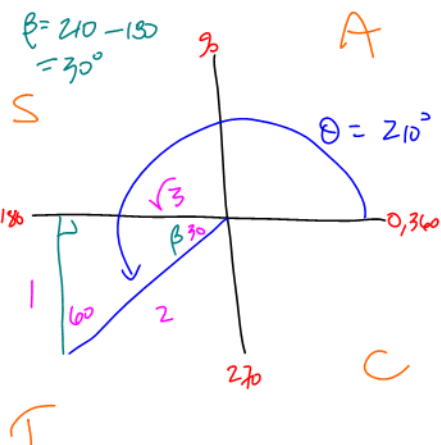
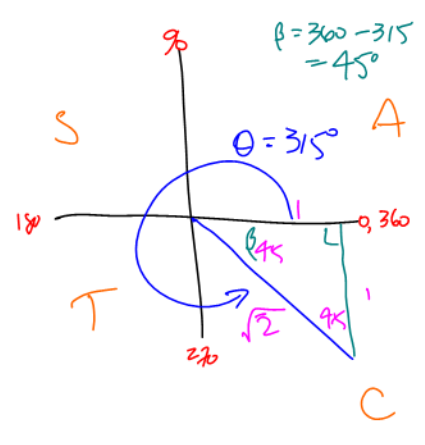


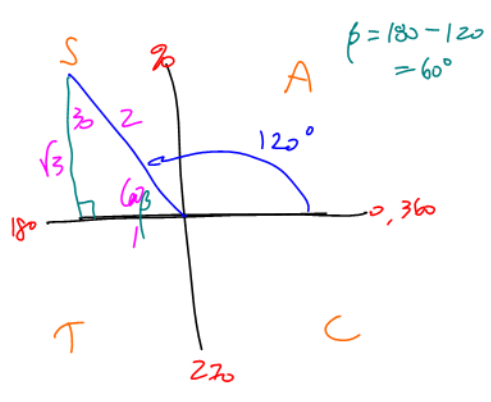
6. For each question, draw the angle of rotation and determine the EXACT trig ratio:
 a) $\cos(210^\circ)$ b) $\tan(315^\circ)$ c) $\sin(120^\circ)$



$$\cos(210) = -\frac{\sqrt{3}}{2}$$



$$\tan(315) = -\frac{1}{1}$$

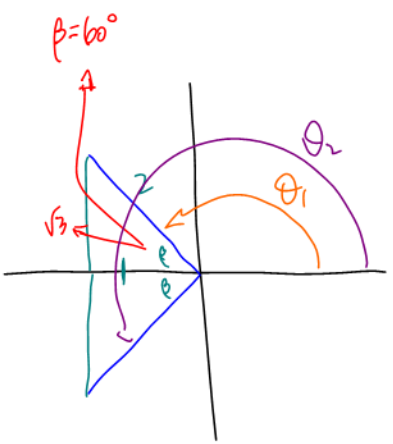


$$\sin(120) = +\frac{\sqrt{3}}{2}$$

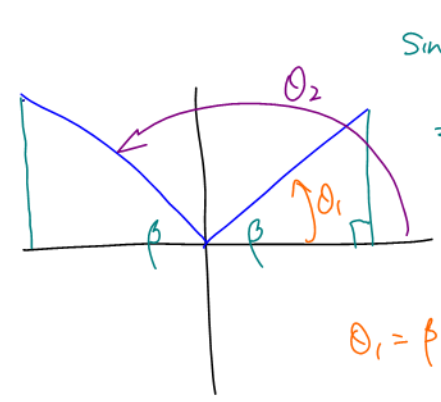
7. Given the trig ratio determine **both possible** values for θ where $0^\circ \leq \theta \leq 360^\circ$: *Sine is positive in Q1, Q2.*

a) $\cos(\theta) = -\frac{1}{2}$ (exact values please) ^{Q2, Q3}

b) $\sin(\theta) = 0.351$ (round to one decimal place)

