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## ENTRANCE AND SCHOLARSHIP SAMPLE PAPERS

Sample Paper

# FOREST SCHOOL <br> ENTRANCE EXAMINATION MATHEMATICS 

## Calculators are NOT allowed <br> You are advised to show your working

Time: One hour

NAME
CANDIDATE NUMBER $\qquad$

1 Work out $694+888$

ANSWER

2 Work out 1234-566

ANSWER

3 Work out $764 \times 7$

ANSWER

4 Work out $20504 \div 8$

ANSWER
$5 \quad$ In $1970 £ 1$ was worth the same as $\$ 2.50$.
How many pounds was $\$ 1000$ worth?

ANSWER
$6 \quad$ Calculators normally cost $£ 6$ and protractors normally cost 30p.
In a sale, calculators have been reduced by a quarter and protractors are half price.

David bought 8 calculators and 20 protractors.
How much did he have to pay?

ANSWER

7 Jordan eats $\frac{1}{4}$ of a pizza and Anna eats $\frac{1}{3}$ of what is left.
Rohit, Guhesh and Matilda share equally the remainder.
What fraction of the pizza did Matilda eat?

ANSWER

8 Mayank thinks of a number. He doubles it and then adds 4 and gets the answer 40.

What was Mayank's number?

ANSWER
$9 \quad$ Write in words the number 4040440

ANSWER

10 What number is halfway between -3 and 8 ?

## ANSWER

11 A programme starts at 9:15pm and ends at 11:06pm. How many minutes did it last?

ANSWER $\qquad$ minutes

12 Grace plants a row of daffodils.
There is a gap of 1.1 metres between each daffodil, and the row begins and ends with a daffodil.

She has 8 daffodils.
How long is the row of daffodils when she has finished?
130.126 is halfway between two numbers.

One of the numbers is 0.11 .
What is the other number?

ANSWER

14 Khatijah throws two dice and adds together the scores.
How many different ways can she score 8 ?
Show each different way clearly.

15 Hiring a Sports Hall costs a $£ 30$ booking fee and then $£ 10$ per hour.
Chris hires it and pays $£ 120$.
How many hours did Chris hire the hall for?

ANSWER

16 Jerry the bearded dragon eats 12 locusts for breakfast at the start of every day.

His owner buys 100 locusts one afternoon for Jerry to eat.
How many locusts does Jerry get on the day these locusts run out?

ANSWER. $\qquad$

17 What is the smallest number that 3,4 , and 10 all go into?

ANSWER

18 Draw the shape whose sides are twice as big as the one shown in the space in the grid below it.

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19 Prasha is swimming lengths at her local swimming pool.
She takes 24 seconds to swim a length doing front crawl.
She takes 60 seconds to swim a length doing breaststroke.
She swims 3 lengths of each (so a total of 6 lengths).
The last length takes an extra 6 seconds as she gets tired.
How long did she take to swim all 6 lengths? Give your answer in minutes and seconds.

Ermintrude the female cat flea can lay 50 eggs a day.
These become adults in 30 days.
How many new adult fleas will there be in 40 days?

ANSWER

21 Complete the table showing whether pupils walk to school or not and answer the questions below.

|  | Walk | Don't walk | Total |
| :---: | :---: | :---: | :---: |
| Girls | 6 |  | 11 |
| Boys |  | 8 |  |
| Total |  |  | 23 |

(i) What fraction of the pupils are boys who walk to school?
(ii) What fraction of the girls don't walk to school?

2236 is a square number because it can be written $6 \times 6$.
Similarly, $64=8 \times 8$ is a square number.
1000 is a cube number because it can be written $10 \times 10 \times 10$
Similarly, $343=7 \times 7 \times 7$ is a cube number.
The French mathematician Pierre de Fermat claimed correctly that there is only one square number that is 2 less than a cube number.

It is less than 50.
What is it?

ANSWER.

23 A game is played on a board with spaces numbered 1, 2, 3, 4, 5, 6, 7.... and so on.

In the game players throw a dice numbered 1 to 6 and move forward the number of spaces indicated unless they throw a 6.

If they throw a 6 they do not move but have to go back the number on the next throw.

What space would you end up on after these 8 throws: $5,5,3,6,2,6,1,4$ ?

24 On the planet Zog the wibbles and the wobbles are having their annual conference.
A wibble has 6 arms and a wobble has 5 arms.
There are 11 wibbles and a total of 81 arms at the conference.
How many wobbles are there?

## ANSWER

25 In this addition each letter represents a different digit.
List all the possible digits that A could be.
$N A+R A+T A=W X A$

ANSWER

In this multiplication each letter represents a different digit.
List all the possible digits that B could NOT be.
$\mathrm{MB} \times \mathrm{NB}=\mathrm{GHB}$

26 A number is a multiple of 11 if 11 goes into it. 33 and 121 are both multiples of 11 .

Ajay says that a number is a multiple of 11 if the difference of alternate sums of digits in the number is a multiple of 11 .

So, 27390628 is a multiple of 11 because
$2+3+0+2=8$
$7+9+6+8=30$
and $30-8=22$ which is a multiple of 11 .
(a) Is 978261 a multiple of 11 ? Show your working clearly.

ANSWER
(b) Find one of the ways to fill in the gaps so that this number is a multiple of 11.


27 What is 6 metres per second in kilometres per hour?

28 Safiya draws a rectangle.
She then adds 10 cm to each side.
What has the perimeter increased by?

## ANSWER

cm

29 Kasey takes 24 minutes to cycle from A to B
Shayban cycles at three quarters of Kasey's speed.
How long does it take Shayban to cycle from $A$ to $B$ ?
$\qquad$

30 How many ways are there of colouring in three squares in this grid so that exactly one coloured square appears in each row and each column? Show clearly how you get your answer.


31 A number is deficient if its factors, not including itself, add up to a number less than the original number.

If they add up to more, it is abundant.
So 8 is deficient because its factors add up to $1+2+4=7$ which is less than 8.

Are the following numbers deficient or abundant? Explain clearly your reasoning.
(a) 10

ANSWER
BECAUSE
$\qquad$
$\qquad$
(b) 12

ANSWER
BECAUSE
$\qquad$

Victor says that all prime numbers are deficient. Do you agree?
Explain your reasoning carefully

ANSWER.
BECAUSE

32 Katie, Molly and Olivia are three friends.
One of them always tells the truth.
One of them always lies.
The other one sometimes tells the truth and sometimes lies.
Katie says: I always lie.
Olivia says: Katie sometimes lies and sometimes tells the truth.
Use this information to determine which person is which.

Always tells the truth
Always lies.
Sometimes tells the truth and sometimes lies

33 Alan and Bob can paint a room in 4 hours.
Bob would take 6 hours on his own.
How long would Alan take on his own?

[^0] Reflect these shapes in the mirror lines.

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35 A cube has six faces.
Theo builds a bigger cube out of 27 little cubes.
He paints the outside of the big cube and lets the paint dry.
He then breaks it up into the original 27 cubes.
What is the total number of unpainted faces on the little cubes? Show clearly how you get your answer.

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[^0]:    ANSWER

