

Q1

(i) $\cos 75^\circ = \frac{d}{60}$
 $d = 60 \cos 75^\circ$
 $= 15.5 \text{ nm}$

(ii) $\sin 75^\circ = \frac{m}{60}$
 $m = 60 \sin 75^\circ$
 $= 58.0 \text{ nm}$

Q5

$\cos 42^\circ = \frac{x}{18}$
 $x = 18 \cos 42^\circ$
 $= 13.376\dots$
i.e. 13.4 km south

Q2

$\tan 52^\circ = \frac{x}{100}$
 $x = 100 \tan 52^\circ$
 $= 127.994\dots$
i.e. 128.0 km from P

Q6

$\sin 35^\circ = \frac{d}{435}$
 $d = 435 \sin 35^\circ$
 $= 249.505\dots$
i.e. Mal is 249.5 km east of Alice Springs

Q3

(i) $\sin 23^\circ = \frac{d}{1500}$
 $d = 1500 \sin 23^\circ$
 $= 586.096\dots$
i.e. 586.1 km south of P

(ii) $\cos 23^\circ = \frac{m}{1500}$
 $m = 1500 \cos 23^\circ$
 $= 1380.757\dots$
i.e. 1380.8 km west of P

Q7

(i) $\tan 34^\circ = \frac{d}{153}$
 $d = 153 \tan 34^\circ$
 $= 103.199\dots$
i.e. 103.2 km away

(ii) $\cos 34^\circ = \frac{153}{x}$
 $x = \frac{153}{\cos 34^\circ}$
 $= 184.551\dots$
i.e. 184.6 km from original position

Q4

(i) $\cos 52^\circ = \frac{1500}{x}$
 $x = \frac{1500}{\cos 52^\circ}$
 $= 2436.403\dots \text{m}$
i.e. 2436 m from Jake (nearest metre)

(ii) $\tan 52^\circ = \frac{y}{1500}$
 $y = 1500 \tan 52^\circ$
 $= 1919.912\dots \text{m}$
i.e. the ship is 1920 m from Kirsty

Q8

(i) $\tan 40^\circ = \frac{58}{x}$
 $x = \frac{58}{\tan 40^\circ}$
 $= 69.121\dots$
i.e. 69.1 km east

(ii) $\sin 40^\circ = \frac{58}{y}$
 $y = \frac{58}{\sin 40^\circ}$
 $= 90.231\dots$
i.e. 90.2 km from the start