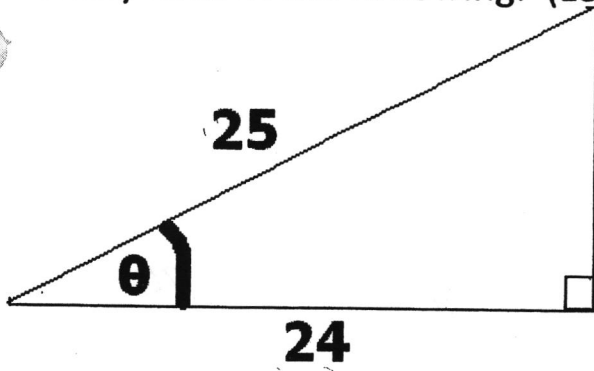


STATION 1

1. Identify each of the following. (Leave answers in fraction form.)



$$\sin \theta =$$

$$\cos \theta =$$

$$\tan \theta =$$

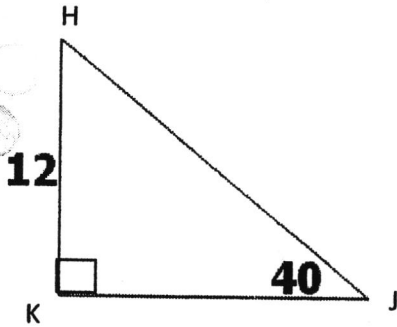
$$\csc \theta =$$

$$\sec \theta =$$

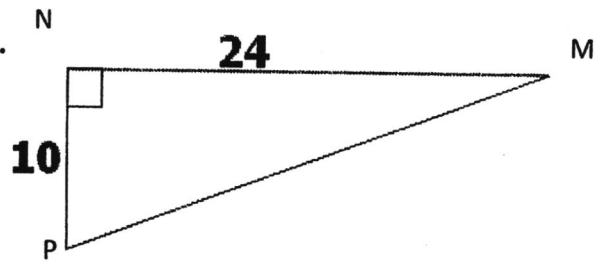
$$\cot \theta =$$

Solve the following triangles

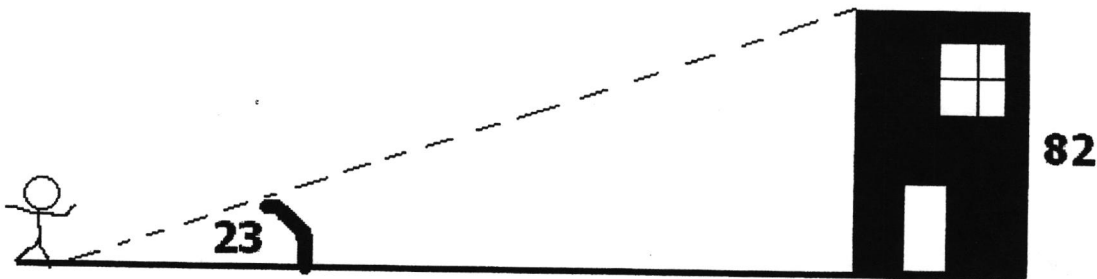
2.



3.



