

Worksheet: Simultaneous Equations

Model answers
to this sheet



Simultaneous
equations
study guide



1) Solve the following simultaneous equations:

a) $y = x + 4$
 $y = 2x + 3$

b) $y - 2x = 4$
 $3x = y + 1$

c) $\frac{y}{2} - x = 2$
 $6x = 2y + 2$

d) $x = 2y + 4$
 $x = 3y - 1$

e) $\alpha + 2\beta = 7$
 $\beta + \alpha = 4$

f) $3y - 2x - 7 = 0$
 $2y + 5x - 11 = 0$

g) $\frac{x}{5} + \frac{y}{10} = 4$
 $x - y = -10$

h) $0.72P - 4.3Q = 5$
 $5.21P + 4.91Q = 7$

i) $A + B = 0$
 $A - B = 1$

2) Sketch the graphs of y against x and, where possible, solve:

a) $y = 5x + 5$
 $y = 6x + 5$

b) $y = 5$
 $y = 6x$

c) $x = 5$
 $y = 6x$

d) $y + 4x = 5$
 $y + 4.1x = 5.1$

e) $y + 4x = 5$
 $y + 4.01x = 5.1$

f) $y + 4x = 5$
 $y + 4x = 5.1$

- 3)
a) For what value of a do the equations

$$y - 3x + 7 = 0$$
$$6x - ay + 3 = 0$$

have no solutions?

- b) For what value of b do the equations

$$y - 3x - b = 0$$
$$6x - 2y + 3 = 0$$

have infinite solutions?

- 4) I think of two numbers. If I add them together I get eight. If I multiply one of them by four and the other by two and then add them, I get twenty-two. What are the numbers?
- 5) I've got pigs and chickens on my farm but I won't tell you how many I have. But I will tell you how many legs they have. There are twenty-two legs. I will tell you how many heads there are too. There are eight heads, all looking at me. Now you tell me how many pigs I have and how many chickens I have got.
- 6) At my café, cakes cost four pounds and sandwiches are two pounds. Eight people come to my café and they all have either a cake or a sandwich. At the end of the day I have made twenty-two pounds. How many cakes and how many sandwiches did I sell?
- 7) One line has gradient -2 and goes through the point $(0,3)$. Another line goes through the points $(-2,10)$ and $(3,5)$. What is the coordinate of their point of intersection?



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