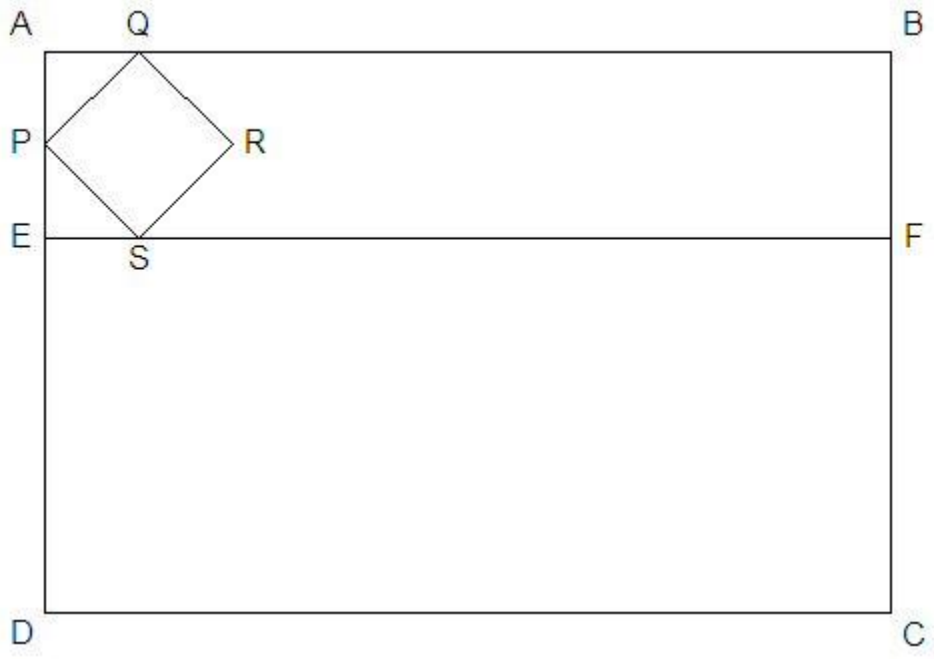
# ARITHMETIC

## SECTION B
## Time allowed: Time allowed: 1¼ hours

1. A man is offered a job at a certain rate of pay with either a yearly increase in pay of £24 or a half-yearly increase in pay of £6. Explain which is the better offer.
2. John spent £12. 10s. on articles costing 12s. 6d., 2s. 6d. and 1½d. each. If he bought 100 articles altogether, including at least one of each kind, how many of each article did he buy?
3. The diagram shows a rectangle ABCD of area 864 sq. ins., a rectangle ABFE and a square PQRS: if AP equals AQ in length, AD is two-thirds of AB in length and AE is one-quarter of AD in length, what is the area of the square PQRS?




4. 1 - 1/2, 1 - 1/3, 1 - 1/4, are the first three numbers of a sequence of 500 numbers. What is the last number of the sequence? Find the answer when all the numbers of the sequence are multiplied together.
5. 2 + 1 + 3 + 5 - 4 is an arrangement of 1, 2, 3, 4, 5, +, +, +, -, so that the result is equal to 7. Find an arrangement of 1, 2, 3, 4, 5, +, +, +, -, so that the result is equal to 3, and find also an arrangement of 1, 2, 3, 4, 5, +, -, x,:, so that the result is equal to 3.
6. Three boys aged 19, 16 and 12 years share a certain sum of money. After the first has received £400, the second £300 and the third £200, the remainder is divided between them in proportion to their ages. If the 16 year old boy receives £160 more than the youngest, how much does each boy receive?
7. A steamer is timed to run from New York to Liverpool at an average speed of 20 knots. (One knot is one sea mile per hour.) Owing to fog, the steamer is 16 hours late over the first part of the journey. How far from Liverpool must the speed be raised to 24 knots in order that the steamer may arrive on time?
8. In a cycle race Tom gives Dick 2 minutes start; Tom takes 10 minutes to draw level with Dick, then cycles at half-speed. How long will it now take Dick to be as far ahead as he was when Tom started?