GCSE Mathematics

Mock Test 1 (Extension)

Time Allowed: 25 minutes

Total Marks: 27

03 November 2024

Calculator Allowed

Full Name of Student: ……

1.

A bowl contains n pieces of fruit.
Of these, 4 are oranges and the rest are apples.

Two pieces of fruit are going to be taken at random from the bowl.

The probability that the bowl will then contain $(n - 6)$ apples is $\frac{1}{3}$

Work out the value of n
Show your working clearly.

[Total for Question 1 = 6 marks]

2.

Find the value of n such that $4^n \times 8^{n+1} = 16$
Show clear algebraic working.

$n =$

[Total for Question 2 = 3 marks]

3.

Simplify, giving your answer as a single fraction.

$$\frac{x+1}{2x+1} - \frac{1}{(2x+1)(x+1)}$$

[Total for Question 3 = 2 marks]

4.

The total surface area of a solid hemisphere is equal to the curved surface area of a cylinder.

The radius of the hemisphere is r cm.
The radius of the cylinder is twice the radius of the hemisphere.

Given that

volume of hemisphere : volume of cylinder = $1 : m$

find the value of m.

$m =$

[Total for Question 4 = 4 marks]

5.

The diagram shows a cone.

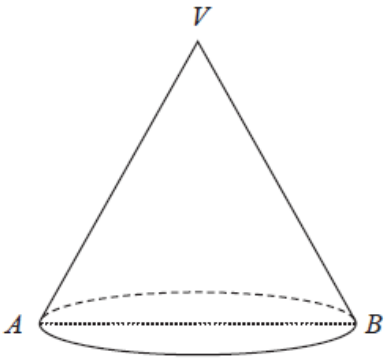

Diagram **NOT** accurately drawn

AB is a diameter of the cone.
V is the vertex of the cone.

Given that

the area of the base of the cone : the total surface area of the cone = 3 : 8

work out the size of angle AVB.
Give your answer correct to 1 decimal place.

……..

[Total for Question 5 = 6 marks]

6.

The four angles, in degrees, of quadrilateral $ABCD$ are

angle $A = (x^2 - 105)$

angle $B = (x^2 - 65)$

angle $C = (470 - 30x)$

angle $D = (510 - 30x)$

Show that $ABCD$ is a trapezium.
Show clear algebraic working.

[Total for Question 6 = 6 marks]

- End of Test -
