

WOODHOUSE GROVE SCHOOL
ENTRANCE AND
SCHOLARSHIP EXAMINATION

13 + MATHEMATICS

TIME : 1 HOUR

SURNAME _____

KNOWN NAMES _____

READ THE FOLLOWING INSTRUCTIONS CAREFULLY BEFORE STARTING THE EXAMINATION

1. DO NOT OPEN THE TEST UNTIL YOU ARE TOLD TO DO SO
2. CALCULATORS ARE NOT ALLOWED
3. WRITE YOUR ANSWERS ON THE LINES PROVIDED
4. THERE IS SPACE TO SHOW WORKING ON THE PAPER

YOU ARE STRONGLY ADVISED TO SHOW YOUR WORKING: YOU MAY LOSE MARKS IF YOU DO NOT SHOW HOW YOU OBTAINED YOUR ANSWER

Work Out

1

a $37 + 18 =$

1 mark

b $73 - 68 =$

1 mark

c $7 \times 7 =$

1 mark

d $42 \div 7 =$

1 mark

e $249 + 1578 =$

1 mark

f $832 - 273 =$

1 mark

g What number should you subtract from 201 to make 140?

.....

1 mark

h By what number should you multiply 53 to make 159?

.....

1 mark

2 Fill in the missing **number** or **numbers** to make the calculation correct.

a $37\frac{1}{2} + \dots = 39$

1 mark

b 50% of $\dots = 46$

1 mark

c $\frac{1}{3}$ of $\dots = 27$

1 mark

d $\dots \times \dots = 36$

1 mark

e $\dots \div \dots = 36$

1 mark

3 Calculate

a $8.62 + 3.87 = \dots\dots\dots$

1 mark

b $8.62 - 3.97 = \dots\dots\dots$

1 mark

c $17.04 \times 8 = \dots\dots\dots$

1 mark

d $17.04 \div 8 = \dots\dots\dots$

1 mark

4 Calculate

a $14 - 3 \times 4 = \dots\dots\dots$ *1 mark*

b $14 - (-12) = \dots\dots\dots$ *1 mark*

c $(2^3)^2 = \dots\dots\dots$ *1 mark*

d $2^3 + 3^2 = \dots\dots\dots$ *1 mark*

e $\sqrt[3]{27} = \dots\dots\dots$ *1 mark*

5a $540 = 2^p \cdot 3^q \cdot 5^t$

540 is given a product of its prime factors

Find the values of the powers p , q and t . Working must be shown for this question.

$p = \dots\dots\dots$ $q = \dots\dots\dots$ $t = \dots\dots\dots$ *5 marks*

b Write down the prime numbers between 99 and 104, inclusive

$\dots\dots\dots$ *2 marks*

6a Write 0.48 as a fraction in its lowest terms

..... 2 marks

b Write $\frac{7}{50}$ as a decimal

..... 2 marks

c Calculate $\frac{3}{8}$ of £6.40

..... 2 marks

7a A compact disc (CD) costs £4.99

What is the cost of 12 such CDs?

..... 2 marks

b 4 litres of milk cost £3.60

What is the cost of $\frac{1}{2}$ litre of milk?

..... 3 marks

c I buy socks for £6.80 and a tie for £12. I pay with a £20 note. How much change should I get?

..... 3 marks

8

X		X		X
	X		X	

- a Complete: The ratio of the number of squares containing an X to the number of blank squares

= :

2 marks

- b I have several such patterns containing a total of 57 squares (of either type). How many blank squares are there?

.....

3 marks

9a Simplify

i $7a + 5a = \dots\dots\dots$

1 mark

ii $7a \times 5a = \dots\dots\dots$

2 marks

b Remove the brackets and simplify.

$$4(3b-7c) + 8(2b+c)$$

$\dots\dots\dots$

4 marks

c Factorize

$$15p - 10q = \dots\dots\dots$$

3 marks

SHOW YOUR WORKING

10 Solve

a $x + 5 = 11$

$x = \dots\dots\dots$ *1 mark*

b $3y - 2 = 7$

$y = \dots\dots\dots$ *2 marks*

c $\frac{1}{4}z = 8$

$z = \dots\dots\dots$ *2 marks*

d $3(w - 5) = w - 3$

$w = \dots\dots\dots$ *5 marks*

11. When $a = 3$, $b = 5$, $c = -4$
find the value of

a $3a + b =$

..... 2 marks

b $c^3 =$

..... 2 marks

c $ac + 2b =$

..... 2 marks

12

	Small	Large
Loaf	38p	70p
Cake	42p	80p

- a Find the cost of 2 large loaves and 4 small cakes

..... 3 marks

- b The price of cakes is increased by 15%. How much does a large cake cost now?

..... 3 marks

- c The price of loaves is also increased by 10% (the cakes are still 15% more than in the table).

By how much does the cost of one large loaf and one large cake increase?

..... 3 marks

13 The probability of a bird on my garden lawn being a wren is 0.16.

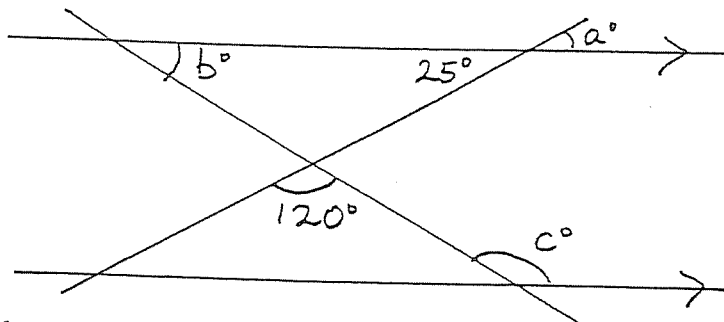
a I observe 50 birds on the lawn. How many should I expect to be wrens?

