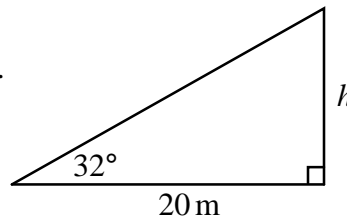*For lengths, answer to 1 decimal place. For angles, answer to the nearest minute.*
Draw a diagram for each question. (Some are started for you).

Q1 The angle of elevation of the top of a flag
pole from a point 20 m from its base is 32°.

Find the height of the pole.

h

32°

20 m

Q2 Julia observes a car approaching on the desert plain from
her position on top of a 30 m cliff. The angle of depression
of the car at that instant is 47°.

How far from the base of the cliff is the car?

47°

30 m

d
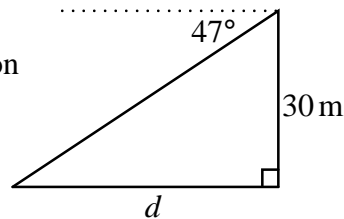
Q3 A slide has an angle of depression of 58°. If the slide is 12.3 m long,
find the horizontal distance that the slide reaches .

Q4 Philip observes a ship out to sea from his position at the top of a 42 m
high lighthouse. The angle of depression to the ship is 23°40'.

Find the distance to the ship:

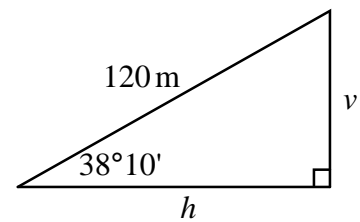(i) from the base of the lighthouse.

(ii) directly along Philip's line of sight.

23°40'

y

42 m

S

x
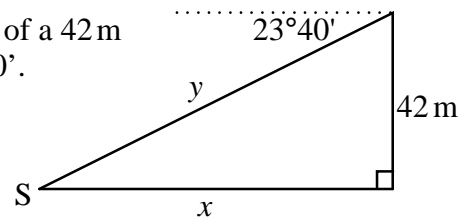
Q5 A bulldozer lumbers up a hill for 120 m. Its instruments
show that the hill has an angle of elevation of 38°10'.

Find:

(i) the vertical distance that the bulldozer has travelled.

(ii) the horizontal distance that the bulldozer has travelled.

120 m

v

38°10'

h

Q6 Ann is on top of a building and observes a man on top of
a taller building nearby at an angle of elevation of 16°.
If her building is 52 m high and the other is 91 m tall,
how far in a direct line is Ann from the man?

M

d

A   16°

91 m

52 m
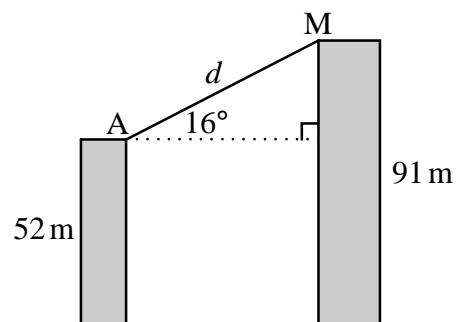
Q7 The 15 m arm of a crane is horizontal before it lifts its load from the ground to a point 9.4 m vertically above the ground. What is the angle of elevation through which the load has been lifted?

Q8 Joy is sitting in a tree-top 3.5 m tall and she observes Fritz the cat on the ground, 2 m from the base of the tree. Calculate the angle of depression from Joy to Fritz.

Q9 A sailor sights a fortress on top of a 45 m cliff from his position 1.6 km out from the base of the cliff. What is the angle of elevation from the sailor to the fortress?

Q10 The angle of elevation from D to B is 30°.
The angle of elevation from D to C is 45°.
AD is 20 m .

Find the distance from B to C.
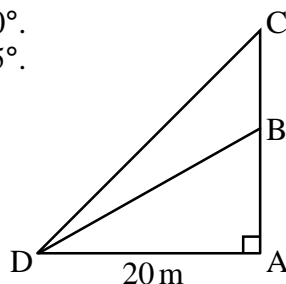
Q11 Sarah is standing on a cliff-top and observes the angle of depression to a point A in a deep gorge to be 50°. Sarah then turns in the opposite direction and observes another point B in a second gorge to have an angle of depression of 65°. The points, A and B, are both on the same horizontal level 45 m beneath Sarah.

Find the distance between A and B.
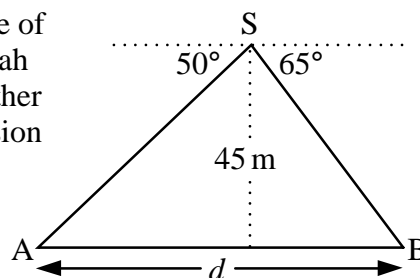
Q12 At a certain point on a cliff-face, a rock-climber, Rob, observes the base of the cliff opposite to have an angle of depression of 60°. He also observes the top of the same cliff to have an angle of elevation of 40°. He knows that the distance from the base of the cliff he is climbing to the base of the opposite cliff is 110 m.

If the cliff that Rob is climbing is 30 m taller than the other, find the height of the smaller cliff.
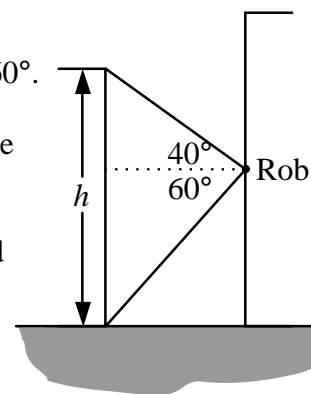
ANSWERS			
A) 5.3 m	H) 58.7 m	O) 141.5 m	V) 38°48'
B) 6.5 m	I) 74.2	P) 279.6 m	W) 42°46'
C) 8.5	J) 94.3	Q) 282.8 m	X) 49°13'
D) 12.5 m	K) 95.8	R) 312.6 m	Y) 55°11'
E) 12.9	L) 97.8 m	S) 1°37'	Z) 60°15'
F) 28.0 m	M) 104.6 m	T) 2°36'	
G) 47.9 m	N) 116.7 m	U) 33°29'	