

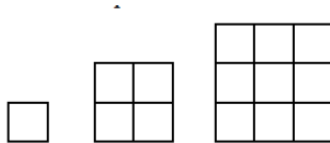
Fiji Mathematics Team Competition - Zone
YEAR 12/FORM 6 – 2014

F6/1 How many numbers from 2 to 100 are equal to the cube of an integer?

F6/2 Three parties contest an election with 100 000 voters who all cast valid votes. The winning party is the one that obtains more votes than either of the other two parties. What is the smallest possible number of votes with which a party can win the election?

F6/3 Tina correctly measures three sides of a rectangle and gets a total of 88 cm. Her brother Robert correctly measures three sides of the same rectangle and gets a total of 80 cm. What is the perimeter of the rectangle, in cm?

F6/4 A sequence of squares is made of identical square tiles. The edge of each square is one tile length longer than the edge of the previous square. The first three squares are shown. How many more tiles the 2005th square have than the 2004th?



F6/5 The yearly changes in the population census of a town for four consecutive years are, respectively, 25% increase, 25% increase, 25% decrease, 25% decrease. What is the net change over the four years, to the nearest percent (and show a decrease or increase).

F6/6 A boat is traveling upstream at 5 mph relative to the current flowing against it at 1 mph. If a tree branch 10 miles upstream from the boat falls into the current of the river, how many hours does it take to reach the boat?

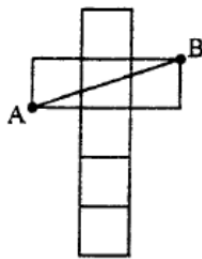
F6/7 After a cyclist has gone $\frac{2}{3}$ of his route, he gets a flat tire. Finishing on foot, he spends twice as long walking as he did riding. How many times as fast does he ride as walk?

F6/8 An alarm clock runs 4 minutes slow every hour. It was set right $3\frac{1}{2}$ hours ago. Now another clock which is correct shows noon. In how many minutes, to the nearest minute, will the alarm clock show noon?

F6/9 It takes 852 digits to number every page in a book. How many pages are there?

F6/10 There are 200 fish in an aquarium. 1% of them is blue, all the rest are yellow. How many yellow fish do we have to take out the aquarium so that blue fish represent 2% of all aquarium fish?

F6/11 A cross is made up of seven congruent squares. If $AB = 20$ cm, determine the area of the cross.



F6/12 City P is 625 kilometers from City Q. M departed from City P at 5:30 a.m. travelling at 100 kilometers per hour, and arrived at City Q. Fifteen minutes after M left, N departed from City Q and arrived at City P travelling at 80 kilometers per hour. At what time did M and N meet together?

F6/13 Each student in a class of 25 students wrote 2 different tests. It is known that

- 18 students passed the first test.
- 22 students passed the second test.
- No students failed both tests.

How many students passed both the tests?

F6/14 Trevor's farm of mutant animals has 3 legged goats and 5 legged goats. In one pen he counts 83 legs and 23 head. How many 5 legged goats are there?

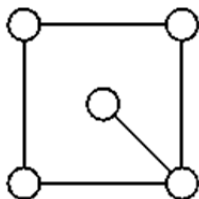
F6/15 Rahul and Jim take turns to pick candies from a bag. Rahul picks 1 candy, Jim 2 candies, Rahul 3, Jim 4 and so forth. After a while there are too few candies to continue and so the boy whose turn it is, takes all the remaining candies. When all the candies are picked, Rahul has 1012 candies in total. What was the original number of candies in the bag?

F6/16 Travelling at an average speed of 100 km/hr, a train took 3 hours to travel to a city. Unfortunately the train then waited just outside the station, which reduced the average speed for the whole journey to 90 km/hr. For how many minutes was the train waiting?

F6/17 How many different words can you form from the letters ABCD, where a word is a sequence of one to four letters, using every letter at most once (for example, words DC and CADB)?

F6/18 Find the next number in the pattern 2; 3; 6; 15; 42

F6/19 The diagram shows five discs connected by five line segments. Three colours are available to colour these discs. In how many different ways is it possible to colour all five discs if discs which are connected by a line segment are to have different colours?



F6/20 In the rugby battle, Town and City play three games or until one team wins two games. In each game, both teams have a $\frac{1}{3}$ chance of winning, and there is a $\frac{1}{3}$ chance that they will tie. What is the probability that Town wins the championship (in simplest fraction)?

Tie Breaker

F6/21 If $\frac{a}{b} = 3$ and $\frac{b}{c} = 2$, then what is the value of $\frac{a-b}{c-b}$?

F6/22 When Peni took his place in the marching band, he was one person in a rectangular array of musicians. He noticed that he was 10th from the front, 7th from the back, 3rd from the left, and 8th from the right. How many musicians were in the band?