..... 2 marks

b At another time I observed that 12 of the birds seen were starlings and I calculated that the probability of a bird being a starling was 0.3. How many birds did I see?

..... 2 marks

14



Find the angles marked a° , b° , c° .

Give reasons for your answers

$a^\circ =$

Reason: 1 mark

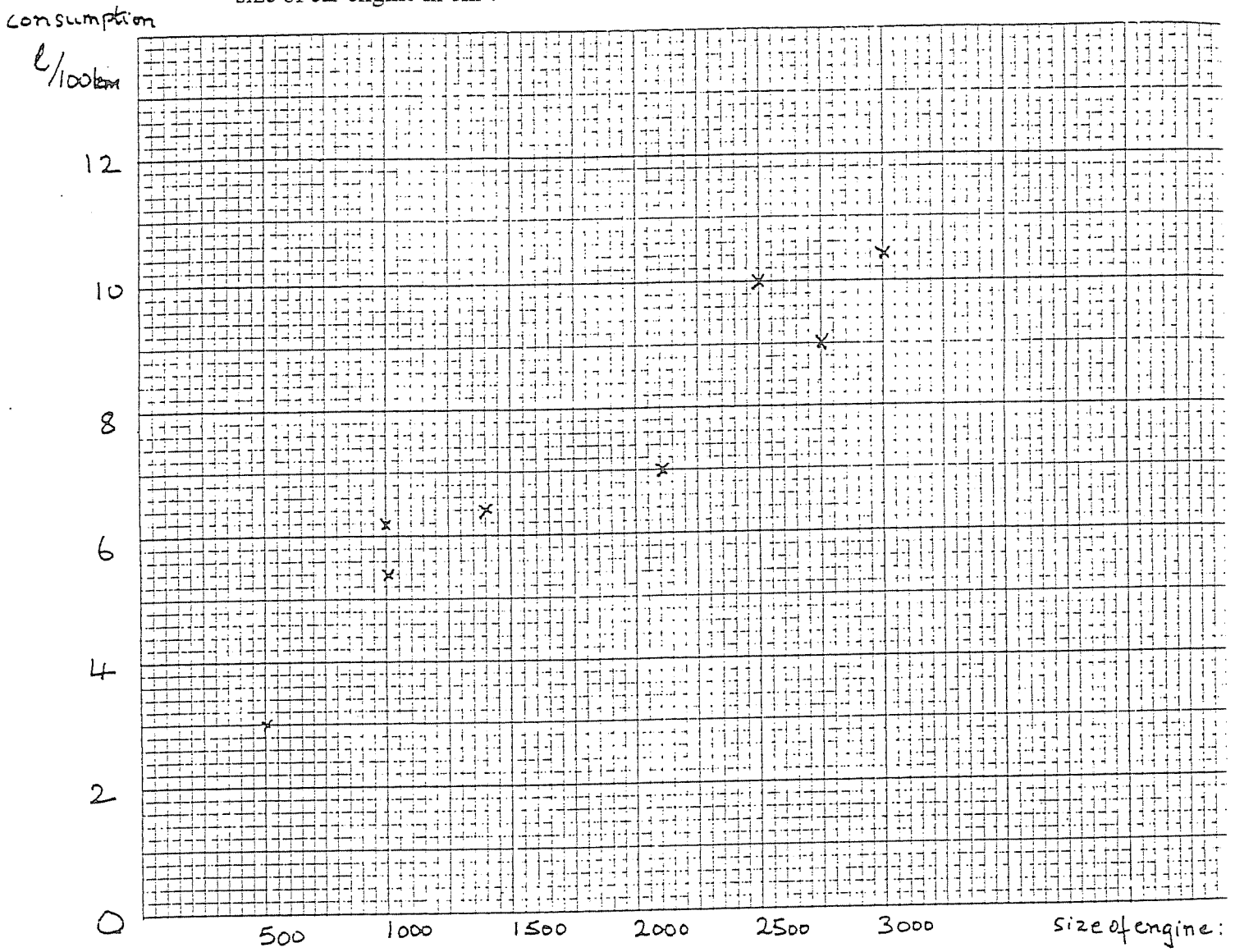
$b^\circ =$

Reason: 2 marks

$c^\circ =$

Reason: 2 marks

15 The scatter graph shows petrol consumption in litres per 100km and size of car engine in cm^3 .



a Plot a point for one more car which uses 8 litres per 100km and has an engine size of 2200 cm^3 .

1 mark

b Draw a line of best fit on the graph

2 marks

c Use your line to estimate the fuel consumption of a car with an engine size of 1700 cm^3

Fuel consumption estimate =

2 marks

Four cards A, B, C and D are shown

$$x + y$$

A

$$xy$$

B

$$\frac{y}{x}$$

C

$$x^y$$

D

Which card will show the largest value when:

a $x = 2, y = 3?$

.....

1 mark

b $x = 2, y = 1?$

.....

1 mark

c $x = \frac{1}{2}, y = 4?$

.....

1 mark