CATERHAM
SCHOOL

11+ MATHS SAMPLE QUESTIONS

11+ Entrance Examination
(For Entry into Year 7)

1 Hour (Non Calculator)

Note: the latest primary school NC was used to ensure continuity with the new NC. Sample questions were checked against this curriculum.
This has not led to any changes apart from the addition of adding and subtracting fractions.

Changes made to exam itself
Reduced to 1 hour
Added in adding and subtracting fractions

Changes made to material sent to parents

Added title "**Caterham School: 11+ Entrance Exam information and sample questions. Updated April 2016"**
Added "The 11+ entrance Mathematics examination is now 1 hour long: calculators are not allowed."

Removed "the style of the examination removes familiar KS 2 SATS"

Added "It does not assume knowledge of anything beyond the government's revised Programme of Study for KS 1 and 2 This can be found at https://www.gov.uk/government/publications/national-curriculum-in-england-mathematics-programmes-of-study"

Added "Adding and subtracting fractions" to Number topic list

Changed description of algebra to "There will be no formal algebra in the paper, however the candidates may be asked to 'fill in the box' with a suitable number, or solve problems that could be done with algebra but are accessible without."

Added "*Specimen Questions (note this is not a whole paper, nor does it reflect the structure of the paper which is not broken into sections). The actual paper will increase in difficulty as the student progresses through it." At the start of the specimen questions*

Minor formatting changes to specimen questions

ALA April 2016

Caterham School: 11+ Entrance Exam information and sample questions. Updated April 2016

The 11+ entrance Mathematics examination is now 1 hour long: calculators are not allowed.

The intention of the examination is to check the competence of (particularly) numerical skills, reading and interpreting simple statistical diagrams and tables and the ability to solve some 'wordy' problems.

It does not assume knowledge of anything beyond the government's revised Programme of Study for KS 1 and 2.
This can be found at https://www.gov.uk/government/publications/national-curriculum-in-england-mathematics-programmes-of-study

Number:

- Place value of the digits in both whole numbers and decimals.
- Ordering (in size) a list of whole numbers and decimals including negative numbers.
- Use of the symbols $>, <, =$ etc.
- Know the meaning of the terms *prime, factors and multiples* including HCF and LCM.
- Addition and subtraction of whole numbers and decimals.
- Multiplication (inc long multiplication) of whole numbers; division (but not long division) of whole numbers.
- Multiplication of decimals by a whole number.
- Order of operations.
- Equivalent fractions and ordering.
- Simple percentages and fractional and decimal equivalents.
- Calculating a fraction or a percentage of a quantity.
- Adding and subtracting fractions
- Ratio: the questions will refer to 'parts' (see example).

Algebra:

There will be no formal algebra in the paper, however the candidates may be asked to 'fill in the box' with a suitable number, or solve problems that could be done with algebra but are accessible without.

Spotting the pattern and writing the next few terms in a sequence of numbers will be expected.

Shapes and measures:

- Read and write standard (linear) metric units and convert between them.
- Know suitable metric units to measure length, area and volume and 'weight'.
- Calculation of perimeter of shapes.
- Calculation of areas of simple standard shapes including rectangle (and square), triangle and compounds made up of these.
- Calculation of volumes of cuboids.
- Understand both line and rotational symmetry; axes of symmetry.
- Understand the terms *parallel* and *perpendicular*.
- Know the terms *acute, obtuse* and *reflex* when referred to angles.
- Angle properties: straight line = 180°, full turn = 360°, triangle sum = 180°.
- Know the terms *isosceles* and *equilateral triangles* and their properties.
- Read the time from a clock using both am and pm and the 24 hour system.
- Calculate the sum or difference of times.

Data:

- Read and interpret simple tables of information.
- Interpret simple line graphs (eg temperature v time).
- Read and draw bar charts and (with 'easy' numbers), pie charts.
- Use a coordinate system for position (see example).
- Estimate the likelihood of an event happening; this will usually involve a number line.

Problem solving:

The questions are generally quite wordy looking at how the candidate 'lifts the mathematics' form the words. Writing down any working is essential since method marks may be awarded quite generously here.

Specimen Questions (note this is not a whole paper, nor does it reflect the structure of the paper which is not broken into sections). The actual paper will increase in difficulty as the student progresses through it.

