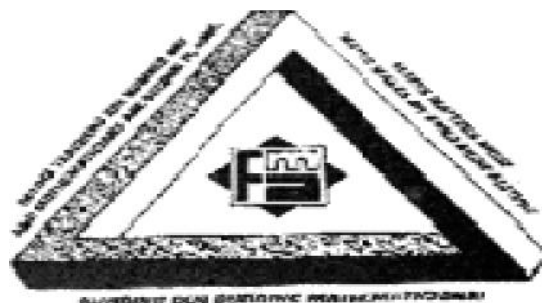


FIJI MATHEMATICS ASSOCIATION



FIJI MATHEMATICS COMPETITION

(FMC)

FORM 5

Thursday 11th July 2013

Time Allowed: 1 Hour 15 minutes

Note:

Calculators are NOT permitted.

Diagrams are NOT drawn to scale.

Instructions:

1. Print your **Name, School Name** and **Form** clearly in the space provided on the answer sheet.
2. Shade the circle corresponding to your answer with pencil on the answer sheet provided.
3. Multiple answers **will not be** accepted.

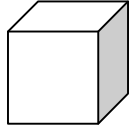
1. $5 + 2^2 - 3 \times -4$ is equal to
 A. 21 B. 12 C. 9 D. 3 E. -3
2. $2^{6-x} \times 2^{3x}$ equals
 A. 2^6 B. 2^{4x} C. 2^{6+2x} D. 2^{6-3x} E. 2^{6-4x}
3. For what values of x is $\frac{x+3}{2x+5}$ undefined?
 A. $-\frac{5}{2}$ B. $\frac{5}{2}$ C. 3 D. 5 E. -5
4. When $(3x - 5)(3x + 5)$ is expanded using the identity $(x + y)(x - y) = x^2 - y^2$ gives
 A. $9x^2 - 25$ B. $6x^2 - 25$ C. $6x^2 - 10$ D. $9x^2 + 25$
 E. $3x^2 - 25$
5. When simplified $\frac{(m^6)^2 \times m^4}{m^5}$ equals?
 A. m^{16} B. m^{14} C. m^{12} D. m^{11} E. m^5
6. $8 \times 2x^0$ equals
 A. 0 B. 2 C. 8 D. 10 E. 16
7. Which of the following is the simplified form of $\frac{x^2 + 4x}{x^2 + x - 12}$
 A. $\frac{x+4}{x-3}$ B. $\frac{x-12}{4x}$ C. $\frac{x-3}{x}$ D. $\frac{x}{x-3}$ E. $x-3$
8. What is the exact value of $\sin 60^\circ$?
 A. $\frac{1}{\sqrt{2}}$ B. $\frac{\sqrt{3}}{2}$ C. $\sqrt{3}$ D. $\frac{1}{2}$ E. $\frac{1}{\sqrt{3}}$
9. The roots of the equation $2x^2 - 10x + 12 = 0$ are
 A. 5 and 6 B. -5 and -6 C. 2 and 3 D. -2 and -3 E. 2 and -3
10. The number of significant figures in the number 0.050502 is equal to
 A. 8 B. 7 C. 6 D. 5 E. 4
11. Petrol and oil are mixed in the ratio 3:2 to make fuel for a lawn mower. How much oil will 15L of fuel contain?
 A. 9L B. 6L C. 5L D. 4L E. 3L

12. Ronal, Asha and Jone share \$450.00 in the ratio 2:3:4 respectively. The amount that Jone gets is
 A. \$50 B. \$100 C. \$150 D. \$200 E. \$250
13. The solution of $\frac{x+3}{2} \leq \frac{2x-1}{3}$ is
 A. $x \geq 11$ B. $0 \leq x \leq 11$ C. $x \leq 11$ D. $x \geq 3$ E. $x \leq 3$
14. A fence around a square garden has a perimeter of 36cm. What is the approximate length of the diagonal of the garden?
 A. 9cm B. 13cm C. 18cm D. 27cm E. 30cm
15. $(0.2)^3 \times 0.8$ equals
 A. 0.008 B. 0.16 C. 0.0064 D. 0.064 E. 0.64
16. The sum of the prime numbers between 50 and 60 is
 A. 59 B. 112 C. 161 D. 167 E. 220
17. A traveller to NZ from Fiji receives 60cents in NZ currency for each of his Fiji Dollar. To receive 960 NZ dollars, the amount in Fiji dollars he would need to change is
 A. \$576 B. \$600 C. \$960 D. \$1600 E. \$2000
18. 8 men take 14 days to paint a building. How many days will 4 men take?
 A. 4 B. 8 C. 14 D. 20 E. 28
19. The gradient of a straight line is $-\frac{3}{2}$ and it cuts the x-axis at the point (4,0). The equation of the line is
 A. $2y+3x=8$ B. $2y+3x=12$ C. $y=-\frac{3}{2}x+4$ D. $2y=3x+4$ E. $2y=3x-8$
20. When simplified $2 \log 5 + \log 4 - \log 20$ equals
 A. $\log 20$ B. $2 \log 5$ C. $\log 5$ D. $\log 4$ E. $\log 80$
21. The gradient of the line $\frac{x}{3} + \frac{y}{5} = 2$ is
 A. $-\frac{5}{3}$ B. $\frac{3}{5}$ C. $\frac{5}{3}$ D. $-\frac{3}{5}$ E. $\frac{5}{2}$
22. The logarithmic form of the expression $2^5 = 32$ is
 A. $\log_5 32 = 2$ B. $\log_2 32 = 5$ C. $\log_{32} 5 = 2$ D. $\log_2 5 = 32$ E. $\log_{32} 2 = 5$
23. What is the next number in the number pattern 1, 8, 27, 64,?
 A. 125 B. 119 C. 113 D. 97 E. 92

24. Luisa wants to buy sulu. If she buys 7 meters, she is 1 dollar short. If she buys 5 meters, 5 dollars is left over. How much does she have?

- A. \$25 B. \$15 C. \$21 D. \$20 E. \$10

25. What is the surface area of a cube with side length 8cm?



- A. 64 cm^2 B. 96 cm^2 C. 384 cm^2 D. 512 cm^2 E. 520
 cm^2

26. A set of traffic lights shows red for 45 seconds, green for 30 seconds and amber for 5 seconds. At any instant, what is the probability that the lights show green?

- A. $\frac{1}{3}$ B. $\frac{2}{3}$ C. $\frac{3}{5}$ D. $\frac{3}{8}$ E. $\frac{4}{5}$

27. Sam bought a plasma TV which was priced at \$3499. He paid \$1000 deposit and got a loan for the balance that was paid off by 24 monthly instalments of \$135.36.
What simple interest rate per annum, to the nearest percent, was charged on his loan?

- A. 11% B. 15% C. 30% D. 46% E. 50%

28. Which of the following correctly expresses n as the subject of $v = \frac{3mn^2}{r}$?

- A. $n = \pm \frac{\sqrt{rv}}{3m}$ B. $n = \pm r \sqrt{\frac{v}{3m}}$ C. $n = \pm \frac{r\sqrt{v}}{3m}$
D. $n = \pm \sqrt{\frac{rv}{3m}}$ E. $n = \pm \sqrt{\frac{3m}{rv}}$

29. How many square centimetres are in 0.0075 square metres?

- A. 0.75 B. 7.5 C. 75 D. 7500 E. 75000

30. Richard is a fisherman. John claims that Richard over-estimates the size of his fish by 25%. Richard describes one fish as 40cm long. What does John claim is the length of Richard's fish?

- A. 10cm B. 30cm C. 32cm D. 50cm E. 55cm