Foundations of Advanced Mathematics

AS Pure Mathematics Bridging Test 1

Questions

1 Three of the following statements are true and **one** is false. Which one is **false**?

A The highest common factor (HCF) of 42 and 70 is 14.

B 97 is a prime number.

C $\frac{1}{4}+\frac{1}{12}=\frac{1}{3}$

D 15% of £80 is £10.00.

2 The number 7654.451 is written below in four different ways.

Three of the ways are correct and **one** is incorrect. Which one is **incorrect**?

A 8000, correct to the nearest thousand.

B 7654.5, correct to 1 decimal place.

C 7600, correct to 2 significant figures.

D 7654, correct to the nearest integer.

3 An electrician charges the following rates:

Call-out charge including work for up to one hour	£42
For each extra half-hour or part of a half-hour	£21

The electrician completed a job which took 1 hour 35 minutes.

Which **one** of the following is the **correct** charge?

A £42

B £63

C £66.50

D £84

4 The table below lists the areas, in square miles, of the continents of the world.

Continent	**Area (square miles)**
Africa	1.2×10^7
Asia	1.5×10^7
Europe	9.0×10^6
North America	7.5×10^6
South America	4.5×10^6
Australasia	6.0×10^6

Three of the following statements are true and **one** is false. Which one is **false**?

A North and South America together cover the same area as Africa.

B Asia has the largest area.

C Europe is 50% larger than Australasia.

D Australasia is 4 times as big as Asia.

5 Which **one** of the following has the **largest** value?

A 62½% of 16

B 8 divided by $\frac{2}{3}$

C $\frac{4}{5}$ of 15.5

D $\sqrt{132.25}$

6 Catherine chooses three numbers, x, y and z. She adds the first two, then multiplies her answer by itself and finally multiplies her result by the third number.

Which **one** of the following is a **correct** algebraic expression for her final answer?

A $z(x+y)^2$

B $[z(x+y)]^2$

C $x^2z + y^2z$

D zx^2y^2

7 Three of the following statements are true and **one** is false. Which one is **false**?

A $2^3 \times 3^2 = 6^5$

B $3^8 \div 3^4 = 3^4$

C $2^9 \div 2^{-3} = 2^{12}$

D $\dfrac{2^5 \times 3^4}{6^2 \times 9} = 2^3$

8 Three of the following statements are true and **one** is false. Which one is **false**?

A $x^2 - 5x - 14 = (x - 7)(x + 2)$

B $x^2 - 25 = (x - 5)^2$

C $(3x - 4)(4x - 3) = 12x^2 - 25x + 12$

D $2x^2y + 4xy^2 = 2xy(x + 2y)$

9 In the four statements below, n stands for an integer.

Three of the following statements are true and **one** is false. Which one is **false**?

A $n - 2 > 3$ for the integers 6, 7, 8,… .

B 0, 1, 2 and 3 are the only integers for which $n^2 \leq 9$.

C $3 - 2n > 1$ for the integers 0, –1, –2, … .

D $2 < n + 6 < 10$ can be rewritten as $-4 < n < 4$.

10 When a pot of paint is half full it weighs 4 kg. When it is one quarter full it weighs 3 kg.

Which **one** of the following is the **correct** weight of the pot of paint when full?

A 4 kg **B** 6 kg **C** 8 kg. **D** 12 kg