SPRINGFIELD SECONDARY SCHOOL

End-of-Year Examination 2023

Secondary 2 Normal Academic

STUDENT NAME	
CLASS	S [ ] - [ ]
INDEX NUMBER	[ ] [ ]

MATHEMATICS

Paper 1

4045/01

29 September 2023

1 hour 30 minutes

Candidates answer on the Question Paper.

READ THESE INSTRUCTIONS FIRST

Write your class, index number and name on all the work you hand in.
Write in dark blue or black pen.
You may use an HB pencil for any diagrams, graphs or rough working.
Do not use staples, paper clips, glue or correction fluid.

Answer **all** questions.

If working is needed for any question it must be shown with the answer.
Omission of essential working will result in loss of marks.
The use of an approved scientific calculator is expected, where appropriate.
If the degree of accuracy is not specified in the question, and if the answer is not exact, give the answer to three significant figures. Give answers in degrees to one decimal place.
For π, use either your calculator value or 3.142, unless the question requires the answer in terms of π.

At the end of the examination, fasten all your work securely together.
The number of marks is given in brackets [ ] at the end of each question or part question.
The total number of marks for this paper is 50.

For Examiner's Use	
Total	/50

Do not turn over this question paper until you are told to do so.

[Turn over

Answer **all** the questions.

1 Consider the following numbers.

$$3 \qquad \sqrt{3} \qquad -4 \qquad \frac{1}{\sqrt{4}} \qquad \frac{1}{3}$$

(a) Write down the integer(s).

Answer ..... [1]

(b) Write down the irrational number(s).

Answer ..... [1]

---

2 Factorise completely

(a) $2y-14x-8$,

Answer ..... [1]

(b) x^2-7x-8.

Answer ..... [2]

---

3 **(a)** Solve the inequality $-3x < -20$.

Answer ..... [1]

(b) Hence, find the smallest prime number x that satisfies the inequality.

Answer $x =$ ..... [1]

[Turn Over

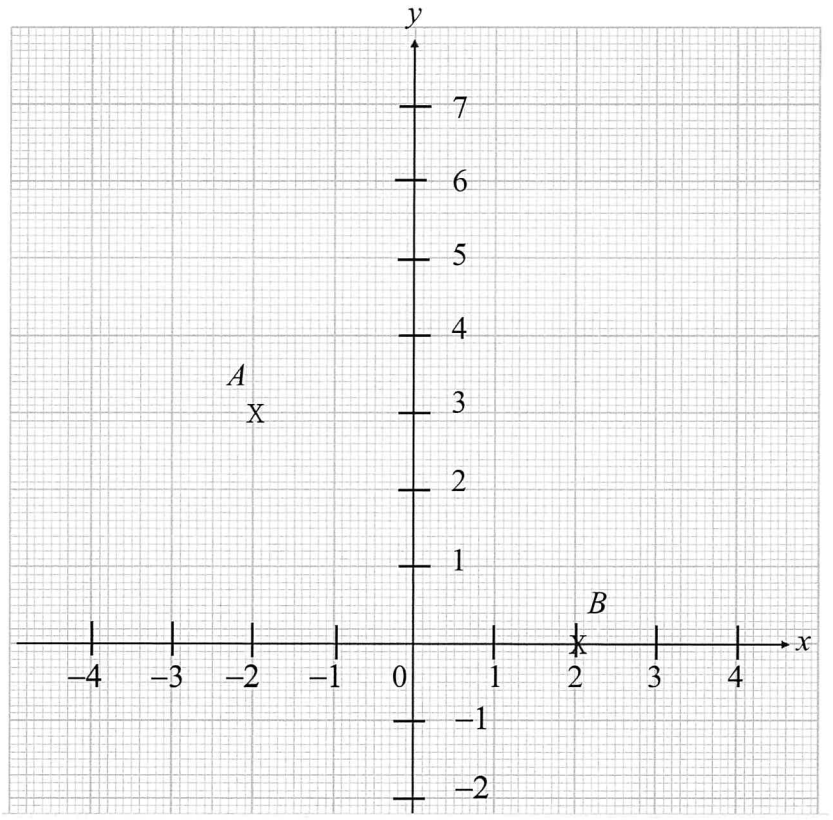
4 Solve the simultaneous equations.

$$2x + 5y = 8$$
$$x + 3y = 6$$

Answer $x =$ .....

$y =$ ..... [3]

5 The grid shows two points A and B.



(a) State the coordinates of the points A and B on the grid above.

Answer A (..... , ...)

B (..... , ...) [2]

(b) A line is drawn from point A to point B.

Calculate the gradient of this line.

Answer ..... [2]

6 The profit, $\$p$, of a chicken rice stall is directly proportional to the number of plates sold, x.

(a) When $x = 8, p = 12$.

Find an equation connecting x and p.

Answer ..... [2]

(b) Find the profit made from selling 25 plates of chicken rice.

Answer $ ..... [1]

---

7 A map of Singapore is drawn to a scale of 1: 25 000.

(a) Orchard Road is 2 km long.

Find the length of the road on the map in centimetres.

