

3. a) The length of a rectangle is 5 metres greater than its width.

i) Use the table to show possible lengths.

ii) Calculate the perimeter. Remember:

$$P = 2(\ell + w) \quad \text{OR} \quad P = 2\ell + 2w$$

b) Use the table to help solve the following problem:

**The length of a rectangle is 5 metres greater than its width. If the perimeter is 42 metres, determine the length and width.**

Width	Length	Perimeter
1	6	$2(1+6)$
2	7	$2(2+7)$
10	15	$2(10+15)$
w	w+5	$2(w+w+5)$

Let w be the width

width	length
w	w+5

$$2(w+w+5) = 42$$

$$2(2w+5) = 42$$

$$4w + 10 - 10 = 42 - 10$$

$$\frac{4w}{4} = \frac{32}{4}$$

$$w = 8$$

∴ The width is 8m  
The length is 13m

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4. d) The length of a rectangle is 4 metres longer than the width. If the perimeter of the rectangle is 128 metres, what are the dimensions of the rectangle?

Let w be the width

width	length
w	w+4

$$2(w+w+4) = 128$$

$$2(2w+4) = 128$$

$$4w + 8 - 8 = 128 - 8$$

$$\frac{4w}{4} = \frac{120}{4}$$

$$w = 30$$

∴ width is 30m  
length is 34m

p.37 #3. b) To find the length of a certain rectangle you must triple the width and add 5m. If the perimeter of the rectangle is 74m, determine the dimensions.

Let w be the width

width	length
w	3w+5

$$2(w+3w+5) = 74$$

$$2(4w+5) = 74$$

$$8w + 10 - 10 = 74 - 10$$

$$\frac{8w}{8} = \frac{64}{8}$$

$$w = 8$$

∴ The width is 8m  
The length is  $3(8)+5 = 29m$ .

4. a) A large billboard has a length measuring 5 metres less than triple its width. The perimeter of the billboard is 110 m. What is the width of the billboard?

Let "w" be the width

width	length
w	3w-5

$$2(w + 3w - 5) = 110$$

$$2(4w - 5) = 110$$

$$8w - 10 + 10 = 110 + 10$$

$$\frac{8w}{8} = \frac{120}{8}$$

$$w = 15$$

∴ The width is 15m  
The length is  $3(15) - 5 = 40m$

p.38

- d) There are three consecutive integers. When the least of them is divided by 5, the next by 3, and the greatest is divided by 4 the sum of the quotients is 40. What are the numbers?

Let n, n+1, n+2 be the numbers

$$\frac{12 \cdot n}{12 \cdot 5} + \frac{20 \cdot (n+1)}{20 \cdot 3} + \frac{15 \cdot (n+2)}{15 \cdot 4} = 40$$

$$\text{LCD} : (5)(3)(4) = 60$$

$$\frac{12n}{60} + \frac{20(n+1)}{60} + \frac{15(n+2)}{60} = 40$$

$$\frac{12n + 20(n+1) + 15(n+2)}{60} = 40$$

$$\frac{12n + 20n + 20 + 15n + 30}{60} = 40$$

$$\frac{47n + 50}{60} = \frac{40}{1}$$

$$47n + 50 = 2400 - 50$$

$$\frac{47n}{47} = \frac{2350}{47}$$

$$n = 50$$

∴ 50, 51, 52

- e) George's teacher refused to reveal her age. After being begged for a hint she finally admitted that in 12 years she would be three times as old as she was 20 years ago. How old is she?

Let "a" be the teacher's age

in 12 years	20 years ago
a+12	a-20

$$a+12 = 3(a-20)$$

$$a+12 = 3a - 60 + 60$$

$$a+72 = 3a - a$$

$$\frac{72}{2} = \frac{2a}{2}$$

$$a = 36$$

∴ She is 36 years old.