

Remember: The first and most important step in solving word problems is to **draw a neat, well labeled diagram.**

- D1 1. The angle of depression to a disabled ship from an approaching helicopter is 55° . If the helicopter is 500m above the level of the water, what is the horizontal distance from the helicopter to the ship?
- D1 2. Donna measured the angle of elevation of a church steeple and found it to be 10° . She walked 100m towards the steeple and measured the angle of elevation again; this time it was 20° . Find the height of the steeple, assuming the ground is level.
- D2 3. Two islands A and B are 5.6km apart. To one decimal place, how far is a third island C, from each of A and B if $\angle BAC = 40^\circ$ and $\angle ABC = 60^\circ$?
4. The distance from the tee-off point to the green is 360m. On this hole, a golfer drives 200m but is 25° off the line. If he hits the ball 160m toward the hole in the second shot, how far short of the hole will he be?
- D2 5. A lighthouse 12m tall stands on a cliff. To an observer on a ship, the angle of elevation of the bottom and top of the lighthouse are 12° and 22° respectively. Determine the height of the lighthouse above the water level if the observer is 1.5m above the water level.
- D2 6. A helicopter is flying 150m above the ground and a light beam is angled at 70° from the horizontal. The beam spreads out at an angle of 5° . How wide an area does the beam light?
- D1 7. A gorge with a rectangular cross section is 59m wide. The angle of depression of a bottom corner when viewed from the opposite edge is 74° .
 a) How deep is the gorge, to the nearest metre?
 b) Suppose the gorge were 100m wide and 35m deep. What would the angle of depression be? (calculate to the nearest tenth of a degree)
- D2 8. At night, a security camera pans over a parking lot. The camera is on a post at point A, which is 53 m from point C and 71m from point B. The distance from B to C is 68m. Calculate angle A (to the nearest tenth of a degree), the angle through which the camera pans.
- D2 9. A pilot is flying from Thunder Bay, Ontario to Dryden, Ontario, a distance of approximately 320 km. As the plane leaves Thunder Bay, it flies 20° east off-course for exactly 80 km.
 a) After flying off-course, how far is the plane from Dryden?
 b) By what angle must the pilot change her course to correct the error?

Answers: 1) 350m 2) 34m 3) 4.9 km from A and 3.7 km from B 4) 38m 5) 26.8m
 6) 14.4m 7a) 206m 7b) 19.3° 8) 64.6° 9)a) 246.4km b) 26° turn towards Dryden