



**Maths  
Junior Certificate  
Higher Level**

**Past Exam Questions on  
Working out a Problem**

#### Q4 Part (c) 2011 Paper 1

- (c) The new Lansdowne Road stadium has seating capacity for 200 journalists.  
It was decided initially that this seating would be in  $x$  rows of equal value.
- (i) Write, in terms of  $x$ , the number of seats per row required to accommodate the 200 journalists.

During the construction it was decided to have 3 fewer rows to accommodate the 200 journalists.

- (ii) Write, in terms of  $x$ , the number of seats per row now required.

It was found that 15 extra seats per row were required compared to the initial plan.

- (iii) ✍ Write an equation using the above information and solve for  $x$ .



#### Q2 Part (c) 2010 Paper 1


- (c) €2000 was invested at  $r\%$  for 2 years compound interest.  
A tax of 25% was deducted each year from the interest gained.  
At the end of the first year the investment amounted to €2030, after tax was deducted.
- (i) ✍ Calculate the rate of interest  $r\%$ .
- (ii) ✍ Find the amount of the investment at the end of 2 years, after tax has been deducted.

**Q1 Part (b) (ii) 2009 Paper 1**

- (ii) A supermarket has a special offer on three different brands of packets of soap.


The following table gives details of the offer:

Brand	No. of bars per packet	Weight of each bar	Price of packet
A	3	100g	€1.35
B	6	100g	€2.40
C	4	125g	€2.38

-  Which brand has the cheapest price per gram?

**Q2 Part (a) 2009 Paper 1**

2. (a) Eight workers can build a cabin in 60 hours.

-  How many workers are needed if the cabin is to be built in 32 hours?



**Q3 Part (c) 2009 Paper 1**

(c) A swimming pool can be filled by a large pipe operating alone in 4 hours.

(i) What fraction of the pool can be filled by this pipe in 1 hour?

The swimming pool can be filled by a small pipe operating alone in  $x$  hours.

(ii) ✍ Derive an expression in  $x$  for the fraction of the pool filled by the two pipes working together in 1 hour.

It takes 3 hours for the two pipes working together to fill the pool.

(iii) ✍ Find  $x$ .



**Q3 Part (a) 2008 Paper 1**

3. (a) When 23 is added to 4 times a certain number, the answer is 11.

✍ Find this number.

**Q2 Part (c) 2007 Paper 1**

- (c) A survey of 40 students was carried out to find how many owned an MP3 player, a digital camera or a CD player.
- 1 student does not own any of these.
- $x$  students own all three, while  $2x$  own an MP3 player and a digital camera but not a CD player.
- 10 own an MP3 player and a CD player, while 11 own a digital camera and a CD player.
- 22 own an MP3 player, 22 own a digital camera and 24 own a CD player.
- (i) ✍ Construct a Venn diagram and solve for  $x$ .
- (ii) ✍ Hence, calculate the percentage of students who own one item only.

**Q1 Part (c) (ii) 2007 Paper 1**

- (ii) ✍ Simplify  $(\sqrt{6} - 2\sqrt{3})(5\sqrt{3} - 3\sqrt{6})$ ,  
without the use of a calculator.
- Express your answer in the form  $a\sqrt{2} + b$ , where  $a, b \in \mathbf{Z}$ .

**Q2 Part (b) 2007 Paper 1**

- (b) (i) ✍ By putting the smallest number first, place the following numbers in order:  $\frac{10}{7}$ ,  $\sqrt{2}$ ,  $\frac{7}{2\sqrt{6}}$ ,  $(1.19)^2$ .

**Q1 Part (b) (ii) 2005 Paper 1**

- (ii) ✍ A tourist paid \$4620 to a travel agent for a holiday in Ireland, where  $\text{€}1 = \$1.32$ .  
The cost to the travel agent of organising the holiday was €2985.  
Calculate, in euro, the profit made by the travel agent.



**Q5 Part (a) 2005 Paper 1**

5. (a) Seven shirts and two sweaters cost €202.50.  
A sweater costs the same as four shirts.  
✍ Find the cost of one shirt.

