

IN THE HIGH SCHOOL ARITHMETIC

17. See No. 7.

18. 12 ac. = 120 sq. ch. $\therefore$ width = 5 ch.

19. Apply formula on page 87.

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20. Area = 10000 plan, $\therefore$ linear measurement = $\sqrt{10000}$
or 100 plan. $\therefore$ 24 yd. = $\frac{24}{100}$ yd. in plan = 8.64 in.

21. The diagonal of the end of the stick equals the
diameter of the end of the tree. Diameter = $(12 \div \frac{2}{7})$
ft. = $4\frac{2}{7}$ ft. Now side of stick : the diagonal :: 1 : $\sqrt{2}$
 $\therefore$ side = $(\frac{4}{7} \div \sqrt{2})$ ft. = 2.699 ft.

22. Cost in pence = $21\frac{1}{2} \times 13\frac{1}{2} \times 6$.

23. Length of string = $\sqrt{24^2 + 18^2 + 7^2}$ ft. = 30.505 ft.

24. Apply formula page 87.

25. The diagonal divides the quadrilateral into 2 Δ s
whose sides are 20, 30, 40 and 25, 32, 40 chains; or into
2 Δ s whose sides are 20, 32, 40 and 25, 30, 40 chains.
Apply formula.

26. Diameter of $\odot$ = diagonal of square. The dia.
of sq. = $\sqrt{8^2 + 3^2}$ ft. = $8\sqrt{2}$ ft. $\therefore$ area of $\odot$ = $\frac{\pi}{4} (4\sqrt{2})^2$
sq. ft. = $100\frac{1}{2}$ sq. ft.

27. Perimeter of semi-circle = semi-circumference +
diameter, circumference = $2 \cdot \frac{\pi}{4} \cdot 2$ ft. $\therefore$ semi-circumfer-
ence = $6\frac{2}{7}$ ft.

28. If r is the radius, then $\frac{\pi}{4}r + r = 80$.

29. Inner radius = $(420 \div \frac{4}{7})$ ft. and the outer radius =
 $(560 \div \frac{4}{7})$ ft. $\therefore$ breadth of road = $(560 - 420) \div \frac{4}{7}$ ft.

30. 1000 times the circumference of the wheel equals
one mile. $\therefore$ the circumference = 5.28 ft. $\therefore$ dia. =
 $(5.28 \div \frac{\pi}{4})$ ft. = 1.68 ft.

31. Radius of pond = $(220 \div \frac{4}{7})$ yd. = 35 yd. Area of
pond = $(\frac{\pi}{4} \times 35^2)$ sq. yd. = 3850 sq. yd. $\therefore$ area of outer
circle, including both path and pond, is $(3850 + 120)$ sq.