SEKOLAH BUKIT SION (HIGH SCHOOL)

CENTRE NUMBER: ID 138

CANDIDATE NUMBER: | | | | |

CANDIDATE NAME:

MATHEMATICS **0580/22**
PAPER 2 (EXTENDED) **May/June 2022**

E-PORTFOLIO (SPECIMEN 1) **28 MARCH 2022**
80 minutes

INSTRUCTIONS:

- Answer all questions.
- Use a black or dark blue pen.
- Use HB pencil for any diagrams or graphs.
- Write your name, centre number and candidate number in the boxes provided in each page.
- Write your answer to each question in the space provided.
- Do not use an erasable pen or correction fluid or tape.
- You may use a scientific calculator where appropriate.
- You must show all necessary working clearly.
- Give non-exact numerical answers correct to 3 significant figures, or 1 decimal place for angles in degrees, unless a different level of accuracy is specified in the question.
- Use the calculator value of π or 3.142.

INFORMATION:

- The total number of marks in this paper is 50.
- The number of marks for each question or part question is shown in brackets [].

Question 01

The probability that Jane wins a game is $\frac{7}{10}$.

(a) Find the probability that Jane does not win the game.

Answer: …… [1]

(b) Jane plays this game 50 times.
Find the number of times she is expected to win this game.

Answer: …… [1]

Question 02

Calculate $\sqrt[3]{0.0256^2}$.
Express your answer correct to 3 significant figures.

Answer: …… [1]

Question 03

Emma has 15 mathematics questions to complete.
The list shows the time, in minutes, it takes her to complete each question.

3	5	6	7	7	8	8	
11	12	12	13	16	16	16	20

Write down the mode, median and the mean of this set of data.

Answer: Mode = …… [1]

Answer: Median = …… [1]

Answer: Mean = …… [1]

Question 04

Write 0.000654 is standard form.

Answer: …… [1]

Question 05

From this list, arrange the numbers starting with the smallest.

$$\frac{7}{5} \qquad 0.6 \qquad \sqrt{7} \qquad 2^3 \qquad \sqrt[3]{9}$$

Answer: _____ < _____ < _____ < _____ < _____ [2]

Question 06

(a) Write down the reciprocal of 0.2.

Answer: …… [1]

(b) Write down the prime number between 90 and 100.

Answer: …… [1]

Question 07

Given that $a = \frac{b^2}{5c}$.

Find b when $a = 5.625$ and $c = 2$.

Answer: …… [2]

Question 08

Find the gradient of the line that is perpendicular to the line $3y = 4x - 5$.

Answer: …… [2]

Question 09

(a) $\varepsilon = \{\text{integers greater than 2 but less than 17}\}$
$A = \{\text{prime numbers}\}$
$B = \{\text{odd numbers}\}$
$C = \{\text{square numbers}\}$

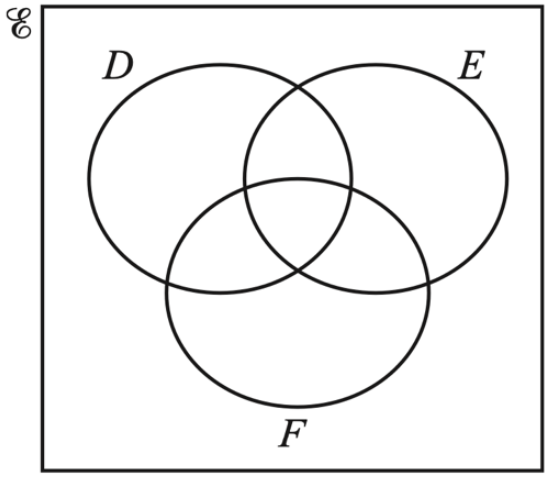
(i) How many elements are there in set A?

Answer: ..... [1]

(ii) Write down the elements in the set $B' \cap C$.

Answer: ..... [1]

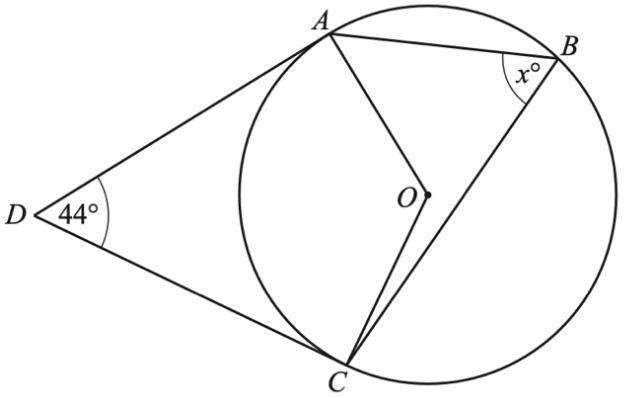
(b) Shade the region $D \cap (E \cup F)'$. [1]



Question 10

A, *B* and *C* are points on a circle, centre *O*.
DA and *DC* are tangents.
Angle *ADC* = 44°.

Work out the value of *x*.



NOT TO SCALE

Answer: ..... [3]

Question 11

The force of attraction, *F* Newtons, between two magnets is inversely proportional to the square of the distance, *d* cm, between the magnets.

When *d* = 1.5, *F* = 48.

(a) Find an expression for *F* in terms of *d*.

Answer: ..... [2]

(b) Find the value of *F* if *d* = 5.

Answer: ..... [1]

Question 12

A is the point (5, 7) and B is the point (9, -1).

(a) Find the length of AB.

Answer: ..... [3]

(b) Find the equation of the line AB.

Answer: ..... [3]

Question 13

Simplify.

$$\frac{2x^2-5x-12}{3x^2-12x}$$

Answer: ..... [4]

Question 14

Simplify.

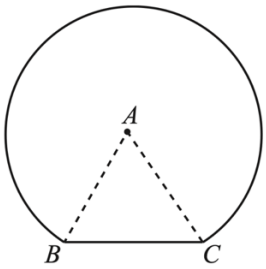
$$\frac{x-2}{5}+\frac{2x+5}{3}$$

Answer: ..... [2]

Question 15

The diagram shows a shape made from an equilateral triangle *ABC* and a sector of a circle.
Points *B* and *C* lie on the circle, centre *A*.
The side length of the **equilateral triangle** is 12.4 cm.

Work out the perimeter of the shape.



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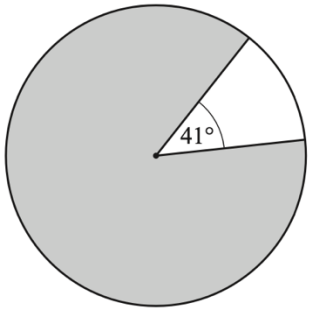
Answer: ..... [3]

Question 16

The diagram shows two sectors of a circle. The major sector is shaded.
The area of the major sector is 74.5 cm^2.

Calculate the radius of the circle.



NOT TO SCALE

Answer: ..... [3]

Question 17

Given that $f(x) = 1 - 2x$ $g(x) = 3x - 2$ $h(x) = x^2 - 5x - 11$.

(a) Find f(-5).

Answer: …… [1]

(b) Find gf(x). Simplify your answer.

Answer: …… [2]

(c) Find $g^{-1}(x)$, the inverse of g(x).

Answer: …… [2]

(d) Solve h(x) = 0. Show all your working and give your answer correct to 2 decimal places.

Answer: …… [3]

**** E N D O F EXAM ****