4. How far away is the building?



STATION 2

Solve this triangle

$$A = 30^\circ$$

$$B =$$

$$C =$$

$$a = 17m$$

$$b =$$

$$c = 16m$$

6 Solve this triangle

$$A = 103^\circ$$

$$B =$$

$$C =$$

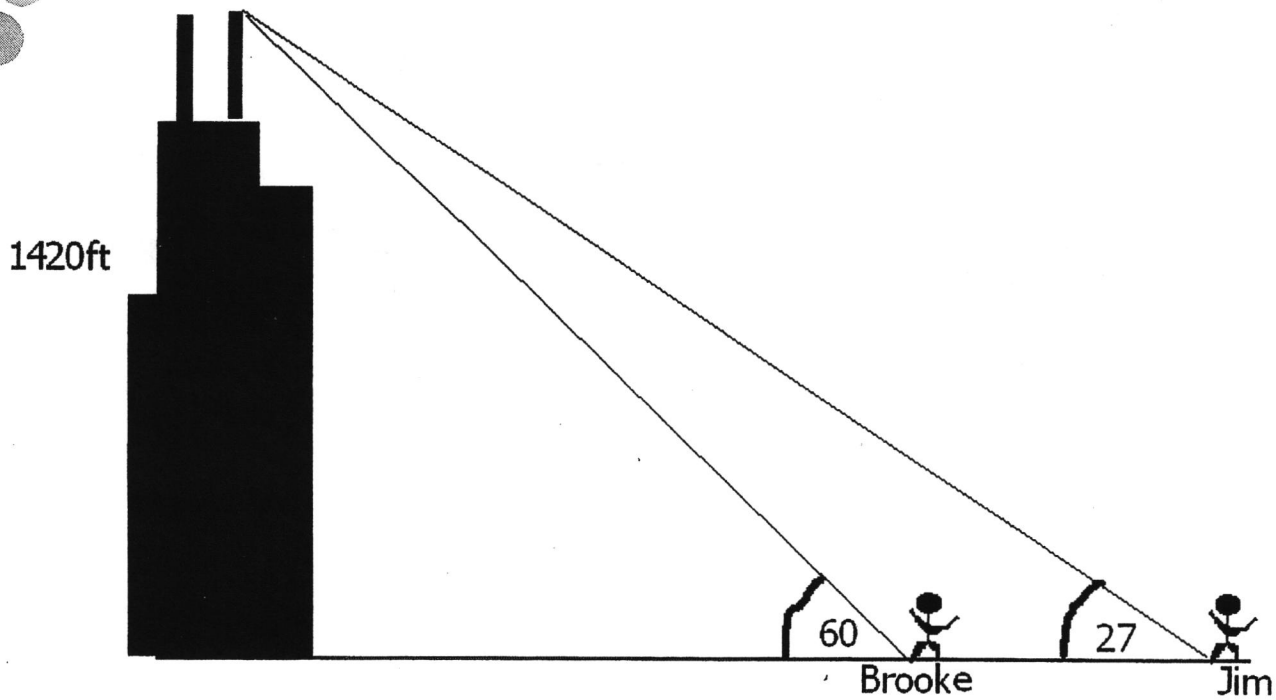
$$a = 30ft$$

$$b = 8ft$$

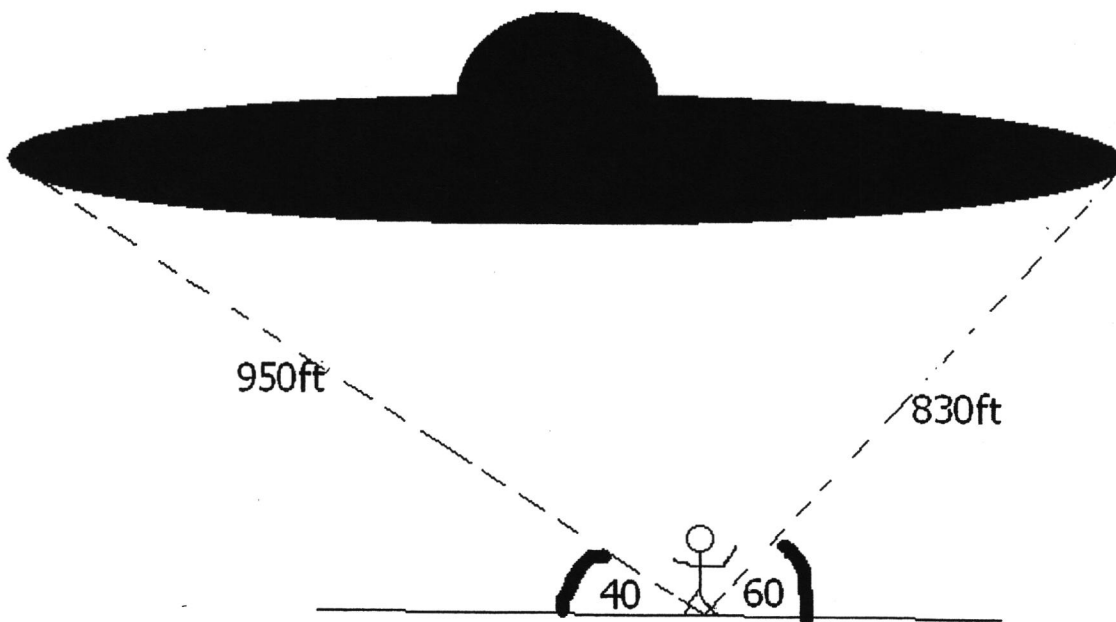
$$c =$$

STATION 3

7. Jim, Brook, and the Sears Tower are lined up as shown. How far apart are Jim and Brooke?

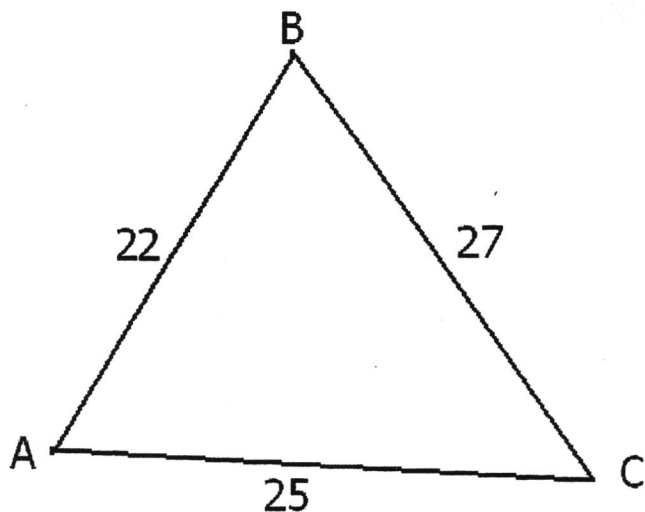


Izzy's town is invaded by flying saucers. Izzy looks up and measures the angles of elevation and the distance to each side of a flying saucer. What is the diameter of the UFO?

