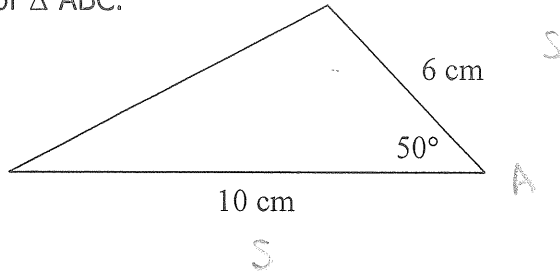


Key

Notes: Day 7
Area of a Triangle

Find the area of $\triangle ABC$.



$$A = \frac{1}{2} (10) (6) \sin 50^\circ$$

$$A = 22.981 \text{ cm}^2$$

SAS Triangle Area

In any triangle, if you know the lengths of two sides and the measure of the included angle, then you can find the area of the triangle by

$$\text{Area} = \frac{1}{2} ab \sin C$$

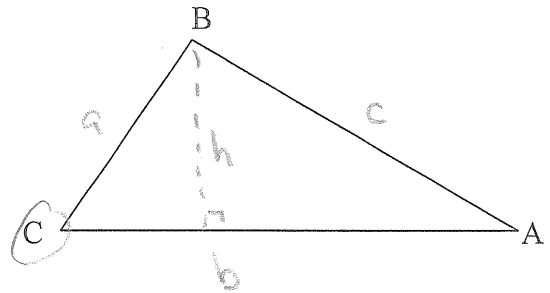
Where does this area formula come from?

$$\sin C = \frac{h}{a}$$

$$h = a \sin C$$

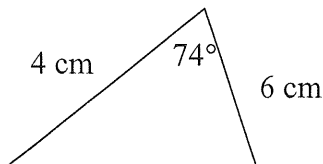
$$\text{Area} = \frac{1}{2} bh$$

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



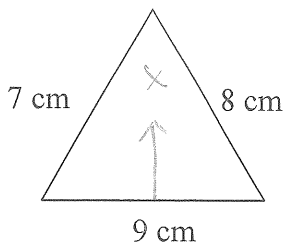
1-4 Find the area of each figure:

1)



$$A = \frac{1}{2} (4) (6) \sin 74^\circ = 11.535 \text{ cm}^2$$

2)



$$A = \frac{1}{2} (7)(8) \sin X = 13.25 \sin X$$

$$= 26.25 \sin X$$

Need 1 angle

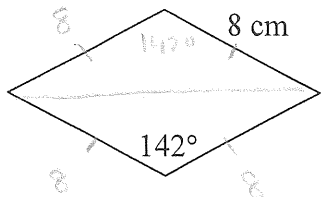
$$9^2 = 7^2 + 8^2 - 2(7)(8) \cos X$$

$$81 = 49 + 64 - 112 \cos X$$

$$\frac{-32}{-112} = \cos X$$

$$X = 73.398^\circ$$

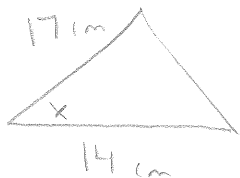
4) (rhombus)



$$A = \left[\frac{1}{2} (8)(8) \sin 142^\circ \right] \times 2$$

$$= 39.402 \text{ cm}^2$$

5) The area of an acute triangle is 70 square feet. The lengths of two sides of the triangle are 17 cm and 14 cm. Find the measure of the angle in between the two given sides.



$$A = \frac{1}{2} ab \sin C = \frac{1}{2} (17)(14) \sin X = 70$$

$$\sin X = .588$$

$$X = 36.015^\circ$$

6) A garden is in a shape of a triangle (refer to picture). You plan to cover it with mulch. If the mulch costs \$3.50 per 10 square yards, then what will it cost to cover the garden in mulch?

$$A = \frac{1}{2} (16)(30) \sin 125^\circ = 196.596 \text{ ft}^2$$

$$196.596 \text{ ft}^2 \left(\frac{1 \text{ yd}}{3 \text{ ft}} \right)^2 \left(\frac{\$3.50}{10 \text{ yd}^2} \right) = \$7.65$$

