

4 Example Construct and solve an equation to solve the problem.

Kim works 4 hours more each day than Jill does, and Jack works 2 hours less each day than Jill does. Over 2 days, the number of hours Kim works is equal to the difference of 4 times the number of hours Jack works and the number of hours Jill works. How many hours does each person work each day?

Make a table using the information given. Let x be the number of hours Jill works in one day.

	Hours Worked Per Day	Hours Worked Over 2 Days
Kim	$x+4 = 10\text{hrs}$	$2(x+4) \rightarrow 2x+8$
Jill	$x = 6\text{hrs}$	$2(x) \rightarrow 2x$
Jack	$x-2 = 4\text{hrs}$	$2(x-2) \rightarrow 2x-4$

$$\text{Kim} = 4\text{Jack} - \text{Jill}$$

$$2x+8 = 4(2x-4) - 2x$$

$$2x+8 = 8x-16-2x$$

$$2x+8 = 6x-16$$

$$\begin{array}{r} -6x \\ \hline -4x+8 = -16 \\ \quad -8 \quad -8 \\ \hline -4x = -24 \\ \quad -4 \quad -4 \\ \hline x = 6 \end{array}$$

$$x = 6 \text{ Jill}$$

Kim works 10hrs,
Jill works 6hrs,
Jack works 4hrs.

5 Example Write and solve an equation to solve the problem.

Lisa is 10 centimeters taller than her friend Ian. Ian is 14 centimeters taller than Jim. Every month, their heights increase by 2 centimeters. In 7 months, the sum of Ian's and Jim's heights will be 170 centimeters more than Lisa's height. How tall is Ian now?

$$x+14 = \text{Ian} + \text{Jim}$$

let $x = \text{Ian's height}$

	Height now	Height after 7 months
Lisa	$x+10$	$x+10+14 = x+24$
Ian	x	$x+14$
Jim	$x-14$	$x-14+14 = x$

$$\text{Ian} + \text{Jim} = 170 + \text{Lisa}$$

$$x+14 + x = 170 + x+24$$

$$2x+14 = 194 + x$$

$$\begin{array}{r} -x \\ \hline x+14 = 194 \\ \quad -14 \quad -14 \\ \hline x = 180 \end{array}$$

$$x+14 = 194$$

$$\begin{array}{r} -14 \quad -14 \\ \hline x = 180 \end{array}$$

$$x = 180$$

Ian is 180cm