



BENENDEN

14+ Entrance 2022/2023

MATHEMATICS

1 hour

Name:
School:
Date:

Equipment required: pen, pencil, ruler, eraser.

Instructions to Candidates:

- Attempt all questions.
- Calculators may **not** be used.
- Show ALL working.
- Check your answers for accuracy.
- Total marks for test : 100

Q1.

(a) Write down all the factors of 9

.....
(1)

(b) Find the highest common factor (HCF) and the lowest common multiple (LCM) of 64 and 80

HCF.....

LCM.....

(4)

(Total for question is 5 marks)

Q2.

(a) Show that $\frac{4}{5} + \frac{2}{3} = 1\frac{7}{15}$

(3)

(b) Show that $2\frac{1}{4} \div 3\frac{1}{2} = \frac{9}{14}$

(3)

(Total for question is 6 marks)

Q3.

(a) Write 7.9×10^{-4} as an ordinary number.

.....
(1)

(b) Work out $(6.5 \times 10^5) \times (3.1 \times 10^4)$
Give your answer in standard form.

.....
(3)

(Total for question is 4 marks)

Q4.

Lisa sees a dress in a sale.

The normal price of the dress is \$45

The price of the dress is reduced by 12% in the sale.

(a) Work out the price of the dress in the sale.

\$.....
(3)

Lisa's weekly pay increases from \$525 to \$546

(b) Calculate her percentage pay increase.

.....%
(3)
(Total for question is 6 marks)

Q5.

(a) Simplify $2a - 5b + 3a - 4b + a$

.....
(2)

(b) Factorise $7d^2g - 35de$

.....
(2)
(Total for Question is 4 marks)

Q6.

The perimeter of a triangle is 90 cm.

The lengths of the sides of the triangle are in the ratio 3 : 5 : 7.

Work out the length of the longest side of the triangle.

..... cm

(Total for question is 4 marks)

Q7.

Solve $5(4 - x) = 7 - 3x$

Show clear algebraic working.

$x =$

(3)

(Total for question is 3 marks)

Q8.

(a)

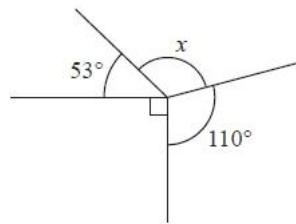


Diagram NOT
accurately drawn

(i) Work out the size of angle x .

..... °

(ii) Give a reason for your answer.

.....
.....

(3)

(b) PQR is an isosceles triangle.

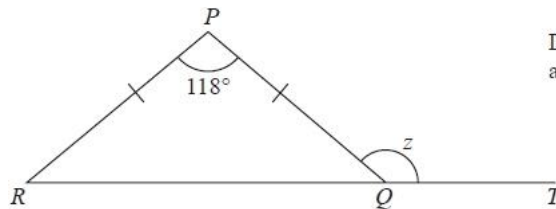


Diagram NOT
accurately drawn

$PQ = PR$
Angle $RPQ = 118^\circ$
 RQT is a straight line.
Work out the size of angle z .

..... °

(3)

(Total for question is 6 marks)

Q9.

(a) Simplify $g^6 \times g^4$

.....
(1)

(b) Simplify $k^{10} \div k^3$

.....
(1)

(c) Simplify $(3mn^4)^2$

.....
(3)

(d) Solve the inequality $4x + 7 > 2$

.....
(2)

(Total for question is 7 marks)

Q10.

In four consecutive weeks, a bakery produces 27 241, 28 644, 36 095 and 36 723 cup cakes, respectively.

How far short of its target of a quarter of a million is the factory?

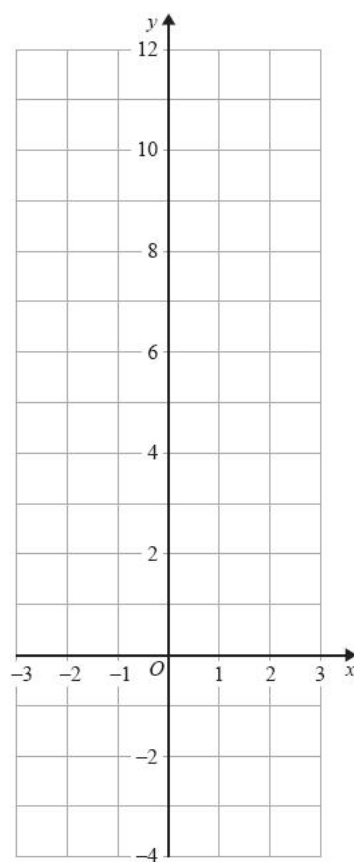
..... (4)

(Total for question is 4 marks)

Q11.

