

2. Find the value of—

$$\frac{5\frac{1}{2} - \frac{2}{3}}{3\frac{1}{2} - \frac{1}{3 - \frac{2 - \frac{1}{2}}{\frac{1}{2} + \frac{1}{3}}}}$$

3. What number divided by $\frac{2}{3}$ of $5\frac{1}{2}$ will give as the result the reciprocal of 11?
4. The rent a farmer pays is 10s. 8d. an acre. His whole rent for 150 acres is exactly the same as his neighbour pays for 120 acres. How much does the latter pay per acre?
5. What is the true present value of £4,000 due 4 years hence at 5 per cent. compound interest?
6. Find the length of a room the area of whose walls is 71 sq. yd. 7 sq. ft. 126 sq. in., the breadth $13\frac{1}{4}$ ft., and the height 11 ft. 3 in.
7. The estate of a bankrupt, which is valued at £3,151 5s. 10d., is to be divided among his four creditors in proportion to the amounts of their claims. A's claim is to B's as 3:4, B's to C's as 5:6, C's to D's as 7:8. What must each receive?
8. If 3 oxen are worth 22 sheep, and 6 sheep cost £3 3s., what must be given for 50 oxen?
9. The difference in area between two squares is 62·1049 sq. ft., and the side of the smaller square is 7 yd.: what is the side of the larger square?
10. One man invests a sum of money in the $3\frac{1}{2}$ -per-cents, and another invests an equal sum in the 4-per-cents. They obtain the same amount of interest. The 4-per-cents being at 96, at what price are the $3\frac{1}{2}$ -per-cents?
11. If £21 = 428 marks, and 278 francs = £11, how many marks are equal to 124 francs?
12. Divide £10 4s. 2d. among 23 men, 30 women, and 35 children, giving each woman $\frac{3}{4}$ of a man's share, and each child $\frac{2}{3}$ of a woman's.

Arithmetic.—For Senior Civil Service. Time allowed: 3 hours.

1. Resolve the numbers 2926, 5005, 6545 into prime factors; hence find their G.C.M. and L.C.M.
2. Reduce 1234567 drams avoirdupois to tons; and find to the nearest farthing the cost at £1 a ton.
3. Add together $5\cdot12\dot{3}\dot{4}$, $16\cdot\dot{5}3\dot{4}$, and $\cdot19\dot{6}$.
Reduce $\cdot12\dot{1}428\dot{5}\dot{7}$ to a simple vulgar fraction.
4. Find the value of 578·735 yards of material at £1 2s. $7\frac{3}{4}$ d. a yard.
5. A quantity of fruit is bought for £50; 40 per cent. is sold at a profit of 35 per cent. on its cost; of the remainder, half cannot be sold, and the other half realises $\frac{2}{3}$ of the selling-price of the good fruit per pound. Find the total loss.
6. What sum will amount to £2,005 in 5 years at 11 per cent., compound interest?
7. A certain 3-per-cent. stock is at 92, and a 4-per-cent. stock at 122: which is the better investment? If you had £5,550 to invest, what would be the difference in the yearly income offered by the two stocks?
8. The populations of the four largest towns in New Zealand in 1896 were 57,616, 41,758, 51,330, and 47,280 respectively; their increases per cent. for the preceding period of 5 years were 12·3, 22·1, 7·3, and 3·1 respectively: what was the increase per cent. of the average population of the four towns during the same period?
9. If a grocer mixes 144 lb. of tea at 1s. $5\frac{1}{4}$ d. per lb. with 180 lb. at 1s. 3d. per lb., at what price per lb. must he sell the mixture so as to gain $2\frac{1}{2}$ d. per lb. after paying 6s. 9d. for paper and labour?
10. Find the square root of $\frac{1}{2}$ to four places of decimals, and the cube root of 1442897.
11. If 55 men working 9 hours a day do $\frac{2}{3}$ of a certain piece of work, and 180 men working 11 hours a day do the remainder, compare the times spent on the work before and after the change.
12. Three bicyclists racing round a circular path $\frac{1}{4}$ of a mile in circumference all start from scratch, and their rates per hour are 20 miles, 20 miles 400 yards, and 20 miles 650 yards respectively: when will they come together again?

Geography.—For Class D. Time allowed: 3 hours.

1. Explain clearly and illustrate by diagrams the changes of the seasons.
2. What are the chief conditions upon which the climate of a place depends; and how does each of them affect it?
3. Describe, either in words or by means of a sketch-map, the position of the different countries which border on the frontier of our Indian Empire, including therein Burma.
4. Enumerate the principal islands and groups of islands in the Mediterranean, giving their position, and the countries to which they respectively belong politically.
5. Describe fully the course and character, mentioning the tributaries and chief towns, of the Rhine, or of the Mississippi.
6. Draw a sketch-map of the eastern Soudan to illustrate the present and projected military operations; or of Africa south of the equator, showing its physical features and political divisions.
7. Name, as far as you can in the order of their discovery, the principal goldfields of the world, and state approximately the annual value of the gold they severally produce.
8. Give in order the names and the chief towns of those of the United States that border on the Atlantic.