

SOLUTIONS OF THE PROBLEMS

4th has a start, equal to the time it takes him to go $\frac{2}{3}$ of a round, he would finish with the 5th. \therefore he should have a start of $3\frac{1}{11}$ min. Similarly for the others.

60. They both fill $\frac{1}{30} + \frac{1}{36}$ in 1 min. \therefore in 12 min. they fill $\frac{2}{3}$. The first pipe will fill $\frac{9}{35}$ in $\frac{9}{35}$ of 30 min. $= 7\frac{5}{7}$ min.

61. 21, page 188.

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62. 16, page 213.

63. A receives \$200 and pays B \$150 and C \$125. \therefore A loses \$75. B receives \$150 and pays D \$100. \therefore B gains \$50. C receives \$125. D receives \$100.

64. Sup. each cost \$2000. \therefore B's cost = \$1700 for each. \therefore B's S. P. = \$2040 for one and \$1275 for the other. The dif. is \$765, which is 5 times the given dif. \therefore each lot cost A \$400.

65. 121 sq. units $= \frac{1}{16}$ ac. $= 484$ sq. yd. \therefore 1 sq. unit $= 4$ sq. yd. \therefore the linear unit $= 2$ yd.

66. Sup. he bought 300 yd. at \$1 a yard. He sells 150 yd. at \$1.20 and 50 yd. at 50c., receiving \$205. To gain 15% he must receive in all \$345. \therefore he sells the remaining 100 yd. for \$140, or \$1.40 a yd., which is $16\frac{2}{3}\%$ above the marked price.

67. The int. on \$93 is \$4 in 1 year, or $\$3\frac{1}{3}$ in 10 mo. \therefore the P. W. of $\$96\frac{1}{3}$ due in 10 mo. is \$93. \therefore the P. W. of \$4335 is \$4185.

68. They approach each other at the rate of $2\frac{1}{2}$ mi. per hr.

69. Total vol. $= 18 \times 18 \times 3$, or 972 cu. in. Vol. of hole $= \frac{2}{7} \times 7 \times 7 \times 3$, or 462 cu. in. \therefore vol. of block $= 510$ cu. in. Surface of 4 sides $= 18 \times 3 \times 4$, or 216 sq. in. Surface of top $= 18^2 - \frac{2}{7} \times 7 \times 7 = 170$ sq. in. Circular surface $= 14 \times \frac{2}{7} \times 3 = 12$ sq. in. \therefore total surface $= 216 + 340 + 12 = 568$ sq. in.