Year 10 Term 3 Homework

Student Name: _____	**Grade**: _____
Date: _____	**Score**: _____

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4 Year 10 Term 3 Week 4 Homework

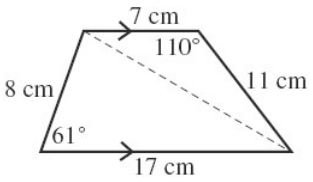
4.1 Further trigonometry

4.1.1 Area of a triangle

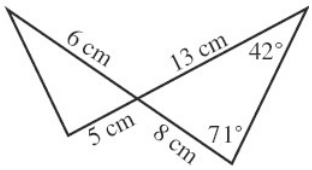
The area of any triangle ABC is given by: $A = \frac{1}{2}ab\,sinC$

Exercise 4.1.1

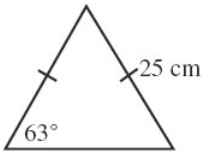
1. *Find the area of this quadrilateral, correct to 1 decimal place.*



2. *Find the total area of this figure correct to 1 decimal place.*



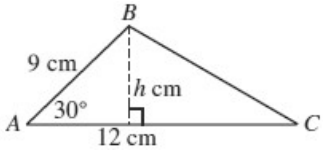
3. *Find the area of this isosceles triangle correct to 1 decimal place.*



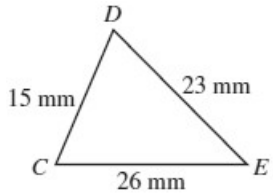
Exercise 4.1.2 Further applications

1. *A regular hexagon has been inscribed in a circle with centre O and radius 4 cm. Find the area of hexagon, without the use of a calculator.*

2. *Find the value of h in this triangle, without the use of a calculator.*



3. *In $\triangle CDE$, CD = 15 mm, DE = 23 mm and CE = 26 mm.*



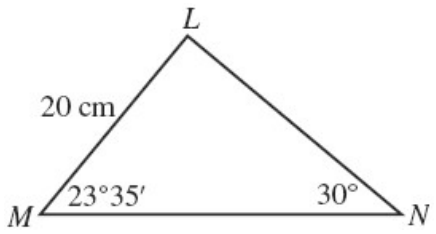
   (a) *Find the size of $\angle CDE$, correct to the nearest minute.*

   (b) *Find the area f $\triangle CDE$, correct to 3 significant figures.*

4.1.2 Applications of the Sine Rule

Exercise 4.1.3

1. *For the figure given below:*



   (a) *Evaluate $sin23°35'$, correct to 1 decimal place..*

   (b) *Hence, find the length of LN.*

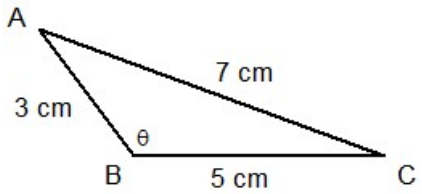
2. *In $\triangle ABC$, $\angle A = 51°$, $\angle B = 45°$ and the longest side is 17 cm. Find the length of the shortest side, correct toe 3 significant figures.*

3. *In $\triangle XYZ$, XY = 9 cm, YZ = 7 cm, XZ = 12 cm and $\angle Z = 42°$. Find the size of the smallest angle in the triangle, correct toe the nearest minutes.*

4.1.3 Application of the Cosine Rule

Exercise 4.1.4

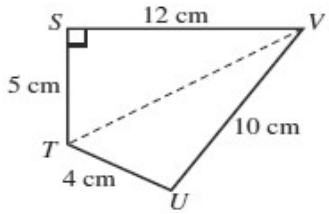
1. *In $\triangle ABC$, AB = 3 cm, BC = 5 cm and AC = 7 cm.*



   (a) *Show that $cos\theta = -\frac{1}{2}$.*

   (b) *Find the size of the $\angle\theta$.*

2. *In the figure shown below:*



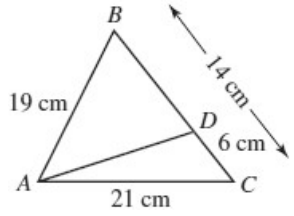
   (a) *Find the length of the diagonal TV.*

   (b) *Find the size of the $\angle TUV$, correct to the nearest minute.*

4.1.4 Miscellaneous problems

Exercise 4.1.5

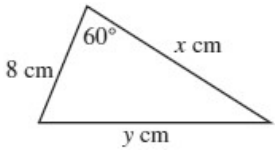
1. *In $\triangle ABC$, AB = 19 cm, BC = 14 cm and AC = 21 cm. D is a point on BC such that DC = 6 cm.*



   (a) *Use the Cosine Rule in $\triangle ABC$ to find the size of $\angle ABC$, correct to the nearest minute.*

   (b) *Use the Cosine Rule in $\triangle ABD$ to find the length of AD, correct to 1 decimal place.*

2. *The area of this triangle is $22\sqrt{3}\,cm^2$.*



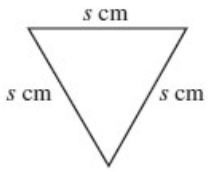
   (a) *Find the value of x.*

   (b) *Hence, find the exactly value of y.*

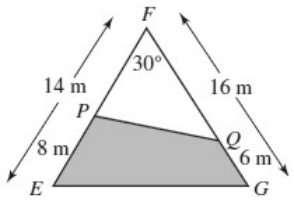
4.2 Maths challenge

Exercise 4.2.1

1. *Show, by trigonometry, that the area of an equilateral triangle of side s cm is given by the formula* $A = \frac{\sqrt{3}}{4}s^2$.



2. *In the digram shown, EF = 14 m, FG = 16 m, EP = 8 m, QG = 6 m and* $\angle EFG = 30°$. *Find the shaded area.*



3. *If AB is the diameter of a circle, and AC is a chord 10 cm long, what is the exact length of the radius of the circle if* $\angle BAC = 30°$*?*