On the grid, draw the graph of $y = 2x + 4$ for values of x from -3 to 3

x	-3	-2	-1	0	1	2	3
y							



(Total for question is 4 marks)

Q12.

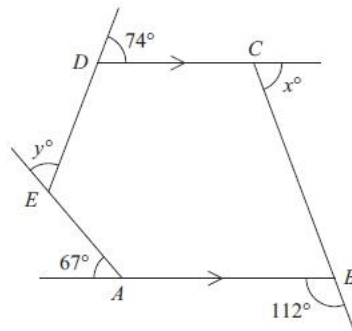


Diagram NOT
accurately drawn

The diagram shows a pentagon $ABCDE$.
 DC is parallel to AB .
The size of an exterior angle at A is 67°
The size of an exterior angle at B is 112°
The size of an exterior angle at C is x°
The size of an exterior angle at D is 74°
The size of an exterior angle at E is y°

(a) Work out the value of x .

$x = \dots\dots\dots$

(b) Work out the value of y .

$y = \dots\dots\dots$
(4)

(Total for question is 4 marks)

Q13.

All the teachers at a school are either left-footed or right-footed.

At the school,

the number of left-footed teachers : the number of right-footed teachers = 3 : 13

A teacher at the school is picked at random.

(a) Find the probability that this teacher is left-footed.

.....
(1)

At the school, there are 18 left-footed teachers.

(b) How many right-footed teachers are there?

.....
(2)

(Total for question is 3 marks)

Q14.

Here are the first five terms of a number sequence S .

10 16 22 28 34

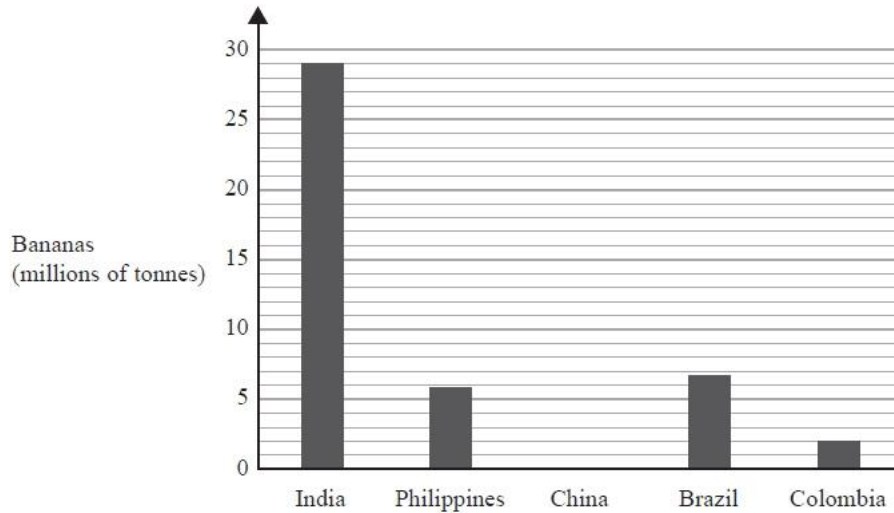
Find an expression, in terms of n , for the n th term of this sequence.

.....
(2)

(Total for question is 2 marks)

Q15.

The bar chart shows information about the weight, in millions of tonnes, of bananas produced by each of four countries in 2016



In 2016, China produced 13 million tonnes of bananas.

(a) Draw a bar on the bar chart to show this information.

(2)

One of these countries produced 6.8 million tonnes of bananas in 2016

(b) Which country?

.....

(1)

In 2016, a total of 116 million tonnes of bananas was produced worldwide.

(c) What fraction of the 116 million tonnes of bananas was produced in India in 2016?

.....

(2)

(Total for question is 5 marks)

Q16.

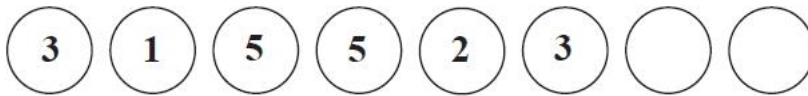
Here are 6 cards.
Each card has a number on it.



(a) Find the median of the numbers on the cards.

.....
(2)

Uzma places two extra cards next to the six cards.



