approx$ _____.

○ **B.** Two triangles are produced, where the triangle with the smaller angle C has $C_1 \approx$ _____ $^\circ$, $A_1 \approx$ _____ $^\circ$, and $a_1 \approx$ _____, and the triangle with the larger angle C has $C_2 \approx$ _____ $^\circ$, $A_2 \approx$ _____ $^\circ$, and $a_2 \approx$ _____.

○ **C.** No triangles are produced.

ID: 8.2.31

3. A famous leaning tower was originally 187.5 feet high. At a distance of 130 feet from the base of the tower, the angle of elevation to the top of the tower is found to be 56°. Find ∠RPQ indicated in the figure. Also find the perpendicular distance from R to PQ.



Determine the value of ∠RPQ.

∠RPQ = _____ °

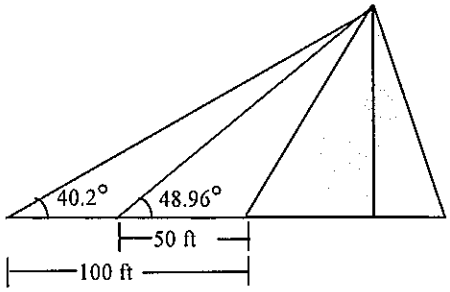
(Round the final answer to one decimal place as needed. Round all intermediate values to four decimal places as needed.)

The perpendicular distance from R to PQ is _____ feet.

(Round to two decimal places as needed.)

ID: 8.2.47

4. A pyramid was built about 2600 BC. Its original height was 195 feet, 7 inches, but due to loss of its topmost stones, it is now shorter. Find the current height of the pyramid, using the information given in the figure on the right.



The current height of the pyramid is _____ feet.

(Do not round until the final answer. Then round to two decimal places as needed.)

ID: 8.2.53

1. 100

   3.92

   3.92

---

2. B.

   Two triangles are produced, where the triangle with the smaller angle C has $C_1 \approx$ **26.09** °,

   $A_1 \approx$ **133.91** °, and $a_1 \approx$ **14.74**, and the triangle with the larger angle C has $C_2 \approx$ **153.91** °,

   $A_2 \approx$ **6.09** °, and $a_2 \approx$ **2.17**.

---

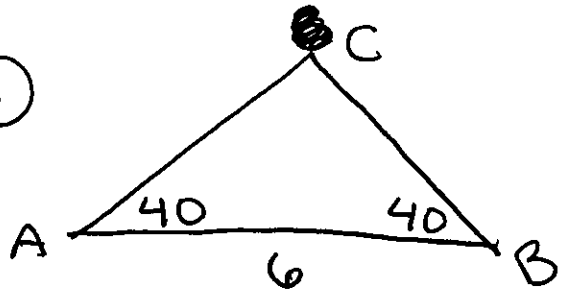
3. 88.9

   187.47

---

4. 159.83

8.2 cw day 1

① 

$180-40-40=C$

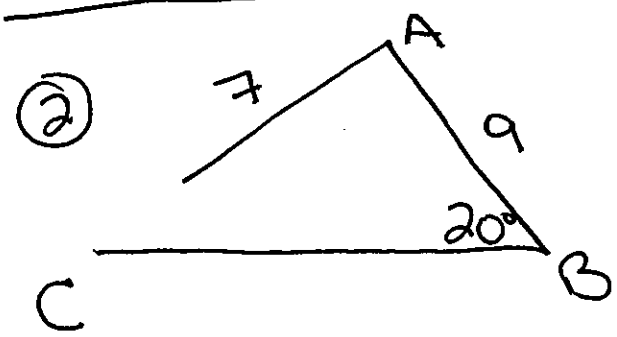
$C=100°$

$$\frac{\sin 100}{6}=\frac{\sin 40}{b}$$

$b=3.92$

* isosceles so $a=3.92$

8.2 cw day 1

② 

$\frac{\sin 20}{7} = \frac{\sin C}{9}$ $C = 26.09^\circ$

$180 - 26.09 - 20 = A$ $A = 133.91^\circ$ ✓

$\frac{\sin 133.91}{a} = \frac{\sin 20}{7}$ $a = 14.74$

---

* because only 1 angle given, check for other solutions

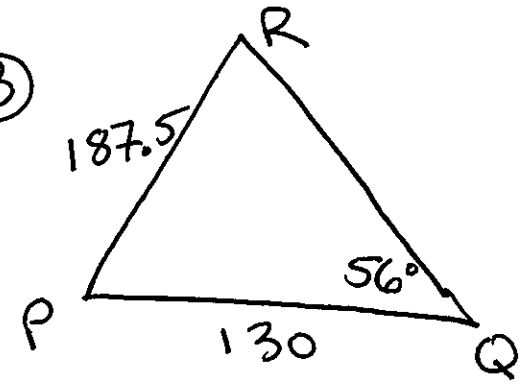
$180 - 26.09 = C$ $C = 153.91^\circ$

$180 - 153.91 - 20 = A$ $A = 6.09^\circ$ ✓

$\frac{\sin 20}{7} = \frac{\sin 6.09}{a}$ $a = 2.17$

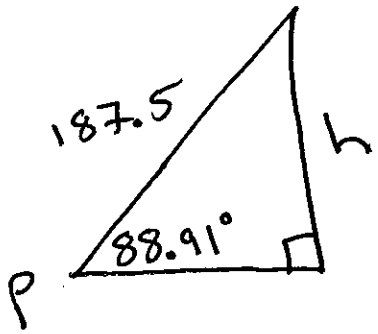
8.2 cw day 1

③



$\frac{\sin 56}{187.5} = \frac{\sin R}{130}$ $R = 35.09°$

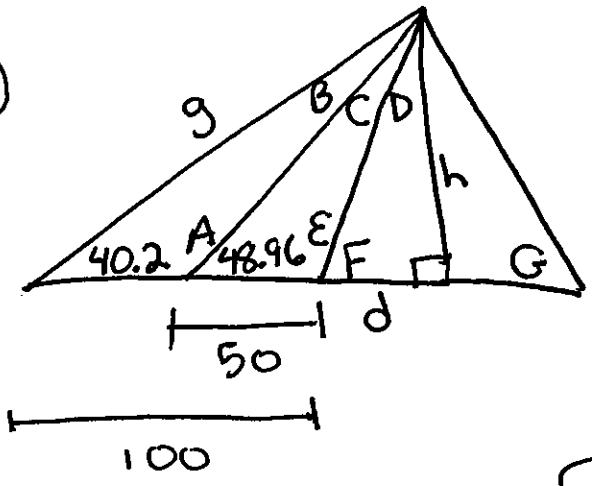
$180 - 56 - 35.09 = P$ $P = 88.91°$



$\frac{\sin 90}{187.5} = \frac{\sin 88.91}{h}$ $h = 187.47$

8.2 cw day 1

(4)



$A = 180 - 48.96 =$ **A = 131.04°**

$B = 180 - 40.2 - 131.04 =$ **B = 8.76**

$$\frac{\sin 8.76}{50} = \frac{\sin 131.04}{9}$$ **9 = 247.63**

$$\frac{\sin 90}{247.63} = \frac{\sin 40.2}{h}$$ **h = 159.83**