Forming and Solving Inequalities

(a) A rectangle has a width of 4 cm and a length of $(2x + 3)$ cm. The area of the rectangle is greater than 30 cm. Form and solve an inequality in x.

(b) A rectangle has a width of $(y + 1)$cm and a length of $(4y - 5)$ cm. The length of the rectangle is more than twice its width. Form and solve an inequality in y.

(a) $4(2x+3) > 30$

$x > \frac{9}{4}$

(b) $4y - 5 > 2(y+1)$

$y > \frac{7}{2}$

(a) Wendy is w years old. Xander is four years older than Wendy. Yuri is twice as old as Xander. When the ages of all three people are added together, their sum is at least 60 years. Form and solve an inequality in w.

(b) Fred has $(t + 14)$ dollars. Gloria has $(2t + 9)$ dollars. Hari has $(5t - 9)$ dollars. Given that the amount of money Hari has is more than the amount of money Fred and Gloria have combined, form and solve an inequality in t.

(a) $w + w + 4 + 2w + 8 \geqslant 60$

$w \geqslant 12$

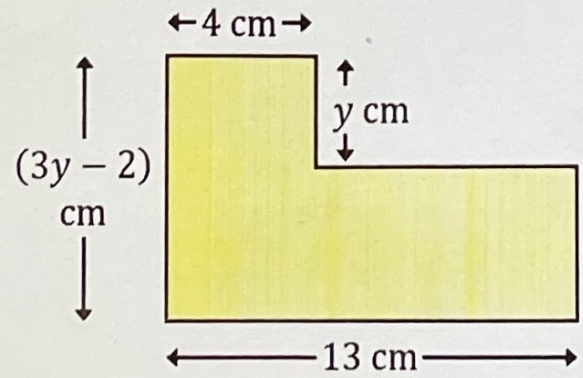
(b) $5t - 9 > t + 14 + 2t + 9$

$2t > 32$

$t > 16$

(a) A triangle has side lengths $4x$ cm, $(3x + 2)$ cm and $(5 - 2x)$ cm. The perimeter of the triangle is between 35 cm and 52 cm. Form and solve a compound inequality in x.

(b) The compound shape shown has an area which is between 58 cm^2 and 76 cm^2. Form and solve a compound inequality in y. Given that y is an integer, find its possible values.



(a) $35 < 5x + 7 < 52$

$\frac{28}{5} < x < 9$

(b)

$58 < 4y + 13(2y - 2)$

$\frac{14}{5} < y < \frac{17}{5}$

$y = 3$