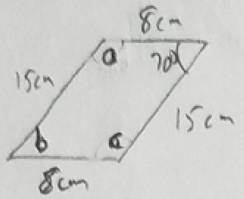
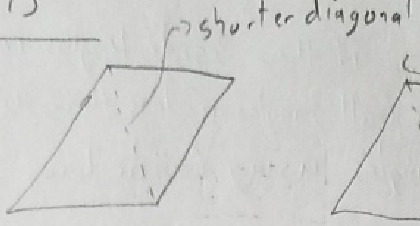
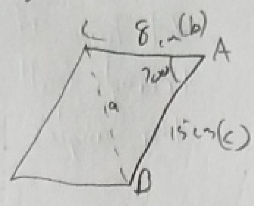
Pg. 138 - 10, 11, 13, 15

(10)







- we know ∠b is equal to 70° as opposite angles in parrallelogram are equal.
- we know angle a and c must be equal and add up to 220° (because 70° + 70° = 140° and 220° would be left to get the 360° of this <u>4-sided</u> figure)

→ means each angle is 110° (half of 220°)

we can use Cosine Law to find diagonal

$a^2 = b^2 + c^2 - 2bc\cos A$

$a^2 = 8^2 + 15^2 - 2(8)(15)\cos 70°$

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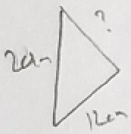
(11) a) i)



* Can't be solved without previous knowledge not covered in this semester.

* This question can be skipped.

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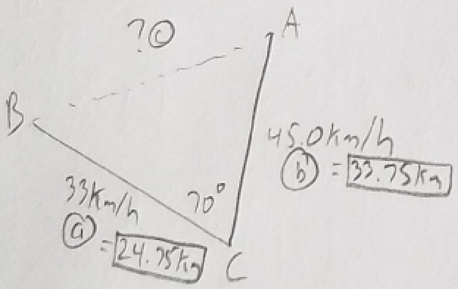
(13)



Driver a

33km/h for 45mins

→ $33\frac{km}{h} \times 0.75h$

$= \boxed{24.75km}$

Driver b

$45.0km/h \times 0.75hr$

$= 33.75km$

* 45 mins = $\frac{3}{4}$ or $\boxed{0.75hr}$

$c^2 = a^2 + b^2 - 2ab\cos C$

$c^2 = (24.75km)^2 + (33.75km)^2 - 2(24.75km)(33.75km)\cos 70°$

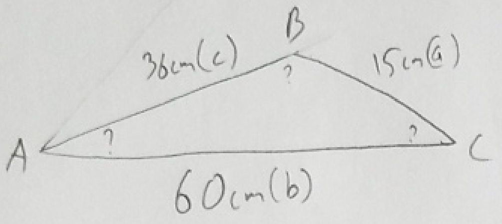
$c^2 = 1751.625km^2 - 531.387km^2$

$\sqrt{c^2} = \sqrt{1180.278km^2}$

$\boxed{c = 34.4km}$

(15) * Same circumstance as # 11 Can't be solved currently

(12)



* to know if these 3 side lengths create an acute triangle (all 3 angles are less than 90°) we must find the angles using Cosine Law.

$\angle A$

$a^2 = b^2 + c^2 - 2bc\cos A$

$15^2 = 60^2 + 36^2 - 2(60)(36)\cos A$

$225 = 4896 - 4320\cos A$

$-4896 \quad -4896$

$\frac{-4671}{-4320} = \frac{\cancel{-4320}\cos A}{\cancel{-4320}}$

$\boxed{1.08125 = \cos A}$

$X = \angle A$

* this is not possible for Cosine Law as the ratio must be less than +1 or greater than -1 to give an angle. This will only give an error for all 3 angle.

↳ this triangle <u>cannot</u> be created!

$\angle B$

$60^2 = 15^2 + 36^2 - 2(15)(36)\cos B$

$\cos B = \frac{2079}{-1080}$

$\angle C$

$36^2 = 15^2 + 60^2 - 2(15)(60)\cos$

$\cos C = \frac{-2529}{-1800}$