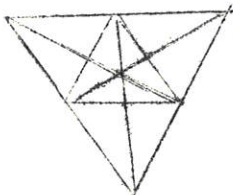


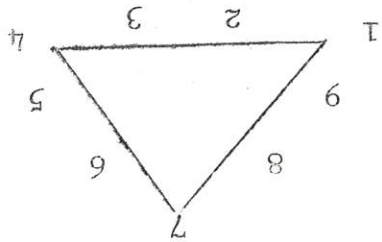
SHREWSBURY SCHOOL
MATHEMATICS PRIZE 1966

1. The first part of this calculation is multiplication,
the second addition. Each star represents a digit.
Each digit from 1 to 9 occurs once and once only.
Replace the stars by the correct numbers.
- * *
_____*
* *
_____*
* *
2. A motorist usually travels at an average speed of x m.p.h.
to reach his office which is d miles from his house. If he were
to increase his average speed by a m.p.h. he would save b hours
on the journey. Express x in terms of a , b , and d . Use your result
to find x if $a = 4$, $b = 1/8$, $d = 45$.
3. 80% of the boys in a school like playing Fives, 84% like playing
Football, and 85% like playing Tennis. What is the least percentage
of the boys that like all three games?
4. In how many ways can a rectangular sheet of 12 postage stamps,
in 3 rows of 4 stamps, be divided into 2 pieces of 6 stamps each
by tearing along the perforations?
5. Here are nine eights: 8 8 8 8 8 8 8 8 8
Copy them and insert mathematical signs in such a way that the
expression is then exactly equal to 1000.
6. O is any point inside the triangle ABC . AC , BO , CO are joined and
produced to meet the opposite sides in X , Y , Z respectively.
 ZY produced meets BC produced at L . Prove that $\frac{BX}{XC} = \frac{BL}{CL}$
7. If two dice are thrown, show that the chance of obtaining a score
of 6 or less is $5/12$, or 7 to 5 against. If three dice are used find
the chance of obtaining 8 or less.

8. A grocer expects to make a profit of 32% by selling sugar at 8d per lb. Unfortunately for him his scales are faulty, and the customer who asks for 1 lb actually receives $16\frac{1}{2}$ oz. What percentage profit does the grocer in fact make?
9. How many triangles are there in this figure?



10. Try to find an arrangement of the digits in the accompanying figure so that the sums of the squares of the four digits along each side are the same.



1966 Paper
Set by P.C.