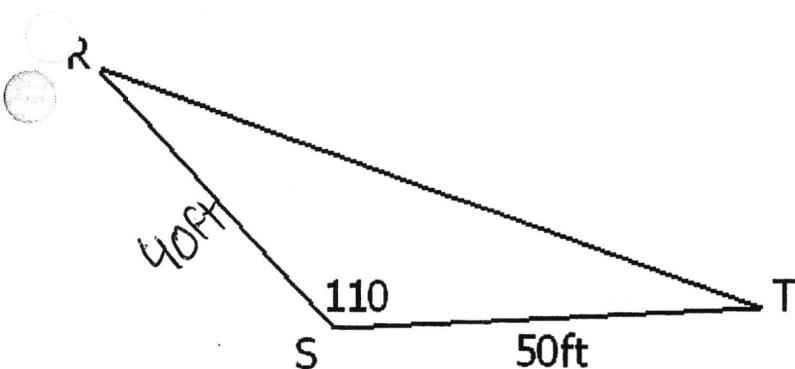


STATION 4

Solve this triangle

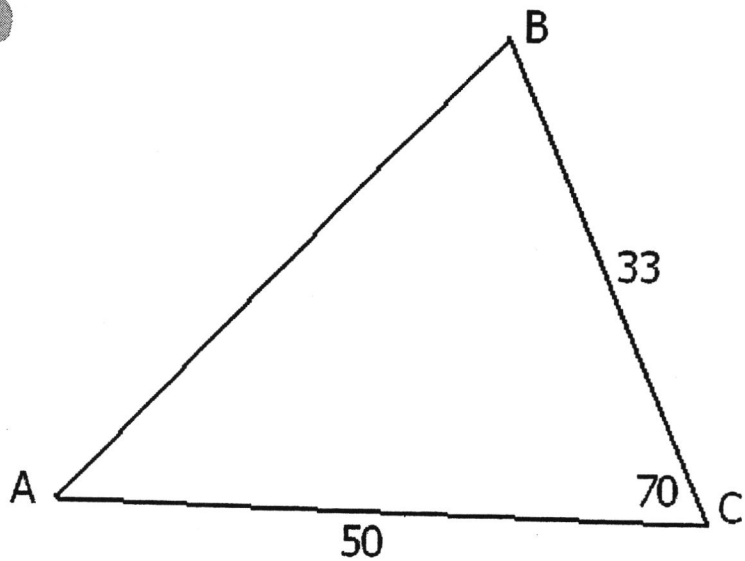


10. Solve this triangle

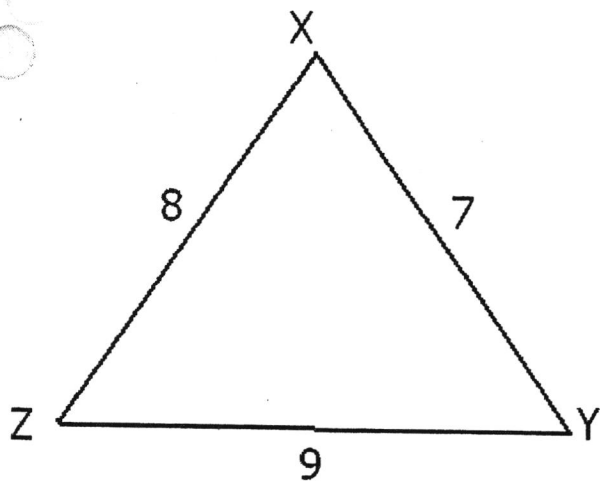


Station 5

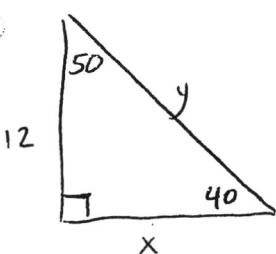
11. Find the area

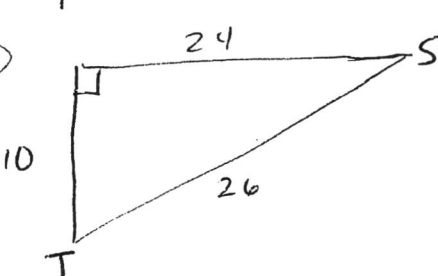


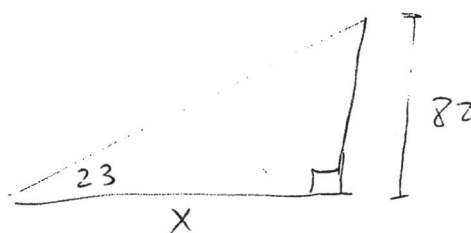
12. Find the area

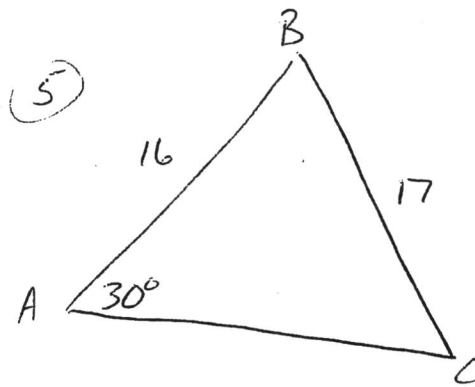


① $\sin \theta = \frac{7}{25}$
 $\cos \theta = \frac{24}{25}$
 $\tan \theta = \frac{7}{24}$
 $\csc \theta = \frac{25}{7}$
 $\sec \theta = \frac{25}{24}$
 $\cot \theta = \frac{24}{7}$

②  $\tan 50 = \frac{x}{12} \rightarrow x = 14.3$
 $\sin 40 = \frac{12}{y} \rightarrow y = 18.7$

