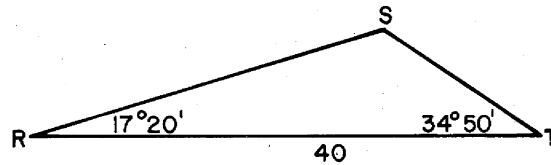


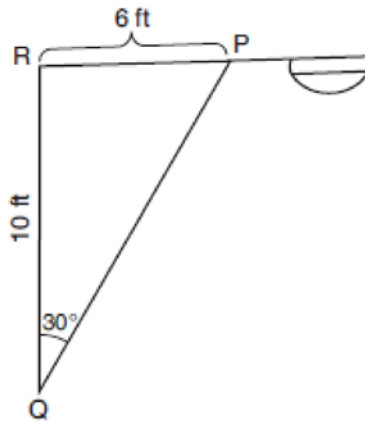
G.SRT.D.11: Law of Sines 5

- 1 In the accompanying diagram of triangle RST , $m\angle R = 17^\circ 20'$, $RT = 40$, and $m\angle T = 34^\circ 50'$.

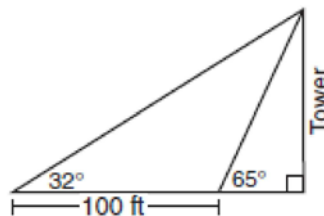


What is the length of $\overline{RS}$ to the *nearest integer*?

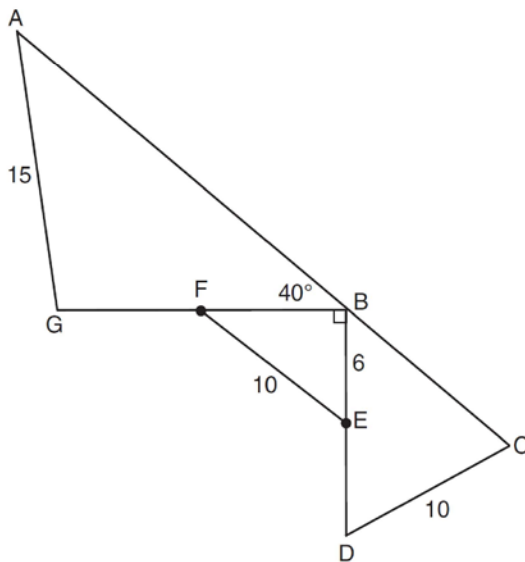
- 2 In the accompanying diagram of a streetlight, the light is attached to a pole at R and supported by a brace, $\overline{PQ}$, $RQ = 10$ feet, $RP = 6$ feet, $\angle PRQ$ is an obtuse angle, and $m\angle PQR = 30$. Find the length of the brace, $\overline{PQ}$, to the *nearest foot*.



- 3 The accompanying diagram shows the plans for a cell-phone tower that is to be built near a busy highway. Find the height of the tower, to the *nearest foot*.

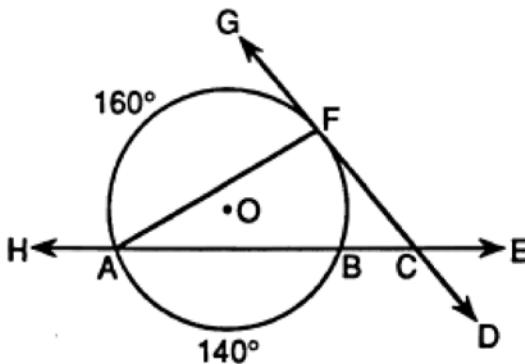


- 4 Given: $DC = 10$, $AG = 15$, $BE = 6$, $FE = 10$, $m\angle ABG = 40$, $m\angle GBD = 90$, $m\angle C < 90$, $\overline{BE} \cong \overline{ED}$, and $\overline{GF} \cong \overline{FB}$



Find $m\angle A$ to the *nearest tenth*. Find BC to the *nearest tenth*.

