

Hundred Starter 12th October

There are 90 counters in a bag.

Each counter in the bag is either red or blue so that

the number of red counters : the number of blue counters =
2 : 13

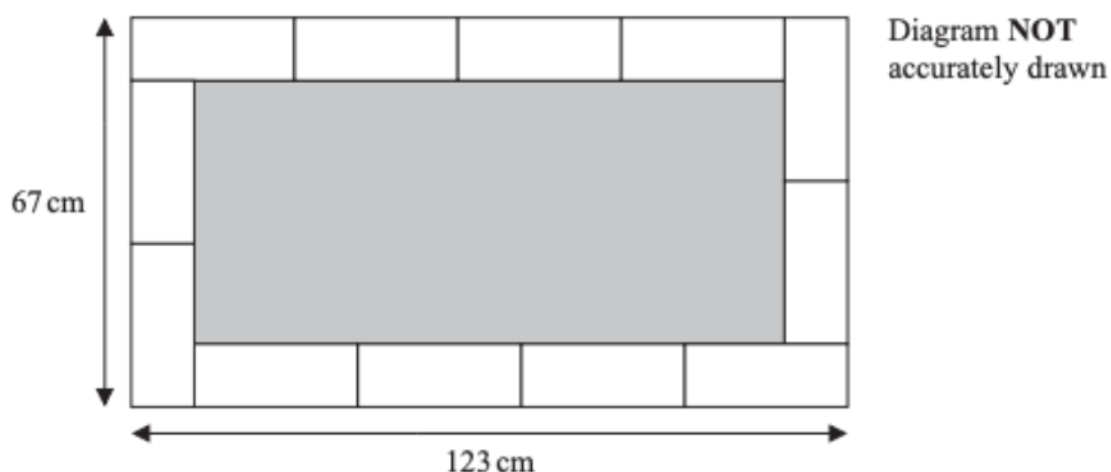
Li is going to put some more red counters in the bag so that

the probability of taking at random a red counter from the
bag is $\frac{1}{3}$

Work out the number of red counters that Li is going to put in
the bag.

Calvin has 12 identical rectangular tiles.

He arranges the tiles to fit exactly round the edge of a shaded
rectangle, as shown in the diagram below.



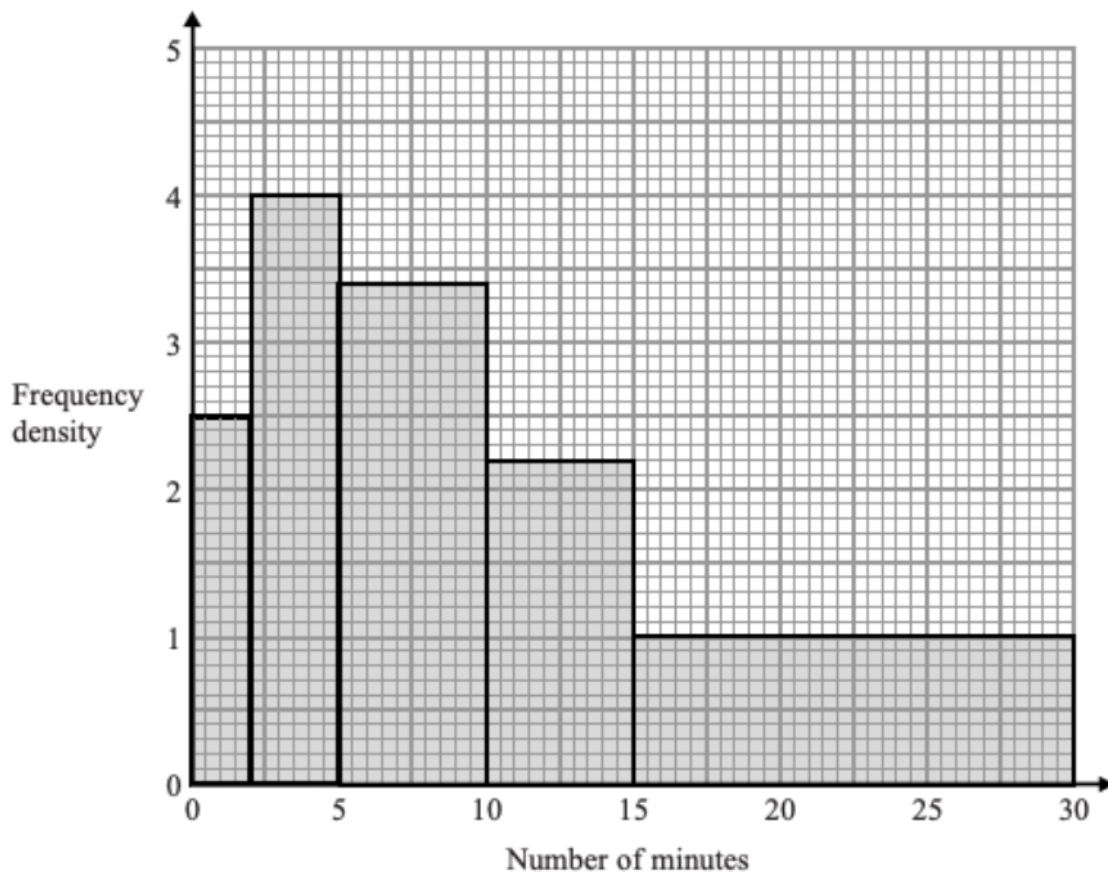
Work out the area of the shaded rectangle.

f is the function such that $f(x) = 4 - 3x$

g is the function such that $g(x) = \frac{1}{1-2x}$

Work out $fg(-1.5)$

The histogram shows information about the numbers of minutes some people waited to be served at a Post Office.



Work out an estimate for the proportion of these people who waited longer than 20 minutes to be served.

$ABCD$ is a trapezium.

$$\vec{DC} = 3\vec{AB}$$

$$\vec{DA} = \begin{pmatrix} -2 \\ 3 \end{pmatrix} \quad \vec{DB} = \begin{pmatrix} -1 \\ 7 \end{pmatrix}$$

Find the exact magnitude of \vec{BC} .

Line **L** has equation $4y - 6x = 33$

Line **M** goes through the point $A(5, 6)$ and the point $B(-4, k)$.

L is perpendicular to **M**.

Work out the value of k .
