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**Time: 50 minutes****Non-Calculator Questions (30 minutes)**

- 1 Estimate the value of  $\frac{10.14 \times 4.93}{7.9 - 3.09}$

**(3 marks)**

- 2 a Write  $5^{12} \div 5^3$  as a single power.

**(1 mark)**

- b Simplify  $(7^3)^8$

**(1 mark)**

- c Evaluate  $\frac{2^7 \times 2^3}{2^5}$

**(2 marks)**

- 3  $\sqrt{70}$  lies between two numbers that each have 1 decimal place.  
Work out these two numbers.

**(3 marks)**



- 4 The number 56 can be written as  $2^m \times n$ , where  $m$  and  $n$  are prime numbers.  
Find the value of  $m$  and the value of  $n$ .

(2 marks)



- 5 Given that  $724 \times 28 = 20\,272$ , work out the value of

a  $0.724 \times 2.8$

(1 mark)

b  $202.72 \div 2.8$

(1 mark)

c  $20\,272 \div 56$

(2 marks)



- 6 Aaron thinks of two numbers less than 30.  
The Highest Common Factor (HCF) of his two numbers is 6.  
The Lowest Common Multiple (LCM) of his two numbers is 72.  
Write down the two numbers that Aaron is thinking of.

(3 marks)



7 Given that  $2 \times \sqrt{8} = 2^n$ , work out the value of  $n$ .

(2 marks)



8 Work out  $(4 \times 10^{-2}) \div (8 \times 10^{-8})$   
Give your answer in standard form.

(2 marks)



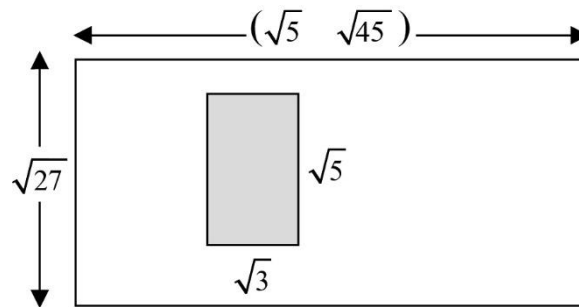
9 Work out  $\left(2\frac{1}{4}\right)^{-\frac{3}{2}}$

(3 marks)



- 10 A large rectangular piece of card is  $(\sqrt{5} + \sqrt{45})$  cm long and  $\sqrt{27}$  cm wide.

A small rectangle  $\sqrt{3}$  cm long and  $\sqrt{5}$  cm wide is cut out of the piece of card.



Show that the area of the card that is left as a fraction of the area of the large rectangle is  $\frac{11}{12}$

(4 marks)

NAME



**Calculator Questions (20 minutes)**



- 11** When two decimal numbers are multiplied, the answer is 0.072  
When the same two decimal numbers are added, the answer is 0.72  
What are the two decimal numbers?

**(2 marks)**

- 12** A restaurant has a set menu for lunch.

**Set Lunch Menu**

*Choose one starter and one main course*

**Starters:** Soup or Houmous or Asparagus

**Mains:** Fish or Meat or Vegetarian



- a** Write down all the possible combinations of starters and main courses.

**(1 mark)**



- b** The restaurant decides to offer two extra starters and another main course.  
How many extra combinations are there now?

**(2 marks)**



13 a **Work out**  $\sqrt{4 - 0.35^2}$

Give your answer as a decimal correct to 3 decimal places.

(2 marks)

b Find the value of  $(5.0625)^{\frac{1}{4}}$

(1 mark)



14 Which of these has the smallest value?

- the reciprocal of 2.7
- the square root of 0.138
- the cube of 0.72

Show how you got your answer.

(2 marks)



15  $A = 2^6 \times 3^5 \times 7$   $B = 2^7 \times 3^8 \times 5$

$A$  and  $B$  are numbers written as the product of their prime factors.

a Find the HCF of  $A$  and  $B$ .

Give your answer in prime factor form.

(1 mark)

b Find the LCM of  $A$  and  $B$ .

Give your answer in prime factor form.

(2 marks)



- 16** Matt is organising an event.  
He buys some party bags and some toys for the party bags from a shop.  
The party bags are sold in packs.  
There are 105 party bags in each pack.  
Each pack costs £1.32  
The toys are sold in packs.  
There are 84 toys in each pack.  
Each pack costs £4.15  
Matt buys exactly the same number of party bags as toys.  
What is the least amount of money he could pay?

**(5 marks)**



- 17** a Write 0.0348 in standard form.

**(1 mark)**

- b Write  $2.9 \times 10^{10}$  as an ordinary number.

**(1 mark)**

Overall mark	/50
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