Answer ..... cm [2]

(b) On the map, the area representing Jurong Lake Gardens is 14 cm^2.

Calculate the actual area of Jurong Lake Gardens in square kilometres.

Answer ..... km^2 [2]

---

8 The ages of a group of 7 students are as shown below.

9, 12, 13, 13, 14, 14, 16

(a) Caculate the mean age of the students.

Answer ..... years old [2]

(b) Calculate the median age.

Answer ..... years old [1]

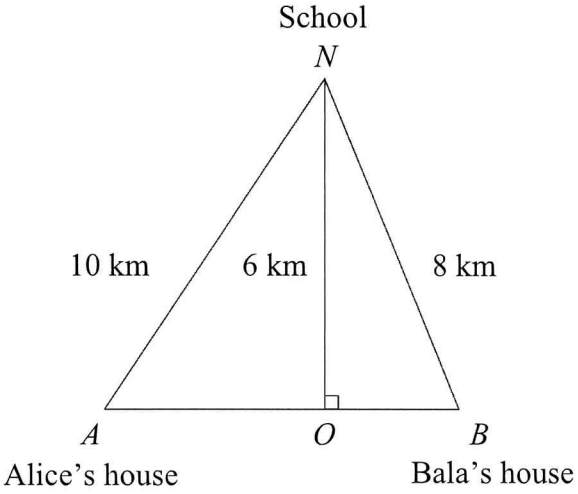
(c) A new student joins the group.
The new mean is 13.5.

What is the age of the new student?

Answer ..... years old [2]

---

9 In the diagram, Alice takes the route AN while Bala takes the route BN to travel to school from their houses.



AOB is a straight line.
$AN = 10$ km, $BN = 8$ km and $ON = 6$ km.

Find the distance AOB.

Answer $AOB =$ ..... km [3]

10 Solve the following equations.

(a) $\frac{2}{5}x - 5 = \frac{3}{2}x$

Answer $x =$ ..... [2]

(b) $\frac{3(y-2)}{2} = \frac{y+4}{5}$

Answer $y =$ ..... [3]

---

11 A box contains 40 markers, of which some are red, some are blue and the rest are yellow. The probability of drawing a red marker is $\frac{3}{8}$ while the probability of drawing a blue marker is $\frac{2}{5}$.

(a) Find the number of yellow markers in the box.

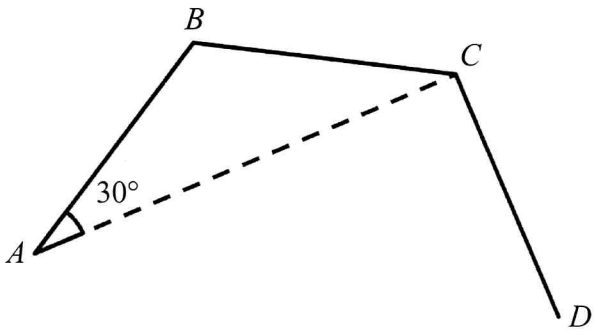
Answer ..... [2]

(b) Find the probabilty of drawing a green marker from the box.

Answer ..... [1]

---

12 AB, BC and CD are three sides of a regular polygon.
Angle $BAC = 30°$.



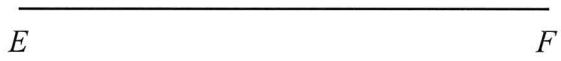
(a) Calculate the exterior angle of the polygon.

Answer ..... ° [2]

(b) Find the number of sides of the polygon.

Answer ..... [2]

13 The triangle EFG has $FG = 8$ cm and angle $GEF = 116°$.
The line EF has been drawn for you below.



(a) Construct and label the triangle EFG. [2]

(b) Measure and write down the length of EG.

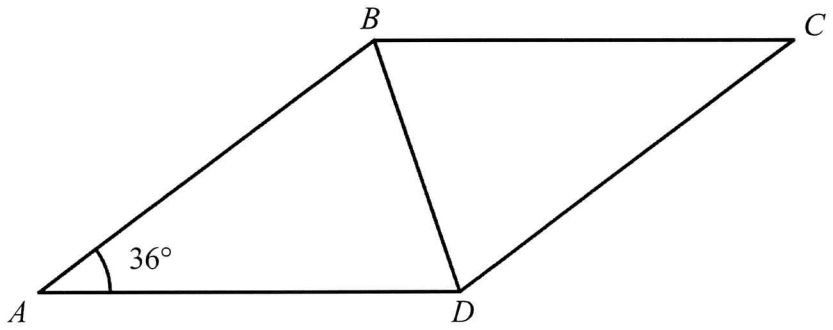
Answer ..... cm [1]

(c) Measure and write down angle EFG.

Answer ..... ° [1]

[Turn Over

14 The diagram shows a rhombus $ABCD$.
Angle DAB is $36°$.



(a) Stating your reasons clearly, find

(i) angle BCD,

Answer angle BCD = ... ° [1]

(ii) angle DBC.

Answer angle DBC = ... ° [2]

(b) Sherry claims that the rhombus is considered a parallelogram.

Do you agree? Explain your answer.

.....

..... [2]

~END OF PAPER~