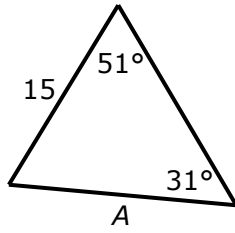


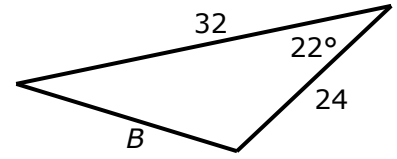
Level 2 Trigonometry Achieved #1

Calculate the unknown for each triangle

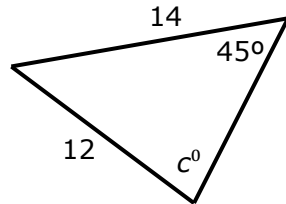
1. $A =$



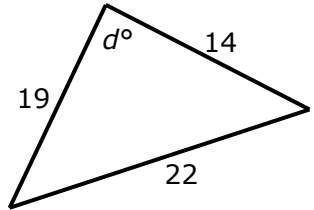
2. $B =$



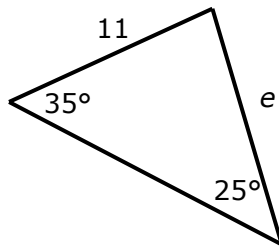
3. $c^\circ =$



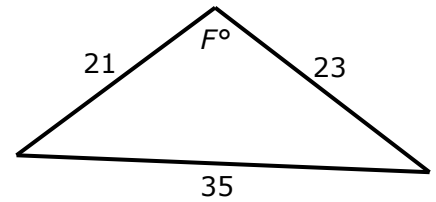
4. $d^\circ =$



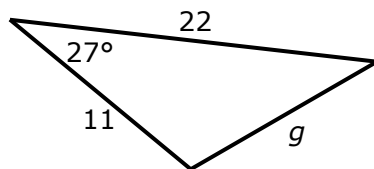
5. $e =$



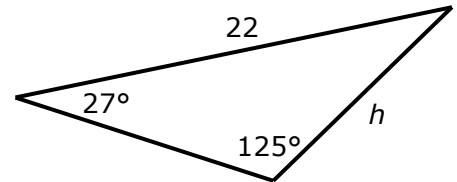
6. $F^\circ =$



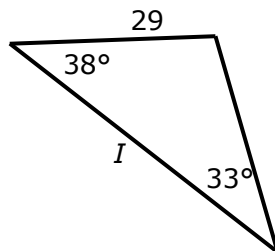
7. $g =$



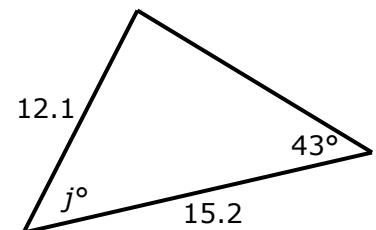
8. $h =$



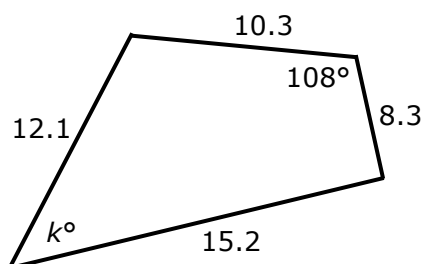
9. $I =$



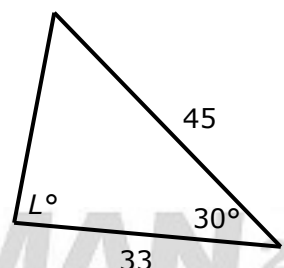
10. $j^\circ =$



11. $k^\circ =$



12. $L =$



Answers: Level 2 Trigonometry Achieved #1

1. $A = \frac{15}{\sin 31^\circ} \times \sin 51^\circ = 22.633$

2. $B^2 = 32^2 + 24^2 - 2 \times 32 \times 24 \times \cos 22^\circ = 175.85$ $B = \sqrt{175.85} = 13.26$

3. $\sin c^\circ = \frac{\sin 45^\circ}{12} \times 14 = 0.82496$ $c^\circ = \sin^{-1}(0.82496) = 55.58^\circ$

4. $\cos d^\circ = \frac{19^2 + 14^2 - 22^2}{2 \times 19 \times 14} = \frac{73}{532}$ $d^\circ = \cos^{-1}\left(\frac{73}{532}\right) = 82.11^\circ$

5. $e = \frac{11}{\sin 25^\circ} \times \sin 35^\circ = 14.929$

6. $\cos F^\circ = \frac{21^2 + 23^2 - 35^2}{2 \times 21 \times 23} = \frac{-255}{966}$ $d^\circ = \cos^{-1}\left(\frac{-255}{966}\right) = 105.31^\circ$

7. $g^2 = 22^2 + 11^2 - 2 \times 22 \times 11 \times \cos 27^\circ = 173.75$ $B = \sqrt{173.75} = 13.18$

8. $h = \frac{22}{\sin 125} \times \sin 27^\circ = 12.193$

9. Missing angle in triangle = $180^\circ - 38^\circ - 33^\circ = 109^\circ$

$$I = \frac{29}{\sin 33} \times \sin 109 = 50.35$$

10. Call third angle y : $\sin y = \frac{\sin 43}{12.1} \times 15.2 = 0.85675$ $y = \sin^{-1}(0.85675) = 58.95^\circ$

$$j^\circ = 180^\circ - 58.95^\circ - 43^\circ = 78.05^\circ$$

11. Find the diagonal across - x

$$x^2 = 10.3^2 + 8.3^2 - 2 \times 10.3 \times 8.3 \times \cos 108 = 176.89$$
 $p = \sqrt{176.89} = 13.30$

Now use that value to find k

$$\cos k = \frac{12.1^2 + 15.2^2 - 13.3^2}{2 \times 12.1 \times 15.2} = \frac{200.56}{367.84}$$
 $k = \cos^{-1}\left(\frac{200.56}{367.84}\right) = 56.96^\circ$

12. Find the side opposite 30° using cos rule.

$$o^2 = 45^2 + 33^2 - 2 \times 45 \times 33 \times \cos 30 = 541.90$$
 $o = \sqrt{541.90} = 23.28$

Now we have all three sides, so can use the other version of cos rule

$$\cos A = \frac{33^2 + 23.28^2 - 45^2}{2 \times 33 \times 23.28} = \frac{-394.0416}{1536.48}$$
 $x = \cos^{-1}\left(\frac{-394.0416}{1536.48}\right) = 104.86^\circ$