Number:

1. What is the *smallest* possible number you can write down using these figures, once each ?

2 6 7 3 *Ans:*.....

What is the *largest* possible number you can write down using these figures, once each ?

2 5 6 4 *Ans:*.....

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2. Calculate the following

$(33 + 7) \div (14 - 6) =$

Ans:.....

$2 \times 9 + 4 \times 2 =$

Ans:.....

$(16 + 40) \div 2 \times 4 =$

Ans:.....

3. Jimbob buys 9 pairs of laces for his hiking boots.

It costs £19.26 altogether.

How much would 3 pairs of laces cost ?

Ans:.....

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4. If $15 \times 20 = 300$, give the answers to these, without working them out in full:

$15 \times 21 =$ .....

Ans:.....

$15 \times 19 =$ .....

Ans:.....

$300 \div 15 =$ .....

Ans:.....

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5. Write these numbers in order of size starting with the smallest:

0.23, $\frac{2}{3}$, 0.029, 0.66, 25%

Ans:.....

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6. Here is a list of fractions:

$\frac{3}{12}$ $\frac{4}{7}$ $\frac{2}{8}$ $\frac{1}{3}$ $\frac{1}{4}$ $\frac{2}{5}$

Pick out *three* from the list that have the same value.

Ans: ..... , ... , *and* .....

7. Jimbob's van can carry **192** boxes.

Jimbob has **6240** boxes to move from Woking to Caterham.

How many journeys must the van make to transport all of these boxes from Woking to Caterham ?

Show your method and workings.

Ans:.....

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8. This table shows the temperature that it went down to overnight in 5 parts of the UK.

Location	Temperature
London	+3
Manchester	+2
Brighton	+4
Cardiff	-2
Edinburgh	-6

What is the temperature difference between the hottest and coldest places?

.....

Pre-Algebra:

1. Look at this pattern of numbers.

Fill in the missing numbers:

3	8	17	30	.....	.....
5	9	13	17	.....	

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2. I think of a number.

I multiply it by 3 and then subtract 5.

I get an answer of 16.

What was the number I first thought of ?

Ans:.....

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3. Which number replaces the * in this calculation:

$$\frac{*}{5} + \frac{*}{10} = \frac{9}{10}$$

Ans:.....

4. A list of numbers is written down using the rule

multiply the position in the list by 5 and add 2

For example, the third number in the list will be $5 \times 3 + 2 = 17$.

Write down the tenth number in the list.

Ans:.....

Write down the twenty-fifth number in the list.

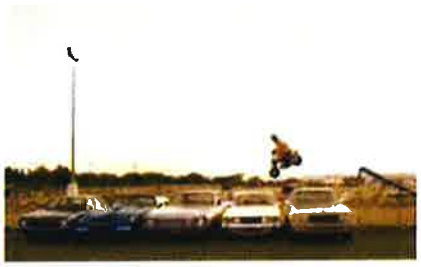
Ans:.....

One of the numbers in the list is 337.

Which position in the list is 337 ?

Ans:.....

1. Nancy is a motorcycle stunt driver. She likes jumping over cars and vans on her motorbike. The cars and vans are arranged side by side like in the picture..



On her first jump, she jumps over 5 cars and 2 vans, which is a total width of 14 metres. On her second jump, she jumps over 5 cars and 4 vans, which is a total width of 19 metres.

What is the width of a car and the width of a van?

Car's width:.....

Van's width:.....

Shapes and measures:

1. A rectangular field has an area of 72 m^2.
The length of the field is 9 m.

How wide is it ?

Ans:.....*m*

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2. Jane went to the supermarket to buy these items:

1 kg potatoes, ½ kg carrots, 1½ kg onions, 2 kg steak and 750 g peas.

Work out the total weight of these items

Ans:.....

Suppose the supermarket had run out of carrots.

What would the total weight of the shopping be then ?

Ans:.....

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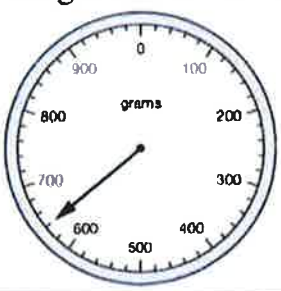
3 Anne-Marie is making cakes, and weighs out some sugar. This is what her scales show:



How much is this in grams? .....

How much is this in kilograms? .....

