E Maths Test 1

60 Marks

1. Expand $7(x - 8)$.

[1]

2. Here is a sequence

   a, 13, 9, 3, −5, −15, b, …

   Find the value of a and the value of b.

[2]

3. Complete these statements.
   a. When $w =$............ , $10w = 70$.

   b. When $5x = 15.$, $12x =$..........

[2]

4. 22   17   25   41   39   4

   Work out the difference between the two prime numbers in the list above.

[2]

5. **Without using your calculator**, work out $\frac{2}{3} - \frac{1}{12}$.

   You must show all your working and give your answer as a fraction in its simplest form.

[2]

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6. Here are some numbers written in standard form.

$$3.4 \times 10^{-1} \quad 1.36 \times 10^{6} \quad 7.9 \times 10^{0} \quad 2.4 \times 10^{5} \quad 5.21 \times 10^{-3} \quad 4.3 \times 10^{-2}$$

From these numbers, write down
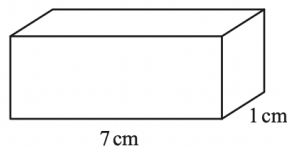
(a) the largest number,

(b) the smallest number.

[2]

7. $3.56 \quad 5 \quad \sqrt{196} \quad 8 \quad \sqrt{7} \quad 12$

From the list, write down a number that is

a. a multiple of 3,

b. a cube number,

c. a prime number,

d. an irrational number.

[4]

8. The diagram shows a solid cuboid with base area $7cm^{2}$. The volume of this cuboid is 21 cm^{3}. Work out the total surface area.

NOT TO SCALE

1 cm

7 cm

[3]

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9. Find the volume of a cylinder of radius 5 cm and height 8 cm.

[3]

10. Convert $0.\overline{12}$ to fractions. Give each answer in its simplest form.

[5]

11. (a) Here is a list of ingredients to make 20 biscuits.

260 g of butter
500 g of sugar
650 g of flour
425 g of rice

(i) Find the mass of rice as a percentage of the mass of sugar.

[1]

(ii) Find the mass of butter needed to make 35 of these biscuits.

[2]

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(iii) Michel has 2kg of each ingredient.

Work out the greatest number of these biscuits that he can make.

[3]

(b)A company makes these biscuits at a cost of $1.35 per packet. These biscuits are sold for $1.89 per packet.

(i) Calculate the percentage profit the company makes on each packet.

[3]

(ii)The selling price of $1.89 has increased by 8% from last year. Calculate the selling price last year.

[3]

(c) Over a period of 3 years, the company's sales of biscuits increased from 15.6 million packets to 20.8 million packets.

The sales increased exponentially by the same percentage each year.

Calculate the percentage increase **each year**.
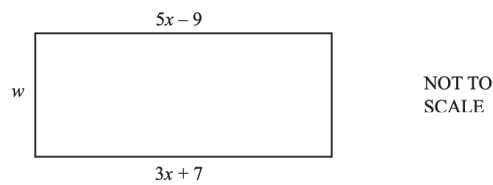
[3]

12. Simplify.

(i) $(3p^2)^5$

[2]

(ii) $18x^2y^6 \div 2xy^2$

[2]

(iii) $\left(\frac{5}{m}\right)^{-2}$

[1]

13. In this part, all measurements are in metres

The diagram shows a rectangle. The area of the rectangle is 310 m^2.

Work out the value of w.

[4]

14. Complete the table for the following sequences. The first row has been completed for you.

Sequence	Next two terms	Nth term
1, 5, 9, 13	17, 21	$4n - 3$
(a) 12, 21, 30, 39		
(b) 80, 74, 68, 62		
(c) 1, 8, 27, 64		
(d) 2, 10, 30, 68		

[10]