She wants the mean of the numbers on the 8 cards to be 4
She wants the range of the numbers on the 8 cards to be 9

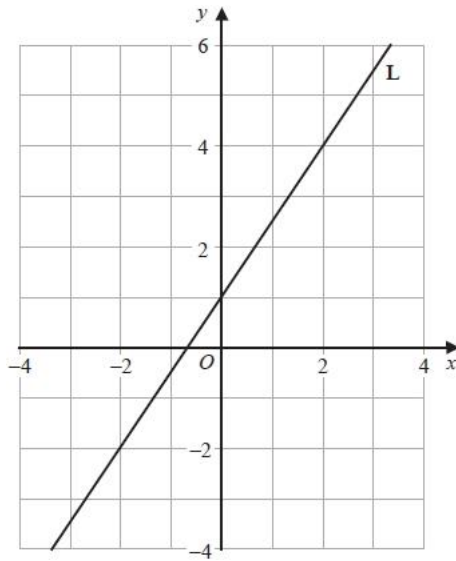
(b) Find the numbers that she should write on the two extra cards.

..... and
(3)

(Total for question is 5 marks)

Q17.

The line **L** is drawn on the grid.



- (a) Find an equation for **L**.

.....(2)

- (b) Find an equation for the line parallel to **L**, passing through the point (0, - 2).

.....(2)

(Total for question is 4 marks)

Q18.

$$h = 6q - 2u$$

(a) Work out the value of h when $q = 3$ and $u = -5$

$$h = \dots\dots\dots$$

(3)

$$B = 3m + 2p$$

(b) Work out the value of p when $B = 2$ and $m = -6$

$$p = \dots\dots\dots$$

(3)

(Total for question is 6 marks)

Q19.

Solve the simultaneous equations

$$4x + 2y = 9$$

$$x - 4y = 9$$

Show clear algebraic working.

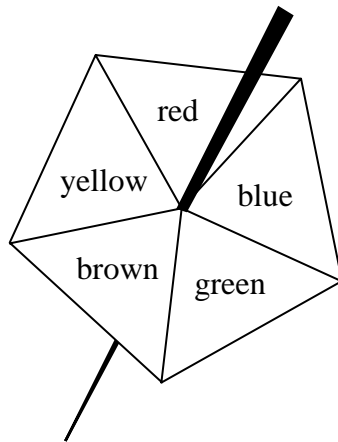
$x =$

$y =$

(Total for question is 3 marks)

Q20.

Here is a biased 5-sided spinner.



Kenny spins the spinner once.

The table gives the probabilities that the spinner lands on red or on blue or on green.

Colour	red	blue	green	brown	yellow
Probability	0.15	0.26	0.33		

(a) Work out the probability that the spinner lands on red or blue.

.....
(2)

When the spinner is spun once, the probability that the spinner lands on brown is 0.06 more than the probability that the spinner lands on yellow.

Janine spins the spinner 150 times.

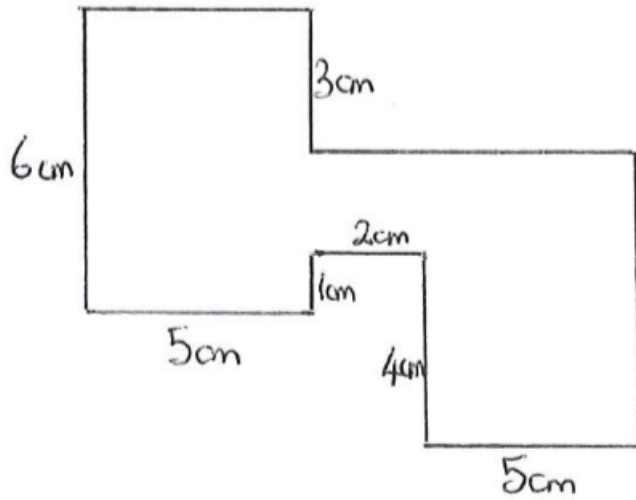
(b) Work out an estimate for the number of times the spinner lands on yellow.

.....
(4)

(Total for question is 6 marks)

Q21.

Find the area and the perimeter of the following shape. All the angles are 90° .



(Not drawn to scale)

Area (3)

Perimeter (3)

(Total for question is 6 marks)

Q22.

Solve $\frac{8 - 2x}{3} - \frac{2x - 3}{2} = 4$

Show clear algebraic working.

$x = \dots\dots\dots$
(3)

(Total for question is 3 marks)

END OF QUESTIONS

CHECK YOUR WORK

If you have time, try the following:

1. The floor of a square-shaped hall is tiled with square tiles. There are 49 tiles altogether along the two diagonals. How many tiles are there on the floor?

2. Amy, Bahu, Clemmie, Dave and Elin play a game in which each is either a lion or a unicorn.

Amy says Bahu is a unicorn

Clemmie says Dave is a lion

Elin says Amy is not a lion

Bahu says Clemmie is not a unicorn

Dave says Amy and Elin are different.

How many unicorns are there?

3. How many ways are there of choosing 3 connected stamps from the sheet of 16 shown in the diagram?