Anne-Marie's friend Chris knocks over the bowl and spills 0.25 kilograms of sugar. How much is left, in kilograms?

.....

4. A water tank has the shape of a cuboid.

It is 3m 20 cm long, 1m 50 cm wide and 2m high.

What is the volume of water in the tank measured in cm^3 ?

Ans:.....*cm^3*

What is the volume of water in the tank measured in litres ?

Ans:.....*litres.*

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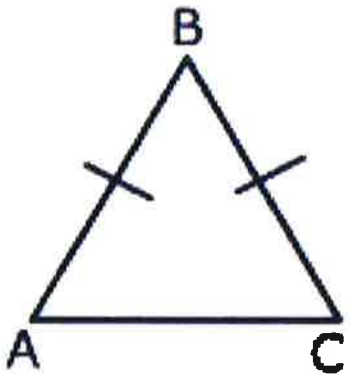
5. ABC is an isosceles triangle, with AB=BC. If the angle at B is 50°, what is the angle at A?
Note:The triangle is not drawn accurately



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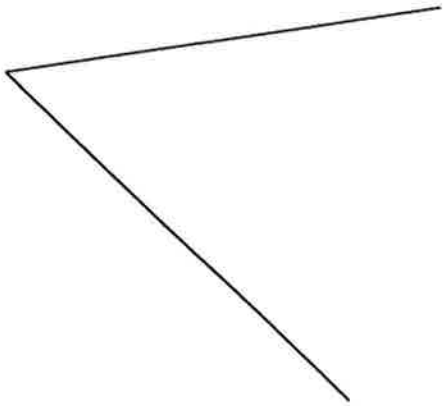
6. Estimate (without a protractor) the size of the angle shown, giving your answer in degrees.



.....°

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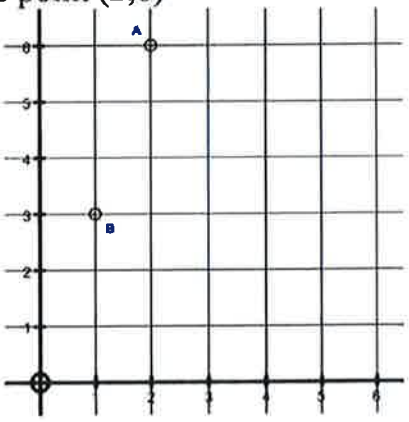
7. On the axes shown, A is the point (2,6)



a. What are the co-ordinates of point B?

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b. Point C has co-ordinates (4,3). Plot C on the axes above

c. ABCD is a parallelogram. Write down the co-ordinates of point D.

.....

8. The bus takes 1 hour and 15 minutes to go from Guildford to Oxford.

On the train it would take just 43 minutes.

How much time would I save by travelling on the train ?

.....*minutes*

9. Floor tiles measure 20 cm by 30 cm.

They are used to cover a floor that is 9.4 metres by 6.6 metres.

How many tiles of side length 20 cm will fit along the 9.4 metre side ?

Ans:.....

How many tiles of side length 30 cm will fit along the 6.6 metre side ?

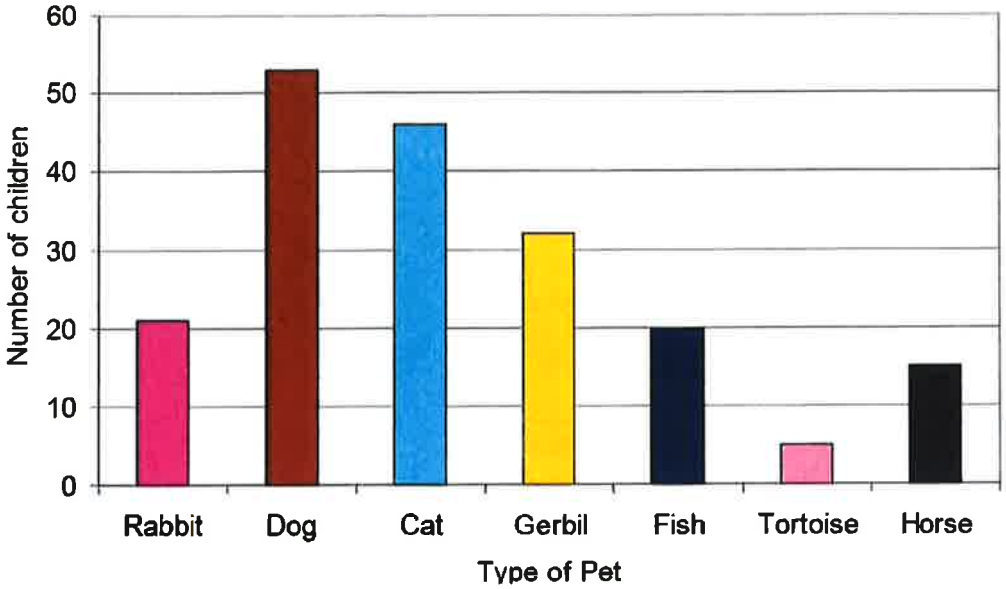
Ans:.....

