

TT 1. *Foundations and Pre-calculus Mathematics 10* (Pearson), question 6 on page 111
Possible Solutions

6. a) angle T = $90^\circ - 33^\circ$
= 57°

$$\sin 33^\circ = \frac{12.5 \text{ cm}}{\overline{TU}}$$

$$\overline{TU} \sin 33^\circ = 12.5$$

$$\overline{TU} = \frac{12.5}{\sin 33^\circ}$$

$$\overline{TU} = 23.0 \text{ cm}$$

$$\tan 33^\circ = \frac{12.5 \text{ cm}}{\overline{UV}}$$

$$\overline{UV} \tan 33^\circ = 12.5$$

$$\overline{UV} = \frac{12.5}{\tan 33^\circ}$$

$$\overline{UV} = 19.2 \text{ cm}$$

b) angle Y = $90^\circ - 47^\circ$
= 43°

$$\cos 47^\circ = \frac{5.9 \text{ cm}}{\overline{WY}}$$

$$\overline{WY} \cos 47^\circ = 5.9$$

$$\overline{WY} = \frac{5.9}{\cos 47^\circ}$$

$$\overline{TU} = 8.7 \text{ cm}$$

$$\tan 47^\circ = \frac{\overline{XY}}{5.9 \text{ cm}}$$

$$\overline{XY} = 5.9 \times \tan 47^\circ$$

$$\overline{XY} = 6.3 \text{ cm}$$

$$\begin{aligned}\mathbf{c)} \quad (\overline{BZ})^2 &= 9.8^2 + 5.6^2 \\ (\overline{BZ})^2 &= 96.04 + 31.36 \\ (\overline{BZ})^2 &= 127.4 \\ \sqrt{(\overline{BZ})^2} &= \sqrt{127.4} \\ \overline{BZ} &= 11.3\end{aligned}$$

$$\begin{aligned}\tan B &= \frac{9.8 \text{ cm}}{5.6 \text{ cm}} \\ B &= \tan^{-1}\left(\frac{9.8}{5.6}\right) \\ B &= 60.3^\circ\end{aligned}$$

$$\begin{aligned}Z &= 90^\circ - 60.3^\circ \\ &= 29.7^\circ\end{aligned}$$

d)

$$\cos 29^\circ = \frac{\overline{CD}}{13.7 \text{ cm}}$$

$$13.7 \cos 29^\circ = \overline{CD}$$

$$\overline{CD} = 12.0 \text{ cm}$$

$$\sin 29^\circ = \frac{\overline{CE}}{13.7 \text{ cm}}$$

$$13.7 \sin 29^\circ = \overline{CE}$$

$$\overline{CE} = 6.6 \text{ cm}$$