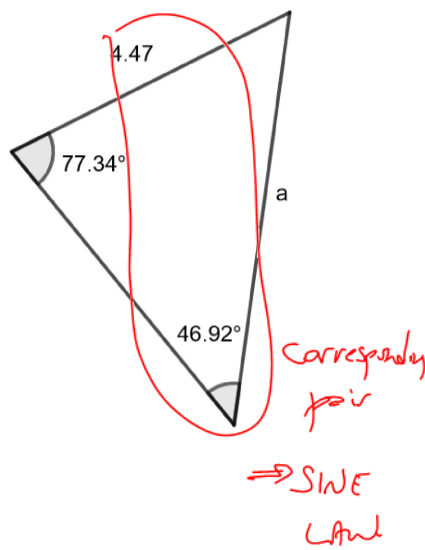
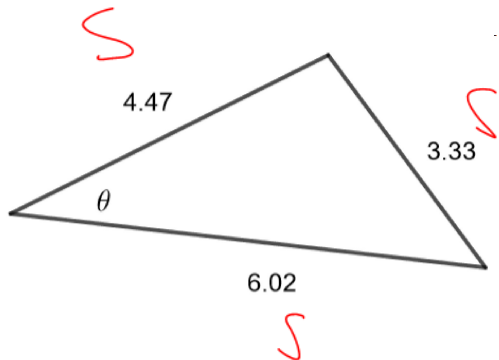
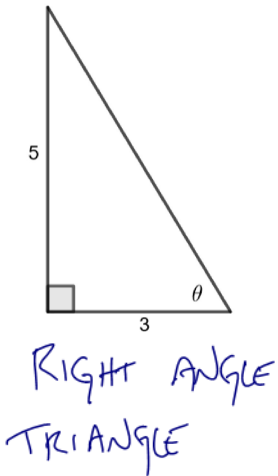


$$\begin{aligned} \theta_1 &= 180 - \beta \\ &= 180 - 60 \\ &= 120^\circ \\ \theta_2 &= 180 + \beta \\ &= 180 + 60 \\ &= 240^\circ \end{aligned}$$



$$\begin{aligned} \sin(\beta) &= 0.351 \\ \Rightarrow \beta &= \sin^{-1}(0.351) \\ &\approx 20.5^\circ \\ \theta_1 &= \beta = 20.5^\circ \\ \theta_2 &= 180 - \beta \\ &= 180 - 20.5 \\ &= 159.5^\circ \end{aligned}$$

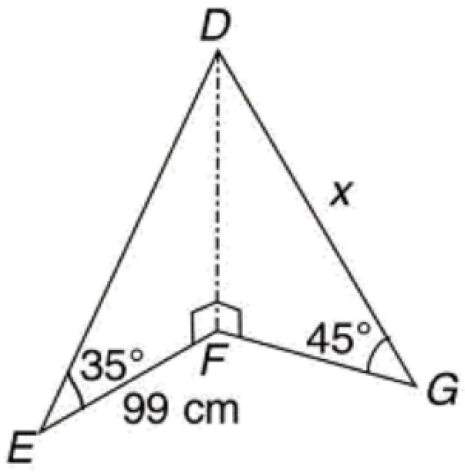
8. For each triangle below explain how you would find the indicated unknown value. One triangle requires SOH CAH TAO, one requires the Sine Law and one requires the Cosine Law. Give a reason for your choices. Do not solve the triangles - just explain.



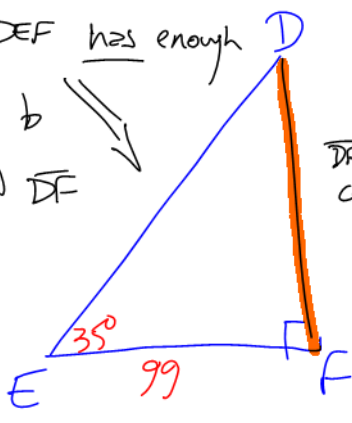
SOH CAH TAO

we have SSS and want an angle
⇒ cosine law - angle form

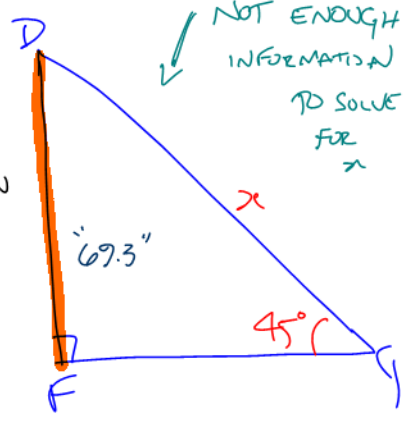
9. Determine the value of x to one decimal place.



