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International Examinations Papers

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**MATHEMATIC A**  
**TOPIC- PROPORTION**  
**(Direct and Inverse)**

17  $P$  is directly proportional to  $q^3$

$P = 270$  when  $q = 7.5$

(a) Find a formula for  $P$  in terms of  $q$



(3)

(b) Work out the positive value of  $q$  when  $P = q$

$q =$  .....  
(2)

(Total for Question 17 is 5 marks)



- 15  $P$  is directly proportional to  $r^3$   
 $P = 343$  when  $r = 3.5$

Find a formula for  $P$  in terms of  $r$ .



(Total for Question 15 is 3 marks)

16  $(5\sqrt{2} - e)(3\sqrt{2} + e) = f\sqrt{2} - 6$

Given that  $e$  and  $f$  are positive integers,  
find the value of  $e$  and the value of  $f$ .

$e =$  .....

$f =$  .....

(Total for Question 16 is 3 marks)



17 Solve  $11x^2 - 3x - 5 = 0$

Show your working clearly.

Give your solutions correct to 2 decimal places.

(Total for Question 17 is 3 marks)

18  $A$  is directly proportional to  $x^2$

$A = 480$  when  $x = 5$

Find the value of  $A$  when  $x = 1.5$

(Total for Question 18 is 3 marks)



6 The pressure  $P$ , of water leaving a cylindrical pipe, is inversely proportional to the square of the radius,  $r$ , of the pipe.

$$P = 22.5 \text{ when } r = 2$$

(a) Find a formula for  $P$  in terms of  $r$ .



(b) Calculate the value of  $P$  when  $r = 1.5$

(3)

$$P = \dots\dots\dots$$

(1)

(c) Calculate the value of  $r$  when  $P = 10$

$$r = \dots\dots\dots$$

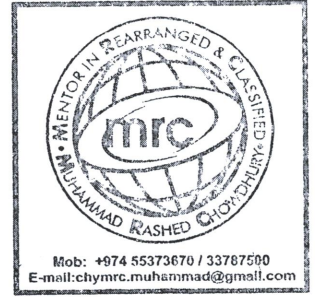
(2)

(Total for Question 6 is 6 marks)

5  $V$  is inversely proportional to the square of  $t$

$$V = 28 \text{ when } t = 2.5$$

(a) Express  $V$  in terms of  $t$



(3)

(b) Work out the value of  $V$  when  $t = 6.25$

$$V = \dots\dots\dots$$

(2)

(Total for Question 5 is 5 marks)