Week 4 Monday 9 September
Chapter Six: More Geometry
Topic: 3.4 The Area of a Triangle
Lesson Obj: Students will find the area of a triangle using the sine formula

Review and Intro:

0. Vocab on board: cosine rule. Homework questions.
1. Review quiz
2. When do we use what rules?
3. How do we find the area of a triangle?

Core Lesson:

4. How do we find the area of a triangle when we don't have base and height?
5. Worksheet Problem 1

Check for Understanding:

6. Students complete worksheet
7. Complete 126:5-7 in class

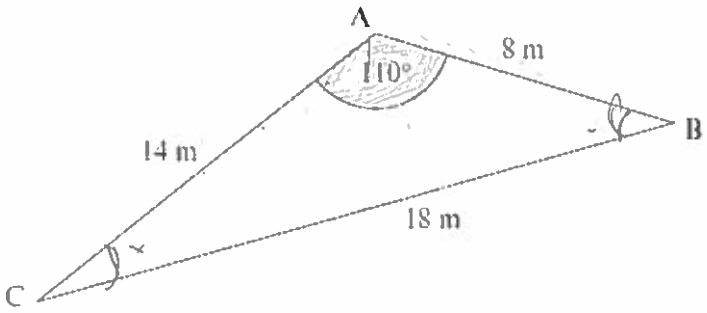
Assignment: Students will study for a test on Trigonometry
Evaluation:

IB Math Studies Year 2

$A = \frac{1}{2}ab\sin C$

3.4 Area of a Triangle

1. The following diagram shows a triangle ABC. Calculate:



a) the area of triangle ABC.

$A = \frac{1}{2}(14)(8)\sin 110$

Area = 52.6 m²

b) the size of angle ACB.

$\frac{18}{\sin(110} = \frac{8}{\sin(x}$

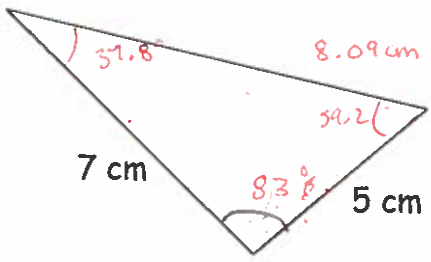
24.605

24.6 ° = ABC

2. The area of this triangle is 17.4 cm². Find all its sides and angles.

$17.4 = \frac{1}{2}(7)(5)\sin(x)$

83° = x



$\cos(83) = \frac{7^2+5^2-x^2}{2(7)(5)}$

$8.530 =$

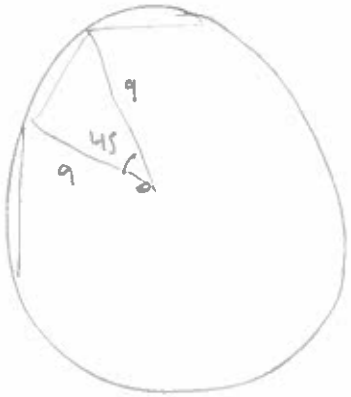
$-65.47 = -x^2$

8.09 cm

$\frac{\sin 83}{8.09\text{ cm}} = \frac{\sin y}{7\text{ cm}}$

59.2 = y

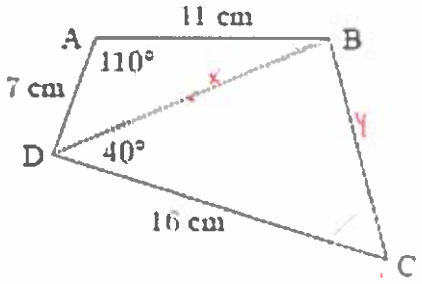
3. Find the area of a regular octagon inscribed in a circle of radius 9 inches.



$\frac{360}{8} = 45$

$A = \left(\frac{1}{2}(9)(9)\sin 45\right) \cdot 8$

4. Find the area of the quadrilateral below.



$\cos(40) = \frac{16^2 + 14.4^2 - 4^2}{16 \cdot 2 \cdot 14.9}$

$\cos(40) = \frac{478.671 - 4^2}{477.504}$

$365.78 =$

$r12.881$

$10.6 = 4$

$\cos(110) = \frac{11^2 + 7^2 - c^2}{11 \cdot 2 \cdot 7}$

$-222.671 = c^2$

$14.9 = x$

$\left(\frac{1}{2}\right) \cdot 7 \cdot 11 \cdot \sin 14.4$

9.899

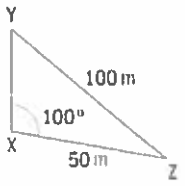
$\left(\frac{1}{2}\right) \cdot 14.9 \cdot 16 \cdot \sin(40$

76.62

$86.5 \text{ in}^2 = A$

EXAM-STYLE QUESTIONS

5 The diagram shows a triangular field XYZ.
XZ is 50 m, YZ is 100 m and angle X is 100°.



a Find angle Z.

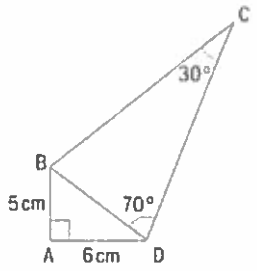
b Find the area of the field. Give your answer correct to the nearest 10 m².

6 The area of an isosceles triangle ABC is 4 cm². Angle B is 30° and AB = BC = x cm.

a Write down, in terms of x, an expression for the area of the triangle.

b Find the value of x.

7 In the diagram, AB = 5 cm, AD = 6 cm, $B\hat{A}D = 90°$, $B\hat{C}D = 30°$, $B\hat{D}C = 70°$.



a Find the length of DB.

b Find the length of DC.

c Find the area of triangle BCD.

d Find the area of the quadrilateral ABCD.

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