$\triangle DEF$ has enough info to find DF



DF is common



$\triangle DFG$ NOT ENOUGH INFORMATION TO SOLVE FOR x

In $\triangle DEF$

$$\tan(35) = \frac{DF}{EF}$$

$$\Rightarrow \tan(35) = \frac{DF}{99}$$

$$\Rightarrow DF = (99)(\tan(35)) = 69.3 \text{ cm}$$

In $\triangle DFG$

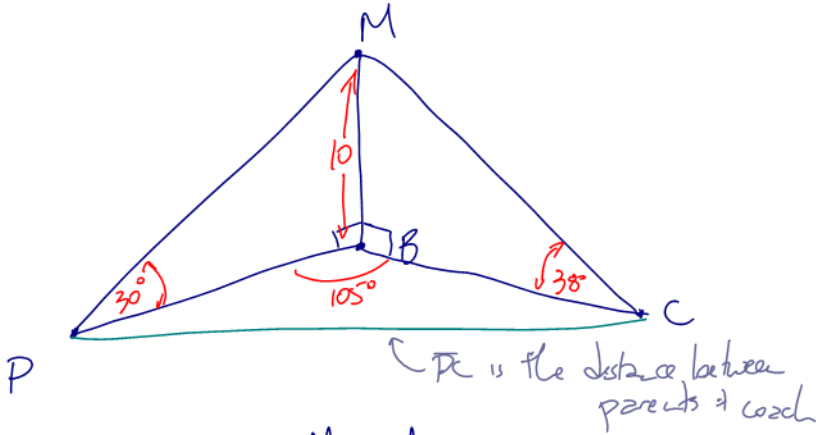
$$\sin(45) = \frac{DF}{DG}$$

$$\Rightarrow \sin(45) = \frac{69.3}{x}$$

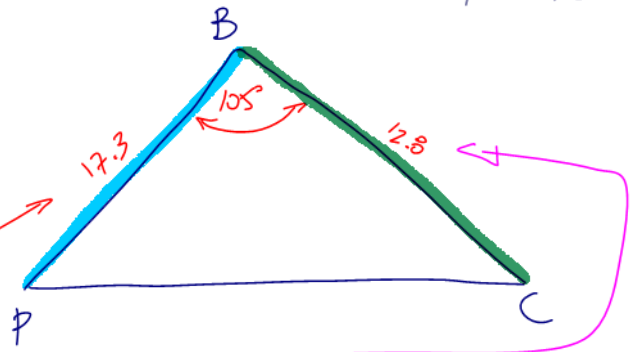
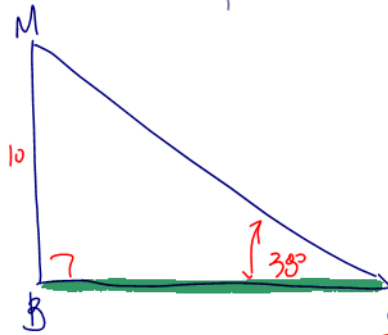
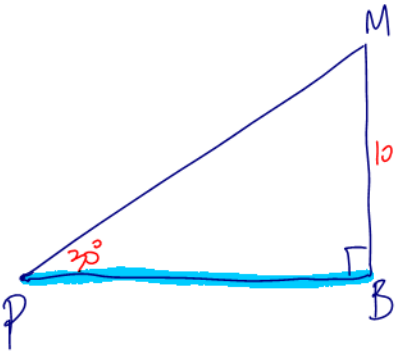
$$\Rightarrow x = \frac{69.3}{\sin(45)} \approx 98 \text{ cm}$$

∴ DF is about 98 cm.

10. Melanie is standing on the 10 m diving platform. Her coach is on the ground to the left of her, while her parents are on the ground to the right of her. Her coach is looking at her at an angle of 38° with the ground, while her parents are looking at her at an angle of 30° with the ground. If the angle at the base of the platform between Melanie's coach and Melanie's parents is 105° , how far apart are her coach and her parents to the nearest metre? Draw a sketch.



finding $\overline{BP} \cong \overline{BC}$
 allows us to use
 the cosine law to
 find \overline{PC}



$$\tan(30) = \frac{10}{PB}$$

$$\Rightarrow PB = \frac{10}{\tan(30)} = 17.3$$

$$\tan(38) = \frac{10}{BC}$$

$$\Rightarrow BC = \frac{10}{\tan(38)} = 12.8$$

$$\overline{PC}^2 = 17.3^2 + 12.8^2 - 2(17.3)(12.8)\cos(105)$$

$$\Rightarrow \overline{PC} = \sqrt{\quad} = 24$$

\therefore The parents & coach are about 24 m apart