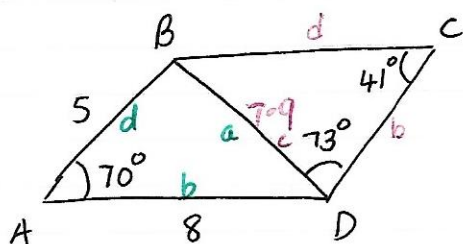


# Year 10 Trig. in 2 Stages : Answers

1)



Use  $\triangle ABD$

$$a^2 = b^2 + d^2 - 2bd \cos A$$

$$BD^2 = 8^2 + 5^2 - 2(8)(5) \cos 70^\circ$$

$$BD^2 = 64 + 25 - 80 \cos 70^\circ$$

$$BD^2 = 89 - 80 \cos 70^\circ$$

$$BD^2 = 89 - (27.36)$$

$$BD^2 = 61.64$$

$$BD = 7.9 \text{ cm}$$

Now use  $\triangle BCD$

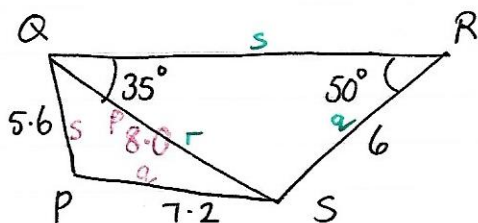
$$\frac{b}{\sin B} = \frac{c}{\sin C} = \frac{d}{\sin D}$$

$$\frac{b}{\sin B} = \frac{7.9}{\sin 41^\circ} = \frac{BC}{\sin 73^\circ}$$

$$\frac{7.9 \sin 73^\circ}{\sin 41^\circ} = BC$$

$$11.5 \text{ cm} = BC$$

2)



Now

$\triangle PQS$

$$s^2 = p^2 + q^2 - 2pq \cos \hat{P}SQ$$

$$5.6^2 = 8^2 + 7.2^2 - 2(8)(7.2) \cos \hat{P}SQ$$

$$31.36 = 64 + 51.84 - 115.2 \cos \hat{P}SQ$$

$$115.2 \cos \hat{P}SQ = 84.48$$

$$\cos \hat{P}SQ = 0.73$$

$$\hat{P}SQ = 42.8^\circ$$

First

Use  $\triangle QRS$

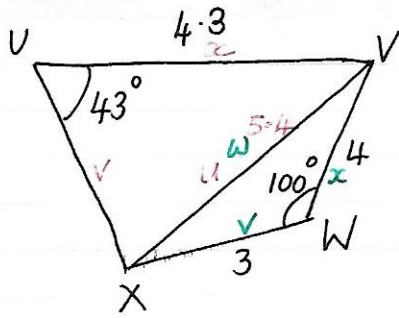
$$\frac{q}{\sin Q} = \frac{r}{\sin R} = \frac{s}{\sin S}$$

$$\frac{6}{\sin 35^\circ} = \frac{QS}{\sin 50^\circ} = \frac{s}{\sin S}$$

$$\frac{6 \sin 50^\circ}{\sin 35^\circ} = QS$$

$$8.0 \text{ m} = QS$$

3)



First  $\triangle VWX$

$$\begin{aligned} \omega^2 &= x^2 + v^2 - 2xv \cos W \\ \omega^2 &= 4^2 + 3^2 - 2(4)(3) \cos 100^\circ \\ \omega^2 &= 16 + 9 - 24 \cos 100^\circ \\ \omega^2 &= 25 - (-4.17) \end{aligned}$$

$$\begin{aligned} \omega^2 &= 29.17 \\ \omega &= 5.4 \text{ m} \end{aligned}$$

Now  $\triangle UVX$

$$\begin{aligned} \frac{u}{\sin U} &= \frac{v}{\sin V} = \frac{x}{\sin X} \\ \frac{5.4}{\sin 43^\circ} &= \frac{v}{\sin V} = \frac{4.3}{\sin \hat{UXV}} \end{aligned}$$

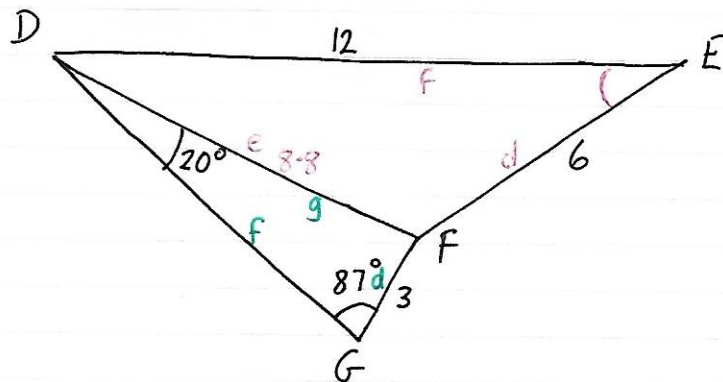
$$\frac{\sin 43^\circ}{5.4} = \frac{\sin \hat{UXV}}{4.3}$$

$$\frac{4.3 \sin 43^\circ}{5.4} = \sin \hat{UXV}$$

$$0.543 = \sin \hat{UXV}$$

$$\underline{\underline{32.9^\circ = \hat{UXV}}}$$

4)

Use  $\triangle DFG$ 

$$\frac{d}{\sin D} = \frac{f}{\sin F} = \frac{g}{\sin G}$$

$$\frac{3}{\sin 20^\circ} = \frac{f}{\sin F} = \frac{9}{\sin 87^\circ}$$

$$\frac{3 \sin 87^\circ}{\sin 20^\circ} = DF$$

$$8.8 \text{ cm} = DF$$

Now use  $\triangle DEF$ 

$$e^2 = d^2 + f^2 - 2df \cos E$$

$$8.8^2 = 6^2 + 12^2 - 2(6)(12) \cos \hat{DEF}$$

$$77.44 = 36 + 144 - 144 \cos \hat{DEF}$$

$$144 \cos \hat{DEF} = 102.56$$

$$\cos \hat{DEF} = \frac{102.56}{144}$$

$$\cos \hat{DEF} = 0.712$$

$$\hat{DEF} = 44.6^\circ$$