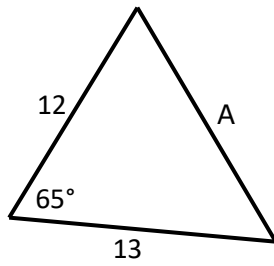


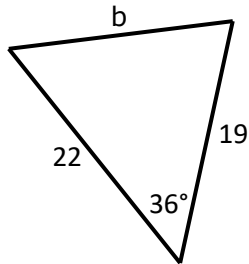
Level 2 Trigonometry Cosine Rule

Calculate the unknown sides

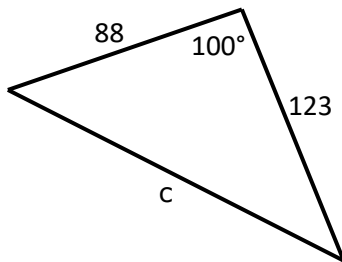
1. $A =$



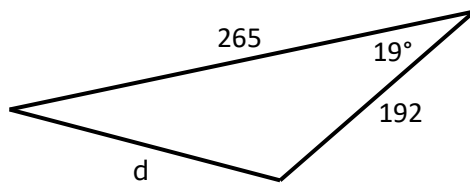
2. $b =$



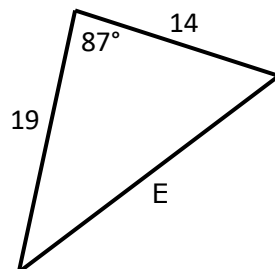
3. $c =$



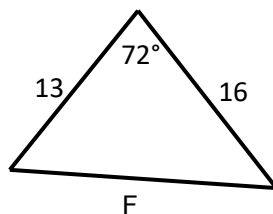
4. $d =$



5. $E =$

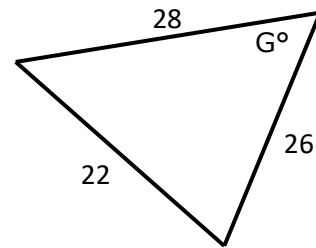


6. $F =$

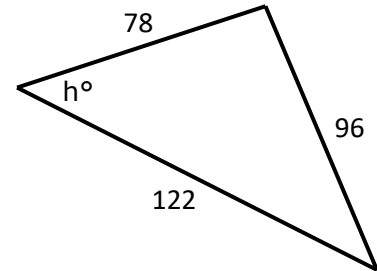


Calculate the unknown angles

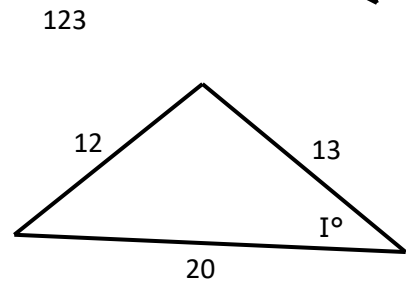
7. $G^\circ =$



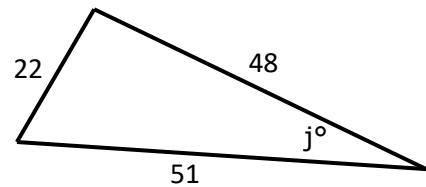
8. $h^\circ =$



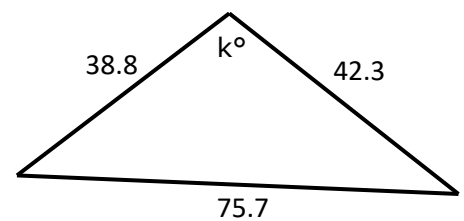
1. $I^\circ =$



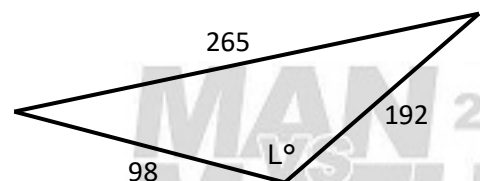
2. $j^\circ =$



3. $k^\circ =$



4. $L^\circ =$



Answers: Level 2 Trigonometry Cosine Rule

1. $A^2 = 13^2 + 12^2 - 2 \times 13 \times 12 \times \cos 65 = 181.14$ $A = \sqrt{\text{Ans}} = 13.459$
2. $b^2 = 22^2 + 19^2 - 2 \times 22 \times 19 \times \cos 36 = 168.66$ $A = \sqrt{\text{Ans}} = 12.987$
3. $c^2 = 88^2 + 123^2 - 2 \times 88 \times 123 \times \cos 100 = 26632.14$ $A = \sqrt{\text{Ans}} = 163.194$
4. $d^2 = 192^2 + 265^2 - 2 \times 192 \times 265 \times \cos 19 = 10873.03$ $A = \sqrt{\text{Ans}} = 104.274$
5. $E^2 = 19^2 + 14^2 - 2 \times 19 \times 14 \times \cos 87 = 529.16$ $A = \sqrt{\text{Ans}} = 23.003$
6. $d^2 = 13^2 + 16^2 - 2 \times 13 \times 16 \times \cos 72 = 296.45$ $A = \sqrt{\text{Ans}} = 17.218$
7. $\cos G = \frac{28^2 + 26^2 - 22^2}{2 \times 28 \times 26} = \frac{976}{1456}$ $G = \cos^{-1}(\text{Ans}) = 47.907^\circ$
8. $\cos h = \frac{78^2 + 122^2 - 96^2}{2 \times 78 \times 122} = \frac{11752}{19032}$ $h = \cos^{-1}(\text{Ans}) = 51.867^\circ$
9. $\cos I = \frac{13^2 + 20^2 - 12^2}{2 \times 13 \times 20} = \frac{425}{520}$ $I = \cos^{-1}(\text{Ans}) = 35.184^\circ$
10. $\cos j = \frac{48^2 + 51^2 - 22^2}{2 \times 48 \times 51} = \frac{4421}{4896}$ $j = \cos^{-1}(\text{Ans}) = 25.447^\circ$
11. $\cos k = \frac{38.8^2 + 42.3^2 - 75.7^2}{2 \times 38.8 \times 42.3} = \frac{-2435.76}{3282.48}$ $k = \cos^{-1}(\text{Ans}) = 137.906^\circ$
12. $\cos L = \frac{98^2 + 192^2 - 265^2}{2 \times 98 \times 192} = \frac{-23757}{37632}$ $L = \cos^{-1}(\text{Ans}) = 129.146^\circ$

Note that the middle stage is negative if the angle is greater than 90° .