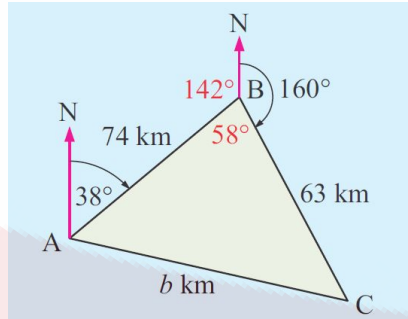Sine and Cosine Law
Even more word problems!

Raisemymarks.com

2020

1. An aircraft flies $74km$ on a bearing of $38°$ and then $63km$ on a bearing of $160°$. Find the distance of the aircraft from its starting point.

2. Two farm houses A and B are $10.3km$ apart. A third farm house C is located such that $\angle BAC = 83°$ and $\angle ABC = 59°$. How far is C from A?

3. A roadway is horizontal for $524m$ from A to B, followed by a $23°$ incline $786m$ long from B to C. How far is it directly from A to C?
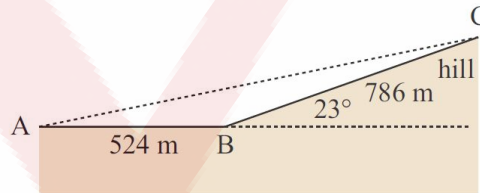

4. Towns A, B and C are located such that $\angle BAC = 50°$ and B is twice as far from C as A is from C. Find the measure of $\angle BCA$.

5. Hazel's property is triangular with dimensions as shown in the figure below.
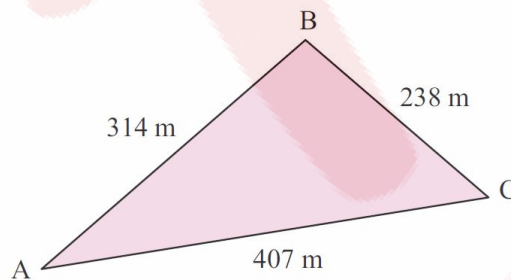
a) Find the measure of the angle at A to 2 decimal places.

b) Find the area of her property to the nearest hectare.

6. An orienteer runs for $450m$ then turns through an angle of $34°$ and runs for another $600m$. How far is she from her starting point?

7. A yacht sails $6km$ on a bearing of $127°$ and then $4km$ on a bearing of $53°$. Find the distance and bearing of the yacht from its starting point.

8. Mount X is $9km$ from Mount Y on a bearing of $146°$. Mount Z is $14km$ away from Mount X and on a bearing of $72°$ from Mount Y. Find the bearing of X from Z.

9. From points A and B at seas, the angles of elevation to the top of the mountain T are $37°$ and $41°$, respectively. A and B are $1200m$ apart.
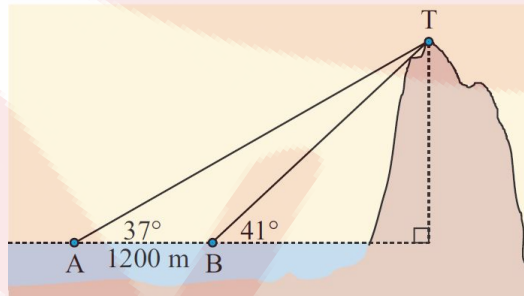

   a) What is $\angle ATB$?
   b) Find the distance from A to T.
   c) Find the distance from B to T.
   d) Find the height of the mountain.
   e) Use the figure below to show that,

$$d = h \left(\frac{1}{\tan \theta} - \frac{1}{\tan \theta} \right)$$
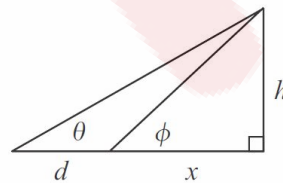
10. Bushwalkers leave point P and walk in the direction $238°$ for $11.3km$ to point Q. At Q they change direction to $107°$ and walk for $18.9km$ to point R. How far is R from the starting point P?

11. David's garden plot is in the shape of a quadrilateral. If the corner points are A, B, C and D then the angles at A and C are 120° and 60°, respectively. $AD = 16m$, $BC = 25m$ and DC is 5m longer than AB. A fence runs around the entire boundary of the plot. How long is the fence?
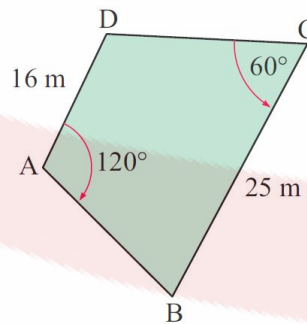
12. Three friends, Kermit, Gonzo and Fozzy are meeting outside for the first time in 8 weeks. They are trying to maintain the social distancing requirements by maintaining a minimum 2m between each of them. Kermit and Gonzo are 2m apart; the angle formed at Kermit is 30°; the angle formed at Fozzy is 105°. Are Kermit, Gozno and Fozzy maintaining the social distancing requirement of a minimum of 2m between each?

13. Jack and Jill are walking up a hill. Jack is 2.1m ahead of Jill. As Jack and Jill are walking up the hill they pass by Little Miss Muffet sitting on her tuffet snacking on her curds and whey. A spider comes and sits beside Miss Muffet on her tuffet scaring the s&#t out of Miss Muffet, who falls off her tuffet and starts rolling down the hill. Jack notices Miss Muffet rolling down the hill and at the very moment the angle between Jack and Miss Muffet is 63°. Jill also notices Miss Muffet and the angle between Jill and Miss Muffet is 56°. The spider is eating Miss Muffet's curds and whey. Is Miss Muffet meeting social distancing requirements with Jack and Jill?