

'A Speedy Sea Current'

$$\text{a) } V_A = \frac{150}{20} = 7.5\text{kph}$$

$$V_B = \frac{250}{20} = 12.5\text{kph}$$

[2 marks]

$$\text{b) using the cosine rule, } d^2 = 150^2 + 250^2 - 75000\cos 80$$

$$d = 268 \text{ km (3 s.f.)}$$

[2 marks]

$$\text{c) idea that the sine rule must be used } \frac{\sin \theta}{250} = \frac{\sin 80}{268}$$

$$\frac{\sin \theta}{\sin 80} = 0.93$$

[3 marks]

$$\text{d) area} = \frac{1}{2}ab\sin C$$

$$\text{area} = \frac{1}{2} \times 250 \times 150 \times \sin 80$$

$$\text{area} = 18500 \text{ km}^2$$

[3 marks]