6.7 Find Angles Using the Cosine Law

15cm

8cm

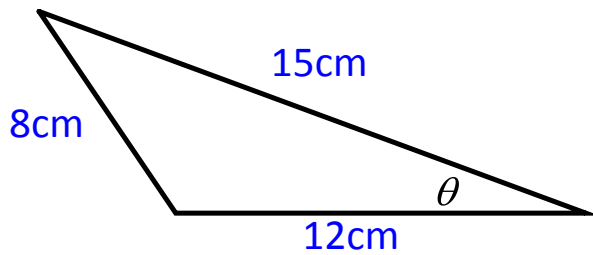θ

12cm

Can you find the unknown angle using Cosine Law???
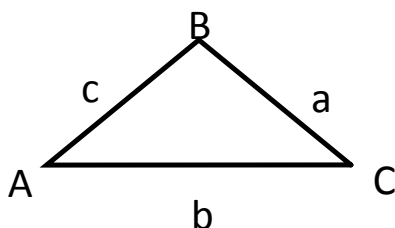Try it!

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

We can rearrange to find a new formula for angle "A"

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

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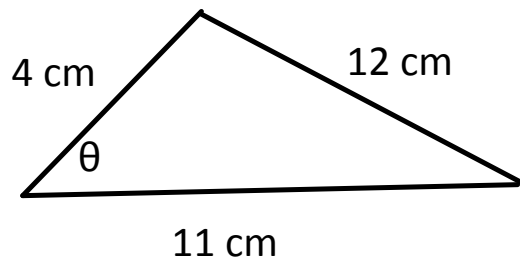
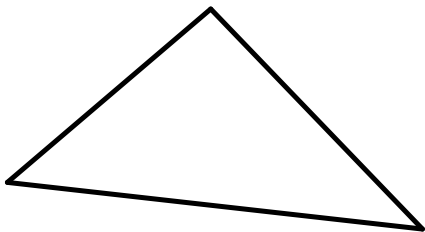$$\cos A = \frac{b^2 + c^2 - a^2}{2bc}$$

Cosine Law: In Δ ABC

B

c

a

A

b

C

$$A = \cos^{-1}\left(\frac{b^2 + c^2 - a^2}{2bc}\right)$$
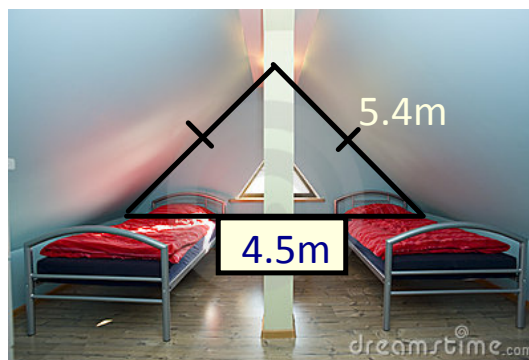
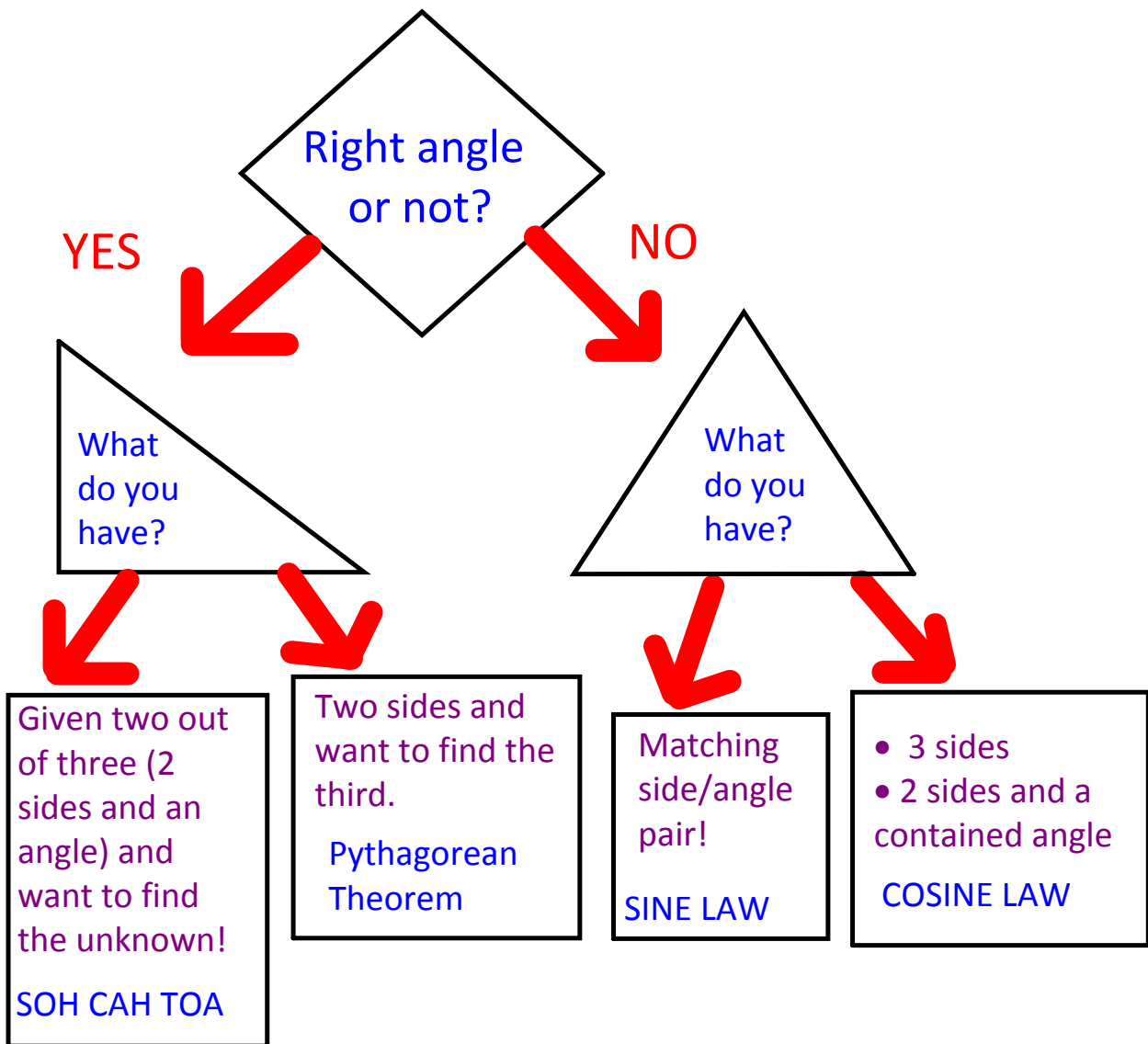**use to find an angle**

Ex1. Solve for the unknown.

4 cm

12 cm

θ

11 cm

Ex.2 Solve Δ DEF if d = 27 m, e = 32 m, f = 51 m.

Ex. 3 Your parents agree to build you a new room in the attic.
It will be a triangular shape like the one shown. The contractor needs
to know all the angles in the triangle to build this special room. Find
the angles of your new room.

5.4m

4.5m

When do I use WHAT?

Right angle or not?

YES   NO

What do you have? (YES branch)

What do you have? (NO branch)

Given two out of three (2 sides and an angle) and want to find the unknown!

SOH CAH TOA

Two sides and want to find the third.

Pythagorean Theorem

Matching side/angle pair!

SINE LAW

- 3 sides
- 2 sides and a contained angle

COSINE LAW

Hmk. Pg.417 #
2c,3b,5a,8-11,16

THINK!!!!