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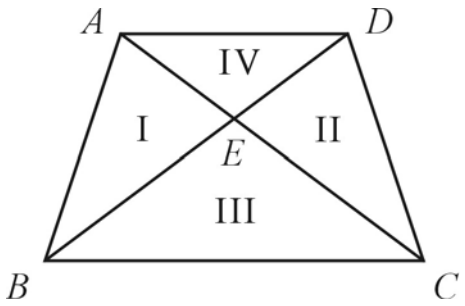
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Po Leung Kuk
12th Primary Mathematics World Contest
Team Contest 2008

Team : _____

(All the figures are not drawn to scale.)

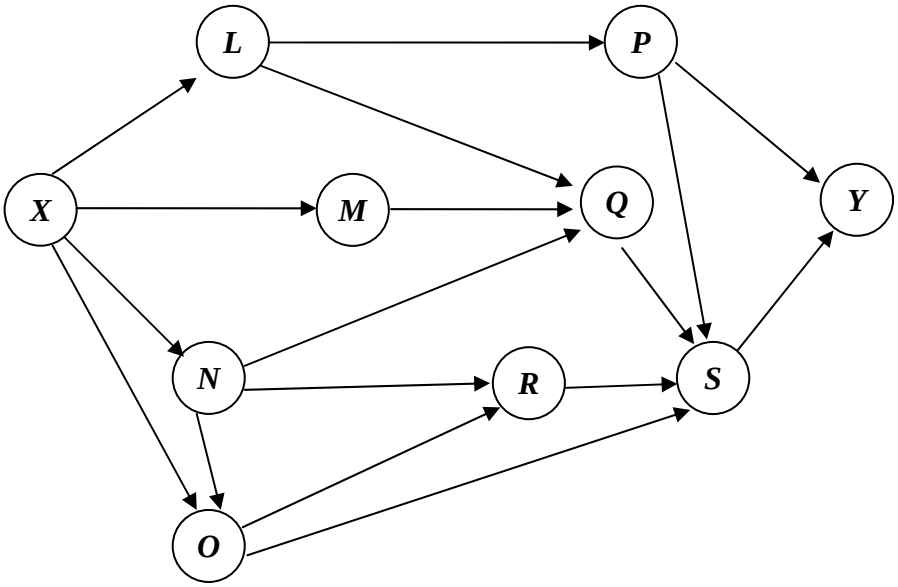
1. In the figure below, AE = 30 cm, CE = 60 cm, BE = 80 cm and DE = 40 cm. What is the ratio of the total area of Triangle III and Triangle IV to the total area of Triangle I and Triangle II?



2. The digits of a 3-digit number, which are all different, are rearranged to form new numbers. The greatest such number and the smallest such number are still 3-digit numbers. The difference between the greatest number formed and the smallest number formed is the original 3-digit number. What is the original number?

3. Three pipes ***A***, ***B*** and ***C*** operating together can fill a tank in 6 hours. After operating together for 2 hours, ***C*** is shut-off and ***A*** and ***B*** need another 7 hours to fill the tank. How many hours would it take for ***C*** to fill the tank on its own?

4. Simon wants to travel from city ***X*** to city ***Y***. He is to travel according to the arrow directions of the following map.

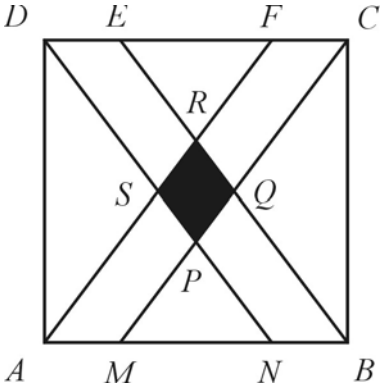


In how many ways can Simon reach city ***Y***?

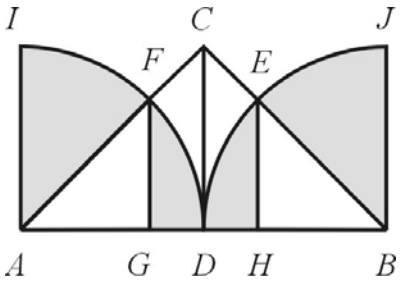
5. A digit is placed in each of the 11 boxes below such that the sum of any three consecutive boxes is equal to 21. If digit "7" is in the first box and digit "6" is in the ninth box (counting from left to right), what is the digit in the second box?

7	**?**							**6**		

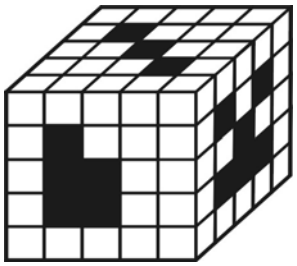
6. In the figure below, *ABCD* is a square, *AM* = *NB* = *DE* = *CF* = 1cm and *MN* = 2cm. Find the area of quadrilateral *PQRS*, in cm^2.



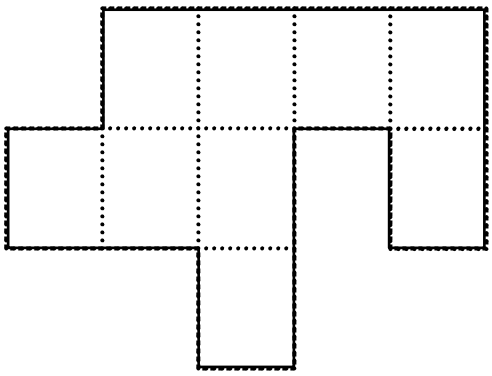
7. In the figure below, *IFD* and *JED* are two arcs in the circles with the same radius. *AD* = *DB* = *DC* = 4 cm. *AGDHB*, *AFC* and *BEC* are straight line segments. *IA*, *FG*, *CD*, *EH* and *JB* are perpendicular to *AB*. Find the area of the shaded region, in cm^2. (**Take π as** $\frac{22}{7}$)



8. The figure below originally was a big cube consisting of 125 small cubes. Some of the small cubes were taken away. They are shown as dark parts which go through the entire big cube. How many small cubes are left?



9. Susan goes to the post-office to buy five stamps of the same denomination and she wants her stamps all connected in one piece. The post master takes out the last set of nine stamps available as shown below. In how many ways can the stamps be torn-off?
(Stamps must be connected along an entire edge, not just at a vertex.)



10. How many natural numbers between 1 and 2008 inclusively have the sum of their digits divisible by 5?