

## Grade 10 Assignment Unit 1: Linear Expressions and Linear Equations

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1. Expand the brackets

$3(5x + 7) =$	$-2(3x - 4) =$
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2. Factor fully

$14x + 49 =$	$-7x - 35 =$
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3. Expand any brackets, gather like terms and factor if possible:

$-x + 10 + 5x - 1$
$-4x + 11 - 3(x - 3)$
$2(4x - 1) + 6x - 1$

4. Solve for x. Line up your '=' signs.

$9x + 3 = 84$	$-4x - 1 = -5$
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$$-7x + 8 = x - 8$$

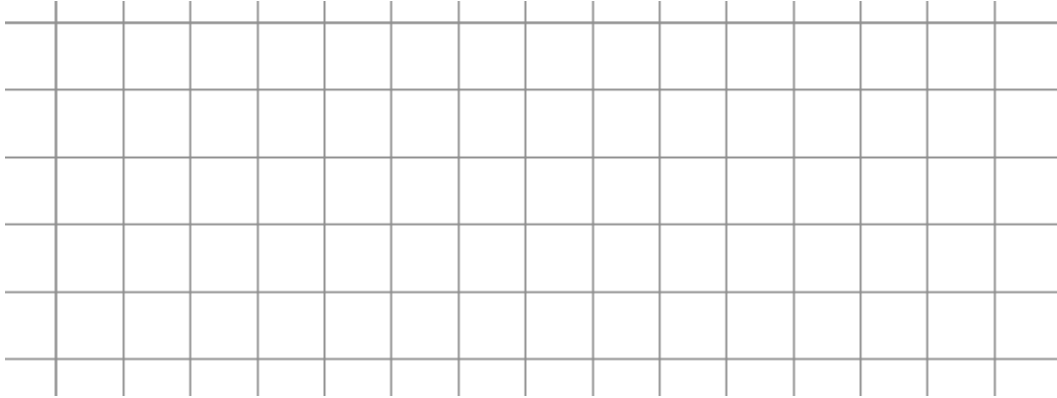
$$2(3x - 1) = 8x - 9$$

$$\frac{x + 3}{3} = \frac{x - 10}{4}$$

$$\frac{x + 5}{3} - 2x = -1 - x$$

5 A rectangle has length  $(3x - 5)$  cm and width  $(x + 7)$  cm.

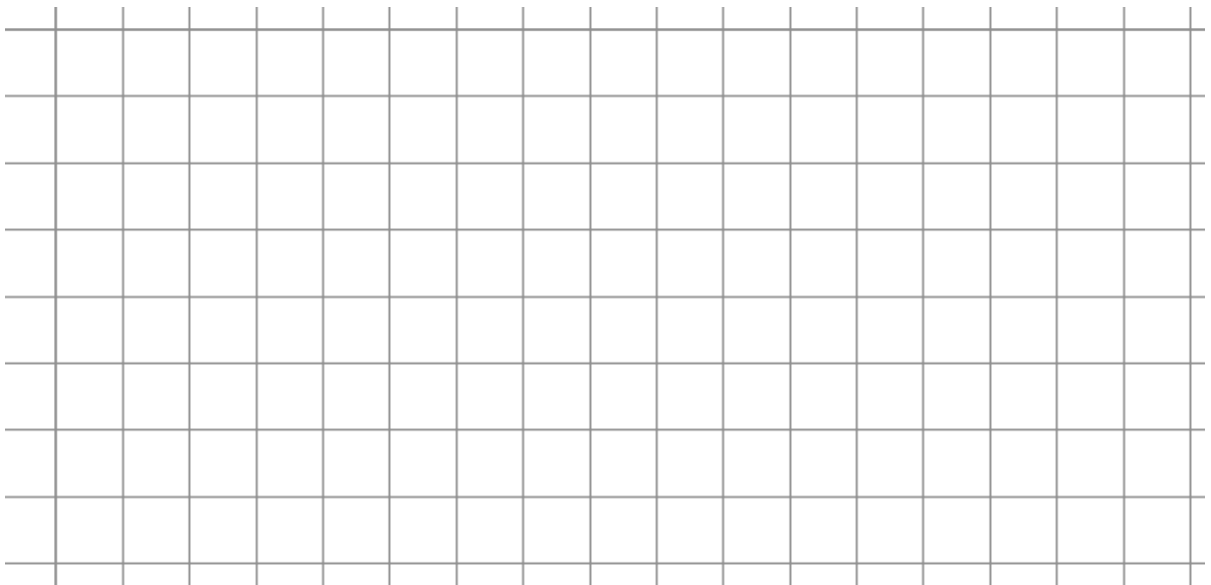
Draw a scale diagram of the rectangle when  $x = 2$  on the grid below.



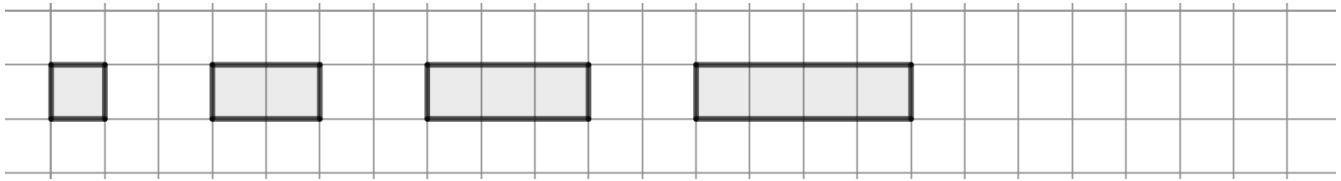
Why is it not possible to draw a diagram of the rectangle when  $x = 1$ ?

For some value of  $x$  the sides are of equal length. Find this value  $x$ .

6 A rectangle has a shorter side and a longer side. The shorter side has length  $x$  cm. The longer side is three times the length of the shorter side. The perimeter (sum of all the edges) is 40 cm. Calculate the value of  $x$  and draw a diagram of the rectangle on the grid below.



7. A sequence of rectangles begins as follows:



(a) Draw the next rectangle in the sequence.

The perimeter of the first rectangle is 4.

The perimeter of the second rectangle is 6.

(b) Complete the table:

Rectangle number	1	2	3	4	5	10	$n$	
Perimeter	4	6						48

8. An exceedingly long algebraic expression has 15 terms. There are five different kinds of terms:  $x$  terms;  $xy$  terms;  $y$  terms;  $x^2$  terms and constant terms.

$$5x + 6xy - 9y + 3x - 2x^2 - 3xy + 8 + 2y - x + 10 + 7x^2 - 3x + 5 - xy + 7y$$

(a) Gather like terms to simplify the expression.

(b) Calculate the value of the expression when  $x = 2$  and  $y = 5$ .