

GRADE 11

SUBJECT: MATHEMATICS

WEEK 9 LESSON 1

TOPIC: TRIGONOMETRY

OBJECTIVE: Solve practical problems involving heights and distances in three dimensional situations

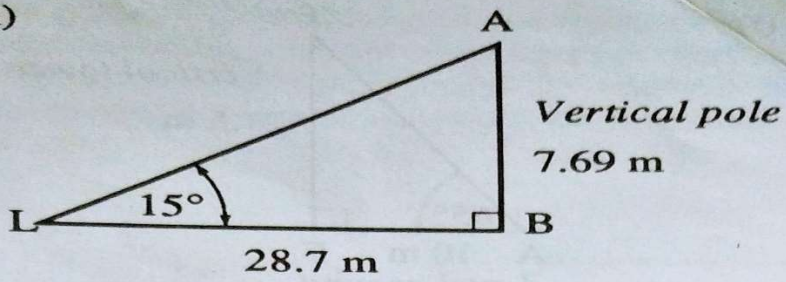
SUB-TOPIC: ANGLES OF ELEVATION AND DEPRESSION

Content:

A vertical pole AB is standing on level ground. L and M are two points 30 m apart on the same side of a straight road running from East to West past the pole. The bearing of B , the foot of the pole, from L and M is 012° and 052° respectively. The angle of elevation of A from L is 15° .

- (a) Draw a sketch of triangle BLM indicating on your diagram the bearings of B from L and M .
- (b) Calculate:
 - (i) the distance LB
 - (ii) the height of the pole AB .

(ii)



Level ground

Right-angled triangle

Fig. 23.33

Considering the *right-angled triangle ABL*.

Then $\tan 15^\circ = \frac{AB}{LB} = \frac{AB}{28.7 \text{ m}}$

So $AB = 28.7 \text{ m} \times \tan 15^\circ$
 $= 28.7 \text{ m} \times 0.268$
 $= 7.69 \text{ m (correct to 3 s.f.)}$.

Hence the *height* of the pole AB is 7.69 m.

Reference: Mathematics a Complete Course Vol 2