③  $\tan S = \frac{10}{24} \rightarrow S = 22.6$
 $\tan T = \frac{24}{10} \rightarrow T = 67.3$

④  $\tan 23 = \frac{82}{x} \rightarrow x = 193.24$



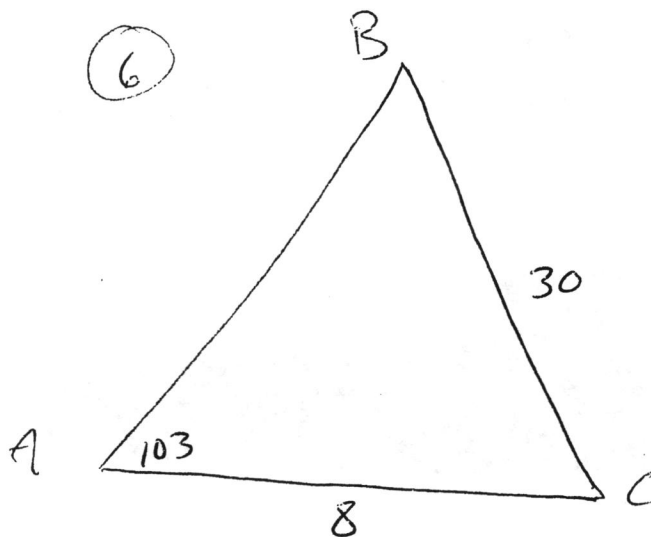
$$\begin{aligned} A &= 30 \\ B &= 122 \\ C &= 28 \\ a &= 17 \\ b &= 28.8 \\ c &= 16 \end{aligned}$$

$$\frac{\sin 30}{17} = \frac{\sin C}{16} \rightarrow C = 28 \text{ or } 102$$

$$B = 122$$

$$\frac{\sin 30}{17} = \frac{\sin 122}{b} \rightarrow b = 28.8$$

2nd sol is false



$$\begin{aligned} A &= 103^\circ \\ B &= 15.1 \\ C &= 61.9 \\ a &= 30 \\ b &= 8 \\ c &= 27.2 \end{aligned}$$

$$\frac{\sin 103}{30} = \frac{\sin B}{8} \rightarrow B = 15.1 \text{ or } 164.9$$