How many tiles would be needed to cover the floor ?

Ans:.....

Data:

1. The bar chart shows the number of children at a school who have each type of pet



What is the least popular pet?

How many children have Rabbits?

How many more children have gerbils than have Horses?

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2. Jimbob and Jo play a game of pool.

The probability that Jimbob wins is 0.7

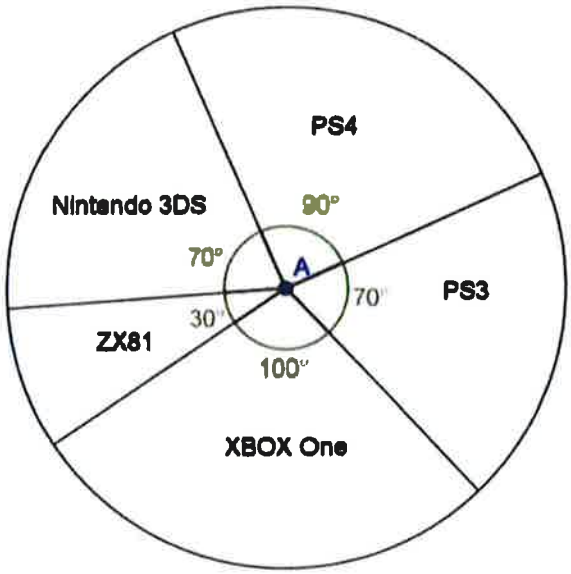
Put an arrow on the number line below to show the probability that Jimbob will win the game.

0 _____ 1

Put an arrow on the number line below to show the probability that Jo will win the game of pool.

0 _____ 1

3. The pie chart below shows what games consoles the students at Helanbacagun primary school in North Wales received for Christmas.



If 6 lucky students got a ZX81, how many students got an XBOX One?

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Problem solving:

1. For one newspaper shop it was noted that on a particular Monday, 32 customers were men, three quarters of the customers were women and 25% of the women bought newspapers.

How many women bought newspapers on that Monday ?

Ans:.....women

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2. Jimbob has many talents, including doing odd jobs for people.

Contacts have fixed him up with 14 houses to paint over the summer.

He has decided to allow himself 14 days to paint each house, but he would like a holiday of 4 days in the middle and unfortunately he will be off sick (because of paint fumes) for a further 3 days.

How many days does the whole job take him from start to finish ?

Ans:.....days

3. Jimbob is good at darts.

He knows that 'triple 10' is worth 30 points and a 'double 5' is worth 10 points.

He needs to score 124 points to win a match.

With his next two darts he scores 'triple 16' and 'double 20'.

How many points will he have to get with his third dart to win the match ?

Ans:.....points

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4. Car hire costs £45 for the first 200 km.

For distances over 200 km, there is an extra cost of £0.50 per km.

a) Rosie hired a car and drove 350 km.

Calculate her total cost.

Ans.....

b) Daryl hired a car.

His total cost was £140.

Work out the distance Daryl drove.

Ans.....km

5. The clock below shows 10.20. Look closely at the position of the hour hand.

What will the angle between the hour and the minute hand be when the time is 4.40?

.....

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6. Jimbob dropped into Thresher's for bottle of wine.

There was an offer that said

"buy two and get a third one free"

Jimbob took three bottles of the same wine off the shelf marked as £7.98 each.

What did Jimbob actually pay ?

Ans:.....

What was the equivalent price per bottle using this offer ?

Ans:.....

7. Can you replace the question mark with a suitable number in this grid ?

72	**16**	**1**
3	**?**	**24**
8	**2**	**9**

Ans: .....