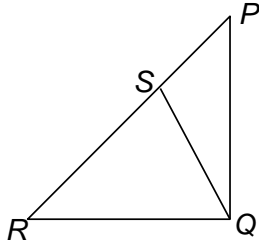


8. What is the maximum possible value of the product of a list of positive integers, which are not necessarily all different, given that the sum of these numbers is 100?

A 10^{10} B 2^{50} C $2^{20} \times 3^{20}$ D 5^{20} E $2^2 \times 3^{32}$

9. Triangle PQR has a right angle at Q and $PQ = QR$. The line through Q which divides the angle PQR in the ratio 1:2 meets PR at S .

What is the ratio $RS:SP$?



A $\sqrt{2}:1$ B $\sqrt{3}:1$ C 2:1 D $\sqrt{5}:1$ E 3:1

10. What is the sum of the values of n for which both n and $\frac{n^2 - 9}{n - 1}$ are integers?

A -8 B -4 C 0 D 4 E 8

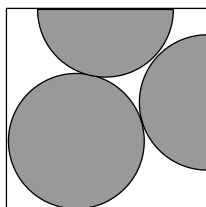
11. A trapezium is bounded by four lines, the equations of which are $x = 0$, $x = 4$, $4y = 3x + 8$ and $y = k$, where $k < 2$.

For which value of k is the numerical value of the perimeter of the trapezium equal to the numerical value of the area of the trapezium?

A $\frac{3}{2}$ B 1 C $\frac{1}{2}$ D $-\frac{1}{2}$ E -1

12. In the diagram, the circle and the two semicircles have radius 1.

What is the perimeter of the square?



A $6 + 4\sqrt{2}$ B $2 + 4\sqrt{2} + 2\sqrt{3}$ C $3\sqrt{2} + 4\sqrt{3}$
 D $4 + 2\sqrt{2} + 2\sqrt{6}$ E 12