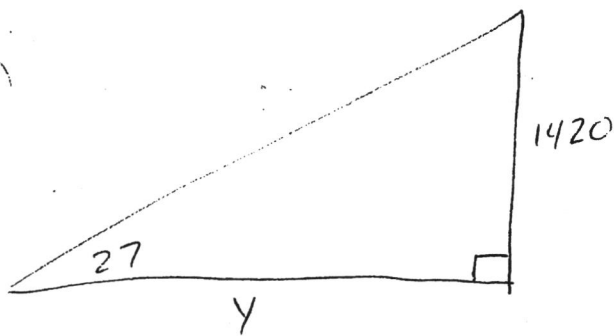
$$C = 61.9$$

$$c = 27.2$$

2nd sol is false

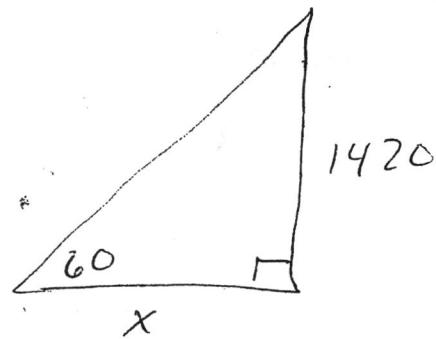
$$\frac{\sin 61.9}{c} = \frac{\sin 103}{30}$$

7



$$\tan 27 = \frac{1420}{y}$$

$$y = 2,787$$

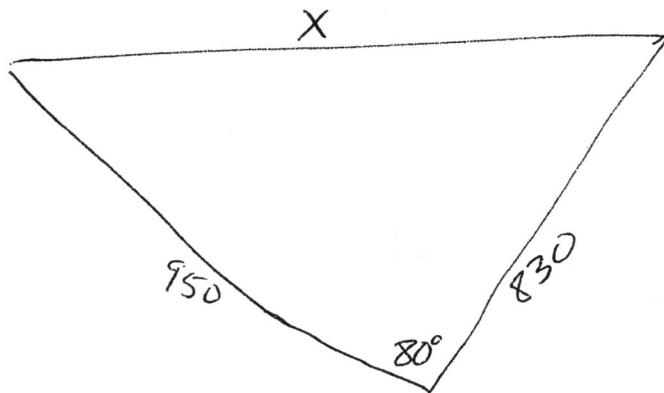


$$\tan 60 = \frac{1420}{x}$$

$$x = 819.8$$

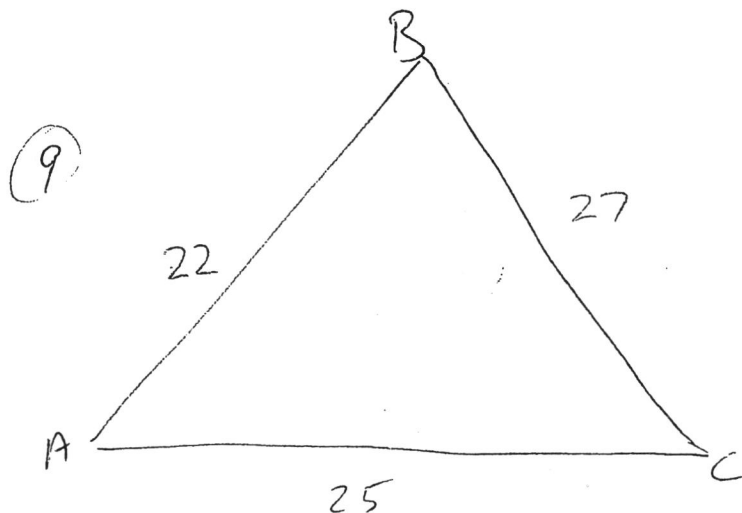
$$\text{distance} = 2,787 - 819.8 = \boxed{1967.2 \text{ ft.}}$$

