

$$\textcircled{1} : 2a + b = 10$$

$$\textcircled{2} : 3a - b = 5$$



The b's are already equal with opposite signs! All I need to do is add the equations together.

$$\textcircled{1} : 2a + b = 10$$

$$\textcircled{2} : 3a - b = 5$$

+

$$\begin{array}{r} \square a = 15 \\ a = \square \end{array} \quad \begin{array}{l} \curvearrowright \\ \div 5 \end{array}$$



The sign for b's are the same so I have to take one equation away from the other to get rid of the b's.

$$\textcircled{1} : 2a + b = 10$$

$$2 \times \square + b = 10$$

$$\begin{array}{r} \square + b = 10 \\ b = 4 \end{array} \quad \begin{array}{l} \curvearrowright \\ - \square \end{array}$$



Now I know what a is I can put it back in to one of my equations to find b!

$$\textcircled{1} : 2a + 3b = 12$$

$$\textcircled{2} : 3a + b = 11$$



Lets make the b's equal! I need to multiply equation 2 by 3.

$$\textcircled{2} \times 3 : 9a + 3b = \square$$

$$\textcircled{1} : \square + 3b = 12$$

$$\begin{array}{r} \square a = 21 \\ a = \square \end{array} \quad \begin{array}{l} \curvearrowright \\ \div 7 \end{array}$$



The sign for b's are the same so I have to take one equation away from the other to get rid of the b's.

$$\textcircled{1} : 2a + 3b = 12$$

$$2 \times \square + 3b = 12$$

$$\begin{array}{r} \square + 3b = 12 \\ 3b = 6 \\ b = 2 \end{array} \quad \begin{array}{l} \curvearrowright - 6 \\ \curvearrowright \\ \div \square \end{array}$$



Now I know what a is I can put it back in to one of my equations to find b!

$$\textcircled{1} : a + 4b = 24$$

$$\textcircled{2} : 2a + 3b = 23$$



Lets make the a's equal!  
I need to multiply equation 1  
by 2.

$$\textcircled{1} \times 2 : \square + \square = 48$$

$$\textcircled{2} : 2a + 3b = 23$$

$$\begin{array}{r} \square + \square = 48 \\ 2a + 3b = 23 \\ \hline 5b = \square \\ b = 5 \end{array}$$



The sign for a's are the same  
so I have to take one equation  
away from the other to get rid  
of the a's.

$$\textcircled{1} : a + 4b = \square$$

$$a + 4 \times \square = \square$$

$$\begin{array}{r} a + \square = \square \\ a = 4 \end{array}$$



Now I know what b is I can put  
it back in to one of my  
equations to find a!

$$\textcircled{1} : 3a + 2b = 24$$

$$\textcircled{2} : 2a - 3b = 3$$



Lets make the b's equal!  
I need to multiply equation 1  
by  $\square$  and equation 2 by  $\square$ .

$$\textcircled{1} \times \square : \square a + 6b = \square$$

$$\textcircled{2} \times \square : \square a - 6b = \square$$

$$\begin{array}{r} \square a + 6b = \square \\ \square a - 6b = \square \\ \hline 13a = 78 \\ a = \square \end{array}$$



The sign for b's are different  
so I have to add the equations  
together to get rid of the b's.

$$\textcircled{1} : 3a + 2b = 24$$

$$3 \times \square + 2b = 24$$

$$\begin{array}{r} \square + 2b = 24 \\ 3 \times \square + 2b = 24 \\ \hline 2b = 6 \end{array}$$

$$b = 3$$



Now I know what a is I can put  
it back in to one of my  
equations to find b!

$$\textcircled{1} : 7a + 5b = \square$$

$$\textcircled{2} : 3a - 2b = 8$$



Lets make the b's equal!  
I need to multiply equation 1  
by 2 and equation 2 by 5.

$$\textcircled{1} \times 2: \square a + 10b = 18$$

$$\textcircled{2} \times 5: \square a - \square b = \square$$

$$\begin{array}{r} \square a + 10b = 18 \\ \square a - \square b = \square \\ \hline \square a = 58 \\ a = \square \end{array}$$



The sign for b's are different  
so I have to add the equations  
together to get rid of the b's.

$$\textcircled{1} : 7a + 5b = \square$$

$$7x \square + 5b \square$$

$$\begin{array}{r} \square + 5b = \square \\ 5b = \square \\ b = \square \end{array}$$



Now I know what a is I can put  
it back in to one of my  
equations to find b!

$$\textcircled{1} : 5a + 3b = 3$$

$$\textcircled{2} : 4a + 2b = 4$$



Lets make the b's equal!  
I need to multiply equation 1  
by 2 and equation 2 by 3.

$$\textcircled{2} \times 3: \square a + \square b = \square$$

$$\textcircled{1} \times 2: \square a + \square b = \square$$

$$\begin{array}{r} \square a = \square \\ a = \square \end{array}$$



The sign for b's are the same  
so I have to take one equation  
away from the other to get rid  
of the b's.

$$\textcircled{1} : 5a + 3b = 3$$

$$5x \square + 3b = 3$$

$$\begin{array}{r} \square + 3b = 3 \\ 3b = \square \\ b = \square \end{array}$$



Now I know what a is I can put  
it back in to one of my  
equations to find b!

1. Solve the simultaneous equations

$$3x + 2y = 8$$

$$2x + 5y = -2$$

2. Solve the simultaneous equations

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

$$4x - 3y = 11$$

4. Solve the simultaneous equations

$$4x + y = -1$$

$$4x - 3y = 7$$

6. Solve the simultaneous equations

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

$$4x - 3y = 11$$

7. Solve the simultaneous equations

$$4x + y = 10$$

$$2x - 3y = 19$$

a)

$$a + 2b = 9$$

$$a + 3b = 11$$

d)

$$p + r = 15$$

$$p - r = 9$$

g)

$$2m + 5n = 57$$

$$n = m + 2$$

b)

$$2x + 5y = 46$$

$$x + 3y = 27$$

e)

$$3a + 2b = 33$$

$$5a - 4b = 44$$

h)

$$4p + 3r = 5$$

$$r = 2p - 5$$

c)

$$3m + 2n = 14$$

$$4m + 5n = 14$$

f)

$$6x - 5y = 20$$

$$4x + 3y = 7$$

i)

$$a - 5b = 6$$

$$a = 3b + 2$$