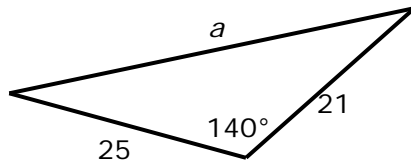# Level 2 Trigonometry Achieved #2
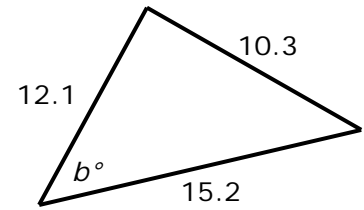
Calculate the unknown for each triangle
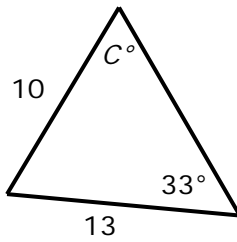
1. $a =$

2. $b° =$

3. $C° =$

4. $d =$
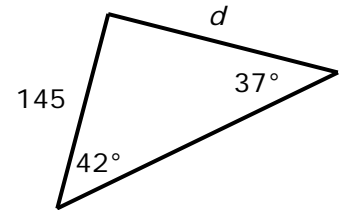
5. $E° =$
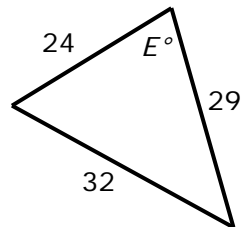
6. $f =$

7. $G =$
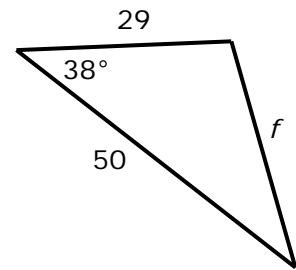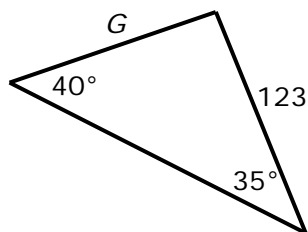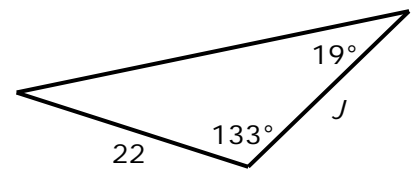
8. $h° =$
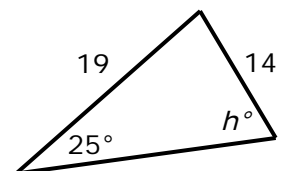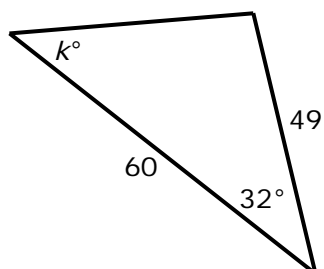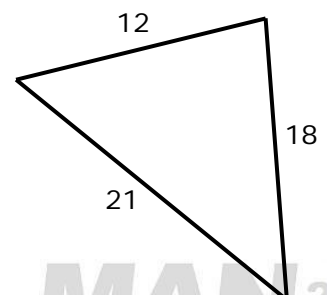
9. $I° =$
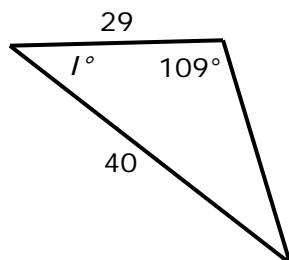
9. $J =$

11. $k° =$

12. Area of triangle =

Answers: Level 2 Trigonometry Achieved #2

1. $a^2 = 25^2 + 21^2 - 2 \times 25 \times 21 \times \cos 140° = 1870.3$ $\qquad$ $a = \sqrt{1870.3} = 43.25$

2. $\cos b° = \dfrac{15.2^2 + 12.1^2 - 10.3^2}{2 \times 15.2 \times 12.1} = \dfrac{271.36}{367.84}$ $\qquad$ $k = \cos^{-1}(\dfrac{271.36}{367.84}) = 42.46°$

3. $\sin C° = \dfrac{\sin 33°}{10} \times 13 = 0.70803$ $\qquad$ $C° = \sin^{-1}(0.70803) = 45.07°$

4. $d = \dfrac{145}{\sin 42°} \times \sin 37° = 130.41$

5. $\cos E° = \dfrac{29^2 + 24^2 - 32^2}{2 \times 29 \times 24} = \dfrac{393}{1392}$ $\qquad$ $E° = \cos^{-1}(\dfrac{393}{1392}) = 73.60°$

6. $f^2 = 29^2 + 50^2 - 2 \times 29 \times 50 \times \cos 38° = 1055.77$ $\qquad$ $f = \sqrt{1055.77} = 32.49$

7. $G = \dfrac{123}{\sin 40} \times \sin 35 = 109.76$

8. $\sin h° = \dfrac{\sin 25°}{14} \times 19 = 0.57355$ $\qquad$ $h° = \sin^{-1}(0.57355) = 35.00° \ (34.998°)$

9. Call other angle $y°$ $\sin y° = \dfrac{\sin 109°}{40} \times 29 = 0.6855$ $\qquad$ $y° = \sin^{-1}(0.6855) = 43.27°$

    $I° = 180° - 43.27° - 109° = 27.72°$

10. The angle opposite J is $180° - 133° - 19° = 28°$ $\qquad$ $J = \dfrac{22}{\sin 19°} \times \sin 28° = 31.72$

11. Find side opposite 32° first

    $x^2 = 60^2 + 49^2 - 2 \times 60 \times 49 \times \cos 32° = 1014.48$ $\qquad$ $a = \sqrt{1014.48} = 31.85$

    Now use Cos Rule

    $\cos k° = \dfrac{60^2 + 31.85^2 - 49^2}{2 \times 60 \times 31.85} = \dfrac{2213.48}{3822}$ $\qquad$ $k° = \cos^{-1}(\dfrac{2213.48}{3822}) = 54.61°$

12. Need angle, doesn't matter which. In this case, one opposite side of length 21

    $\cos x° = \dfrac{12^2 + 18^2 - 21^2}{2 \times 12 \times 18} = \dfrac{27}{432}$ $\qquad$ $x° = \cos^{-1}(\dfrac{27}{432}) = 86.42°$

    Area = ½ × 12 × 18 × sin 86.42° = 107.79