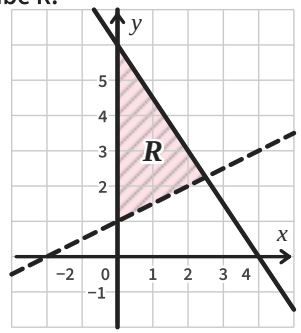
# Inequalities and regions

**1**

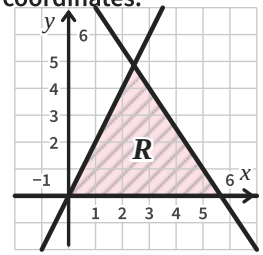
Write down the three inequalities that describe R.




**Answer** _____

**2**

R is the region where $y \geq 0$, $y \leq 2x$ and $3x + 2y \leq 17$. Find the greatest value of $x + 2y$ at a point in R with integer coordinates.




**Answer** _____

**3**

R is the region where $0 \leq x \leq 3$, $y \geq 2x$ and $y < x + k$, where $k$ is a whole number. R contains exactly 14 points with integer coordinates. Find $k$.

**Answer** _____

**4**

R is the region where $y \geq 0$, $y \leq 2x + 1$ and $x + 3y \leq 9$. Find the exact coordinates of the highest point of R.

**Point** _____

**5**

R is the set of points closer to the $y$ axis than to the line $x = 6$, below the line $y = x + 2$ and above the $x$ axis.
Write down three inequalities for R.
How many points with integer coordinates are in R?

**Answer** _____

**6**

R is the region where $y > 2x$ and $y < 2x + 1$. Show that R has points in it, but no point with integer coordinates.

**Reason** _____

**7**

R is the region where $y \geq 1$, $y \leq 2x + 3$ and $y \leq k - 2x$. R is a triangle with an area of 8 square units. Find $k$.

**Answer** _____

**8**

A hall hires small tables that seat 4 for £8 each and large tables that seat 6 for £14 each. It needs seats for at least 72 people, has room for 15 tables at most and wants at least as many small tables as large.
Find the cheapest order.

**Answer** _____