**Fiji Mathematics Team Competition - Zone**

**FORM 6 – 2013**

F6/1 2002 squares, each with area 36 square centimeters, are placed next to each other in one row to form a rectangle. What is the perimeter of this rectangle?

F6/2 A number *n* is subtracted from 18. The result is four less than *n.* What is the value of *n?*



F6/3 Eleven girls are standing around a circle. A ball is thrown clockwise around the

circle. The first girl, Ami, starts with the ball, skips the next three girls, and

throws the ball to the fifth girl who then skips the next three girls and throws the

ball to the ninth girl. If the pattern continues, including Ami’s initial throw, what

is the least number of throws necessary for the ball to return to Ami?

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| F6/4 The sum of the first five terms of an arithmetic sequence is 40 and the sum of the  first ten terms of the sequence is 155. What is the sum of the first fifteen terms  of the sequence? |
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F6/5 The number 88 is obtained from the number 44 by raising this number to the power of **n**. What is the number **n**?

F6/6 In the diagram the angle *m* is the size of *n*. What is the value of *m*?

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F6/7 The regular price for a bicycle is $320. The bicycle is on sale for 20% off. The regular price for a helmet is $80. The helmet is on sale for 10% off. If Sheela bought both items on sale, what is her percentage savings on the total purchase?

F6/8 If the sum of two numbers is 1 and the product of the two numbers is 1, what is the sum of the cubes of the two numbers?

F6/9 The perimeter of a rectangle is 22cm. The area is 24cm2. What is the smaller of the two integer dimensions of the rectangle?

F6/10 The cookies in a cookie jar contain a total of 100 rasins. All but one of the cookies

are the same size and contain the same number of rasins. One cookie is larger and contains one more raisin than each of the others. The number of cookies in the jar is between 5 and 10, inclusive. How many raisins are in the larger cookie?

F6/11 Two sides of a triangle have lengths 4cm and 5cm. The third side has length *x* cm, where *x* is a positive integer. How many different values can *x* have?

F6/12 On Tuesdays, Mr. Smith walks from his home, located at one end of the

main Street, to the grocery store at the other end of the main Street. On his way

down the Main Street, he passes the post office and the police station, in that order. Mr. Smith’s home is 7.5 blocks from to the police station. The post office is 6 blocks from the grocery store and 3.5 blocks from the police station. How

many blocks does Mr. Smith walk from his home to the grocery store?

F6/13 A man will be able to retire when the sum of his age plus the number of years he has worked is 90. He is 25 years old and has worked for 3 years. How old will he be when he is able to retire?

F6/14 Tim purchased a pair of running shoes for $79.20, which included a 10% sales

tax. If the shoes were on sale for 40% off the original price, what was the

original price of the running shoes?

F6/15 If there are ten students in a club, then how many ways are there to choose a

president, vice-president and treasurer (assuming that nobody gets more than one

job) ?

F6/16 The Stationery shop sells pencils and pens individually. Reena buys a pencil

and two pens for $1.10. Ben buys two pencils and a pen for $1.00. How

much does Sushil spend to buy six pencils and six pens from the same Stationery shop?

F6/17 A boat has sprung a leak. Water is coming in at a uniform rate and some has already accumulated when the leak is detected. At this point, 12 people of equal skill can pump the boat dry in 3 hours, while 5 of these people require 10 hours. How many of these people are needed to pump it dry in 2 hours?

F6/18 Avi and Hari agree to meet at their favorite restaurant between 5:00 p.m. and

6:00 p.m. They have agreed that the person who arrives first will wait for the

other only 15 minutes before leaving. What is the probability that the two of

them will actually meet at the restaurant, assuming that the arrival times are

random within the hour? Express your answer as a simplest common fraction.

F6/19 A road construction unit is made up of a certain number of workers and a certain amount of equipment. Three units have paved 20 miles of a road in 10 days. How many additional units are needed if the remaining 50 miles of the road must be paved in 15 days?

F6/20 The average of three consecutive multiples of 3 is *a*.

The average of four consecutive multiples of 4 is *a + 27*.

The average of the smallest and the largest of these seven integers is 42.

Determine the value of *a*.

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Tie Breaker

F6/21 Fatima plans to resume her summer job at the local supermarket, which

requires the use of her personal vehicle to deliver groceries. Including tips,

Fatima earns an average of $9.00 per delivery, and she anticipates spending

$298 each month on gas and vehicle maintenance. If Fatima will work for three

months, what is the minimum number of deliveries she must make to earn

$3286 for tuition and cover her gas and vehicle maintenance expenses?

F6/22 What is the value of the sum 1 + 3 - 5 + 7 + 9 - 11 + 13 + 15 - 17 + …. 61 + 63 -65