

## EXERCISES: Trigonometry & Bearings

- 1** A yacht leaves Sydney and sails 120 km on a bearing of  $080^\circ$ .  
**a** How far north of Sydney is the yacht (to the nearest kilometre)?  
**b** What is the bearing of Sydney from the yacht?
- 2** Colin leaves Nyngan and drives 204 km to Bourke. The bearing of Bourke from Nyngan is  $323^\circ$ .  
**a** How far north of Nyngan is Bourke (to the nearest kilometre)?  
**b** What is the bearing of Nyngan from Bourke?
- 3** The distance 'as the crow flies' from Sydney to Wollongong is 69 km. If the bearing of Wollongong from Sydney is  $205^\circ$ , calculate:  
**a** how far south Wollongong is from Sydney (to the nearest kilometre)  
**b** how far east Sydney is from Wollongong (to the nearest kilometre)  
**c** the bearing of Sydney from Wollongong (to the nearest degree).
- 4** Jana cycles 10 km due south, then 7 km due west.  
**a** How far is Jana from her starting point?  
**b** What is the bearing of the starting point from where she stops?
- 5** Nelson runs every morning. He first runs 3 km due east, then 1 km due north and then directly back to his starting point.  
**a** Calculate correct to two decimal places, how far Nelson runs every morning.  
**b** On what bearing does Nelson run on his way back to the starting point?
- 6** A triathlete cycles 20 km from the end of the swim leg on a bearing of  $200^\circ$  to the finish line.  
**a** How far (to the nearest kilometre) has the triathlete travelled in a southerly direction?  
**b** What is the bearing of the end of the swim leg from the finish line?
- 7** A hiking group walks from Sandy Flats to Black Ridge (a distance of 20.9 km) at a bearing of  $078^\circ$ . They then turn and hike due south to Rivers End, then due west back to Sandy Flats. How far have they hiked altogether (to the nearest 0.1 km)?
- 8** A triangular orienteering run starts at Alpha and passes through the checkpoints of Bravo and Charlie before finishing at Alpha. Bravo is 8.5 km due east of Alpha, and Charlie is 10.5 km due south of Bravo.  
**a** Calculate the distance from checkpoint Charlie to the finish. Give your answer to the nearest kilometre and also to the nearest metre.  
**b** Find the bearing of checkpoint Alpha from checkpoint Charlie, to the nearest degree.
- 9** A fitness class starting from the gym walks 3.5 km west, then 1.2 km south to the pool.  
**a** How far (to the nearest tenth of a kilometre) are they from the gym?  
**b** What is the bearing of the gym from the pool (to the nearest tenth of a degree)?
- 10** A plane takes off at 10:15am and flies on a bearing of  $150^\circ$  at 700 km/h.  
**a** How far (to the nearest kilometre) due south of the airport is the plane at 1:45pm?  
**b** What is the bearing of the airport from the plane?