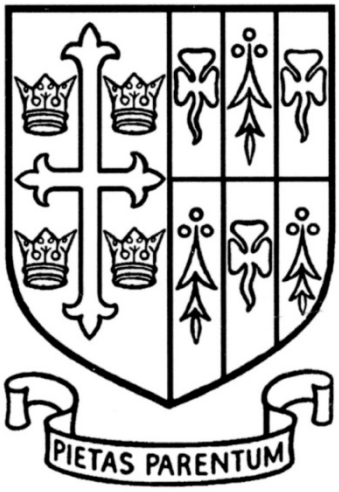
ST EDWARD'S

OXFORD



13+ SCHOLARSHIP EXAMINATION 2017

MATHEMATICS

PAPER 2

1 hour

Answer all questions.

Calculators are NOT permitted.

Extra Paper is available

Name: _____

1. If I place a triangle on a 6 cm by 6 cm square, I can cover up to $\frac{2}{3}$ of the square.
   If I place the square on the triangle, I can cover up to 60% of the triangle.

   What is the area of the triangle?

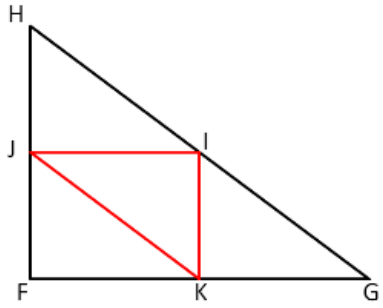
2. Shakil wants to remove numbers from the set $\{1,2,3,...,16\}$ so that no two remaining numbers add to make a perfect square. What is the smallest number of numbers that he needs to remove?

3.

FGH is a right angled triangle with shortest sides $FH = 6\text{cm}$ and $FG = 8\text{cm}$.

I, J, and K are the mid points of the sides GH, FH and FG respectively.

What is the perimeter of the triangle IJK?



4.

My four pet monkeys and I harvested a large pile of peanuts.

Monkey A woke in the night and ate half of them;
then Monkey B woke and ate one third of what remained;
then Monkey C woke and ate one quarter of the rest;
finally Monkey D ate one fifth of the much diminished remaining pile.

What fraction of the original harvest was left in the morning?

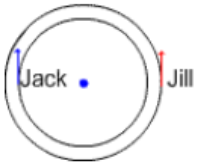
5.

After playing 500 games, my success rate at Solitaire is 49%.

Assuming I win every game from now on, how many extra games do I need to play in order that my success rate increases to 50%?

6.

Jack dances clockwise around the Maypole, making one revolution every five seconds.
Starting from a point diametrically opposite Jack's starting point, Jill dances anticlockwise, making one revolution every six seconds.



How many times do they pass each other in the first minute?

7.

When Clement stands on a table and Dmitri stands on the floor, Clement is 80cm taller than Dmitri. When Dmitri stands on the table and Clement stands on the floor, Dmitri is 1m taller than Clement.

How tall is the table?

8.

In this magic square, which uses all whole numbers from 7 to 15 inclusive, each of the rows, columns and the two main diagonals has the same total.

n		
		7
		14

Which number replaces n in the completed square?

END OF TEST