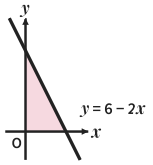
Straight line graphs and area

ANSWERS

1

Find the area of the triangle that $y = 6 - 2x$ makes with the axes.



crosses the y axis at $y =$ 6

crosses the x axis at $x =$ 3

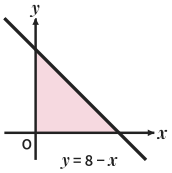
area ½ × 3 × 6 = 9

9

Answer 9

2

Find the area of the triangle that $y = 8 - x$ makes with the axes.



crosses the y axis at $y =$ 8

crosses the x axis at $x =$ 8

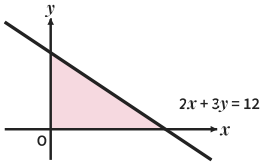
area ½ × 8 × 8 = 32

32

Answer 32

3

Find the area of the triangle that $2x + 3y = 12$ makes with the axes.



crosses the y axis at $y =$ 4

crosses the x axis at $x =$ 6

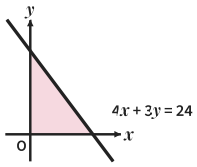
area ½ × 6 × 4 = 12

12

Answer 12

4

Find the area of the triangle that $4x + 3y = 24$ makes with the axes.



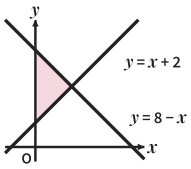
area ½ × 6 × 8 = 24

24

Answer 24

5

Find the area of the triangle enclosed by $y = x + 2$, $y = 8 - x$ and the y axis.



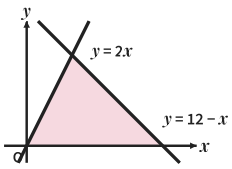
they cross at (3, 5): base 8 − 2 = 6 on the y axis, height 3

9

Answer 9

6

Find the area of the triangle enclosed by $y = 2x$, $y = 12 - x$ and the x axis.



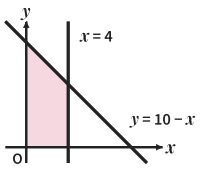
they cross at (4, 8); base 12, height 8

48

Answer 48

7

Find the area of the trapezium enclosed by $y = 10 - x$, the line $x = 4$ and the two axes.



parallel sides 10 and 6, width 4: ½ × (10 + 6) × 4

32

Answer 32

8

A line has gradient −2 and passes through (1, 6). Find the area of the triangle it makes with the axes.

$6 = -2 \times 1 + c$, so $y = 8 - 2x$: crosses at 8 and 4

16

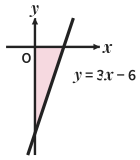
Answer 16

Straight line graphs and area *further practice*

ANSWERS

9

Find the area of the triangle that $y = 3x - 6$ makes with the axes.



crosses at (0, −6) and (2, 0)

6

Answer 6

10

Find the area of the triangle that $x + 2y = 10$ makes with the axes.

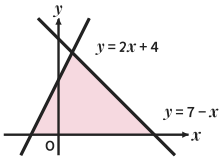
$x = 0$ gives $y = 5$; $y = 0$ gives $x = 10$

25

Answer 25

11

Find the area of the triangle enclosed by $y = 2x + 4$, $y = 7 - x$ and the x axis.



base from −2 to 7 is 9, they cross at (1, 6)

27

Answer 27

12

The line $y = kx + 12$, where k is negative, makes a triangle of area 36 with the axes. Find k.

½ × 12 × base = 36 gives base 6, so the line goes through (6, 0)

$k = -2$

Answer $k = -2$

13

Find the area of the triangle enclosed by $y = x$, $y = 3x$ and $y = 6$.

corners (0, 0), (2, 6) and (6, 6): base 4, height 6

12

Answer 12

14

Find the area of the triangle enclosed by $y = 9 - x$, $y = 3$ and the y axis.

corners (0, 9), (0, 3) and (6, 3)

18

Answer 18

15

The lines $y = x + 1$ and $y = 5 - x$ cross at P. Find P, and the area of the triangle P makes with the points where the lines cross the x axis.

the lines cross the x axis at −1 and 5: base 6, height 3

P(2, 3), area 9

Answer P(2, 3), area 9

16

Sam says $3x + 2y = 12$ makes a triangle of area ½ × 3 × 2 = 3 with the axes. Explain his mistake and find the area.

3 and 2 are not where the line crosses: it crosses at (4, 0) and (0, 6)

12

Answer 12