

**Topic 3: Geometry and Trigonometry** 

**Trig Identities and Proofs** 

- 1. Given that  $\cos x = \frac{4}{7}$ , where x is an acute angle
  - (a) Find the value of  $\sin x$

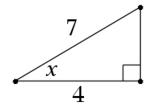
(4 marks)

(b) Find the value of  $\sin 2x$ 

(3 marks)

Mark scheme:

(a)



$$7^2 = 4^2 + b^2 \tag{M1}$$

$$49 = 16 + b^2 \tag{A1}$$

$$33 = b^2$$

$$b = \sqrt{33} \tag{M1}$$

$$\sin x = \frac{\sqrt{33}}{7} \tag{A1}$$

(b) 
$$\sin 2x = 2\sin x \cos x$$
 (M1)

$$\sin 2x = 2\left(\frac{\sqrt{33}}{7}\right)\left(\frac{4}{7}\right) \tag{M1}$$

$$\sin 2x = \frac{8\sqrt{33}}{49} \tag{A1}$$