

$$(c) \log_a m = \log^b b \times \log_a m.$$

9. A man on a horizontal plane observes that the angle of elevation of the top of a tower, 800 yards away, is 15° . How much nearer must he come to the tower in order to make this angle just 30° ?

Let A be top of the tower, C the base, D the first position, C the second position, DC = 800 yds.

Then the angle ADB = angle BAD each being $15^\circ \therefore AB = DB = x$, say
CB = 800 - x

$$\text{Then } \frac{800-x}{x} = \cos 30^\circ = \frac{\sqrt{3}}{2} \therefore 1600 = x(\sqrt{3} + 2)$$

$$x = \frac{1600}{2 + \sqrt{3}} = 1600(2 - \sqrt{3}) = 428.72 \text{ yds.}$$

10. In a triangle having $a = 9$, $b = 12$, $A = 30^\circ$ find c .

$$\text{Given } \log 2 = 30103 \quad \log 171 = 2.23301$$

$$\log 3 = .47712 \quad \log 368 = 2.56635$$

$$L \sin 11^\circ.48'.39'' = 9.31108$$

$$L \sin 41^\circ.48'.39'' = 9.82371$$

$$L \sin 108^\circ.11'.21'' = 9.97774$$

Since a is less than b , but $> b \sin A$, and A an acute angle we have two triangles

$$\sin B = \frac{b}{a} \sin A = \frac{12}{9} \cdot \frac{1}{2} = \frac{2}{3}$$

$$L \sin B = 10 + \log 2 - \log 3 = 9.82391$$

$$\therefore \begin{cases} B = 41^\circ.48'.39'' \text{ or } 148^\circ.11'.21'' \\ A = 30^\circ \end{cases}$$

$$\therefore \begin{cases} C = 108^\circ.11'.21'' \text{ or } 11^\circ.48'.39'' \end{cases}$$

$$\text{Again } c = \sin C \frac{a}{\sin A} = \sin C \times \frac{9}{\frac{1}{2}}$$

$$\therefore \log c = \angle \sin C - 10 + 2 \log 3 + \log 2 = 1.23301.$$

$$\therefore \begin{cases} C = 17.1 \text{ if we take the first value of } C \\ C = 3.68 \text{ if we take the second value of } C. \end{cases}$$

MAGAZINE AND BOOK REVIEWS.

Credit should have been given to *Education* for the article "Some Thoughts on English in Secondary Schools," by Miss Ida M. Street, which appeared in the January number, 1899.

Among the great American magazines none has devoted so much attention to education as the *Atlantic*. In the February number is begun a series of papers entitled "Talks to Teachers on Psychology," by William James, which cannot fail to engage the attention of those for whom it is written. In the same number is a charming short story, "The Queen's Twin," by Sarah Orne Jewett. Mrs. Todd, with whom the author's readers are already

familiar, again appears and conducts another expedition through the country of the Pointed Firs. Charles G D Roberts contributes a story of his Acadian country, "Gaspar of the Black Le Marchands."

The opening article in the February *Appleton's Popular Science Monthly* is devoted to vegetation, "A Remedy for the Summer Heat of Cities." It is prepared especially for the conditions existing in New York, but it urges upon all cities "the cultivation of trees, shrubs, plants, vines, and grasses." There is also an account of a curious death trap in Yellowstone National Park, where carbonic acid gas is forme