8



$$x^2 = 950^2 + 830^2 - 2 \cdot 950 \cdot 830 \cos 80$$

$$\boxed{x = 1147.8 \text{ ft.}}$$



$$\begin{aligned} A &= 69.8 \\ B &= 60.3 \\ C &= 49.9 \end{aligned}$$

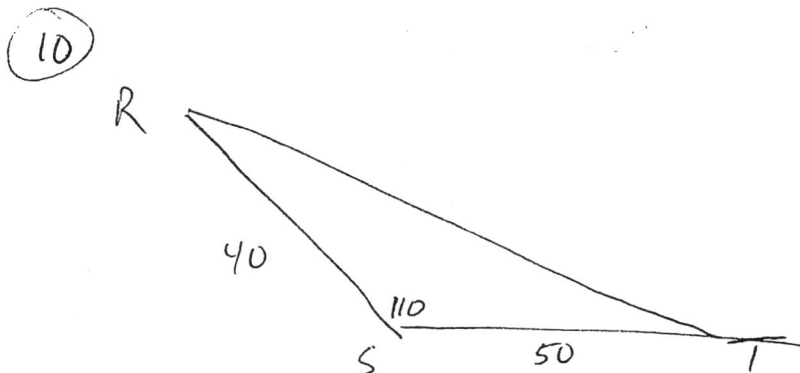
$$\begin{aligned} a &= 27 \\ b &= 25 \\ c &= 22 \end{aligned}$$

$$27^2 = 22^2 + 25^2 - 2 \cdot 22 \cdot 25 \cos A$$

$$729 = 1109 - 1100 \cos A$$

$$A = 69.8 \text{ or } (-110.2) \text{ triangle is acute}$$

$$\frac{\sin 69.8}{27} = \frac{\sin B}{25} \quad B = 60.3$$



$$r^2 = 40^2 + 50^2 - 2 \cdot 40 \cdot 50 \cos 110$$

$$r = 73.9$$

$$\frac{\sin R}{50} = \frac{\sin 110}{73.9} \rightarrow R = 39.5$$

$$R = 39.5$$

$$S = 110$$

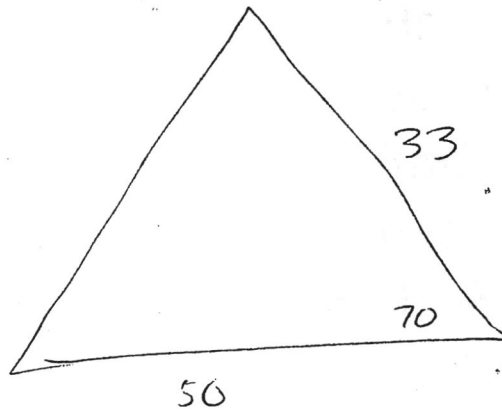
$$T = 30.5$$

$$r = 50$$

$$s = 73.9$$

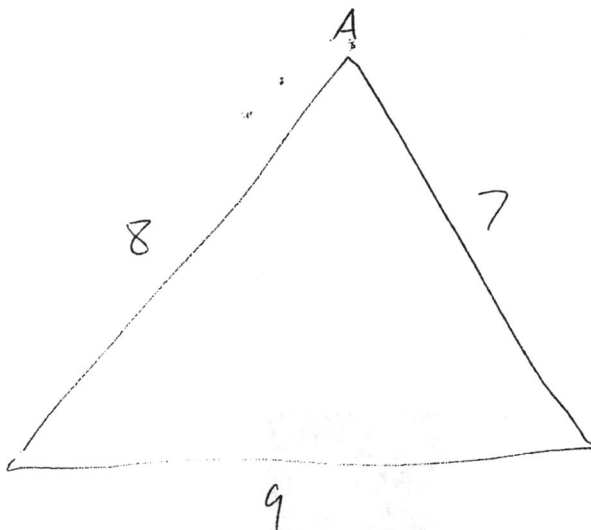
$$t = 40$$

11



$$\begin{aligned} A &= \frac{1}{2} ab \sin C \\ &= \frac{1}{2} \cdot 50 \cdot 33 \cdot \sin 70 \\ &= 775.2 \end{aligned}$$

12



$$\begin{aligned} 9^2 &= 8^2 + 7^2 - 2 \cdot 8 \cdot 7 \cos A \\ 81 &= 113 - 112 \cos A \\ A &= 73.4^\circ \end{aligned}$$

$$\begin{aligned} A &= \frac{1}{2} 8 \cdot 7 \cdot \sin 73.4 \\ A &= 26.8 \end{aligned}$$

$$S = \frac{1}{2} (8 + 7 + 9) = 12$$

or

$$\begin{aligned} A &= \sqrt{12(12-8)(12-7)(12-9)} \\ &= \sqrt{12 \cdot 4 \cdot 5 \cdot 3} \\ &= \sqrt{720} = 26.8 \end{aligned}$$