- 5 In triangle ABC , $m\angle A = 27^\circ 10'$, $m\angle B = 33^\circ 20'$, and $BC = 12$ centimeters. Find the length of side $\overline{AB}$ to the nearest centimeter.
- 6 In $\triangle ABC$, $m\angle B = 38^\circ$, $m\angle C = 56^\circ 20'$, and $a = 12$. Find the length of side c to the nearest integer.
- 7 Carmen and Jamal are standing 5,280 feet apart on a straight, horizontal road. They observe a hot-air balloon between them directly above the road. The angle of elevation from Carmen is 60° and from Jamal is 75° . Draw a diagram to illustrate this situation and find the height of the balloon to the nearest foot.
- 8 In the accompanying diagram, $\overleftrightarrow{DCFG}$ is tangent to circle O at F , $\overleftrightarrow{ECH}$ is a secant intersecting the circle at A and B , $m\widehat{AB} = 140$ and $m\widehat{AF} = 160$. If $FC = 10$, find AF to the nearest tenth.



G.SRT.D.11: Law of Sines 5 **Answer Section**

1 ANS:
29

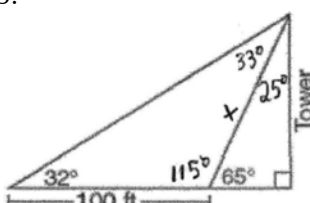
REF: 088438siii

2 ANS:

$$\begin{aligned} \frac{10}{\sin P} &= \frac{6}{\sin 30} & \frac{r}{\sin 94} &= \frac{6}{\sin 30} \\ \sin P &= \frac{10 \sin 30}{6} & r &= \frac{6 \sin 94}{\sin 30} \\ 12. \quad P &= \sin^{-1} \frac{10 \sin 30}{6} & r &\approx 12 \\ P &\approx 56^\circ \end{aligned}$$

REF: 060728b

3 ANS:

88. 

$$\begin{aligned} \frac{x}{\sin 32} &= \frac{100}{\sin 33} \\ x &= \frac{100 \sin 32}{\sin 33} \quad \sin 65 \approx \frac{T}{97.3} \\ x &\approx 97.3 & T &\approx 88 \end{aligned}$$

REF: 080527b

4 ANS:

$$\begin{aligned} \frac{16}{\sin A} &= \frac{15}{\sin 40} & \frac{10}{\sin 50} &= \frac{12}{\sin C} & \frac{d}{\sin 63.2} &= \frac{12}{\sin 66.8} \\ \sin A &= \frac{16 \sin 40}{15} & \sin C &= \frac{12 \sin 50}{10} & d &= \frac{12 \sin 63.2}{\sin 66.8} \\ A &\approx 43.3 & C &\approx 66.8 & d &\approx 11.7 \end{aligned}$$

REF: 011639a2

5 ANS:
14

REF: 018139siii

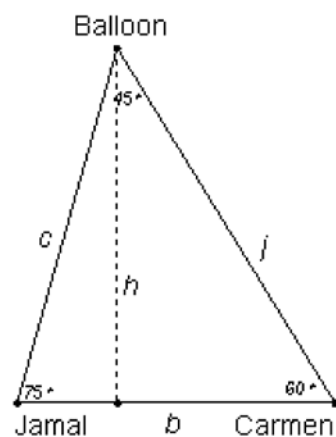
6 ANS:

$$\frac{c}{\sin 56^\circ 20'} = \frac{12}{\sin(180 - (38 + 56.3))}$$

$$c \approx 10$$

REF: 068341siii

7 ANS:



$$\frac{j}{\sin 75} = \frac{5280}{\sin 45} = \frac{c}{\sin 60}$$

$$6,246. \quad j = \frac{5280 \sin 75}{\sin 45} \quad c = \frac{5280 \sin 60}{\sin 45} \quad \sin 60 \approx \frac{h}{7212.6} \quad \sin 75 \approx \frac{h}{6466.7}$$

$$j \approx 7212.6 \quad c \approx 6466.7 \quad h \approx 6246 \quad h \approx 6246$$

REF: 080233b

8 ANS:

$$m\widehat{FB} = 60, m\angle FAB = 30, m\angle C = \frac{160 - 60}{2} = 50, m\angle AFC = 100 \quad \frac{x}{\sin 100} = \frac{10}{\sin 30}$$

$$x \approx 19.7$$

REF: 089138siii