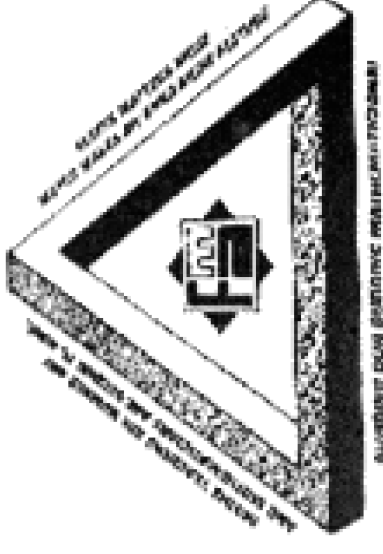


22. If $f(x) = 4^x$, then $f(x+1) - f(x)$
- A. $3(4^x)$ B. 4^x C. 3 D. 4 E. 12^x
23. The equivalent of $\frac{x+3}{2} - \frac{x+2}{6}$ is:
- A. $\frac{x+4}{6}$ B. $\frac{3x+8}{6}$ C. $\frac{3x-4}{6}$ D. $\frac{5}{3}$ E. $\frac{2x+7}{6}$
24. The expression $3x^2 - 13x + 4$ factorizes to:
- A. $(3x-2)^2$ B. $(3x-2)(x+2)$ C. $(3x-1)(x-4)$
- D. $(3x-4)(x-1)$ E. $(3x-4)(x+1)$
25. Waqabaca started a mobile call at 10:57 am. The charge for the call was 89cents per minute and the total cost for the call was \$6.23. Waqabaca's call ended at
- A. 11:27 am B. 11:14 am C. 11:04 am D. 11:46 am E. 11:05 am
26. Which of the following statements is correct?
- A. $\sin 60^\circ = \cos 60^\circ$ B. $\cos 25^\circ = \cos 65^\circ$ C. $\cos 60^\circ = \sin 30^\circ$
- D. $\sin 70^\circ = \tan 20^\circ$ E. $\sin 12^\circ = \sin 78^\circ$
27. The number of integer solution of the equation $(x^2 - 3x + 1)^{x+1} = 1$
- A. 1 B. 2 C. 3 D. 4 E. 5
- 28 what is the gradient of the line perpendicular to $\frac{x}{2} + \frac{y}{5} = 3$?
- A. $-\frac{5}{2}$ B. $-\frac{2}{5}$ C. $\frac{2}{5}$ D. -5 E. .10
29. If $a^2 = a + 2$, then a^3 equals to
- A. $a + 4$ B. $2a + 8$ C. $3a + 2$ D. $4a + 8$ E. $27a + 8$
30. It takes two painters 4 days to paint a house. The older painter would only take 6 days to do the job on his own. How many days would the younger painter take to paint the house on his own?
- A. 12 days B. 16 days C. 15 days D. 19 days E. 10 days

FIJI MATHEMATICS ASSOCIATION



FIJI MATHEMATICS COMPETITION (FMC)

YEAR 12

Thursday 10th July 2014

Time Allowed: 1 Hour 15 minutes

Note:


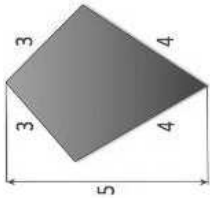
Calculators are NOT permitted.

Diagrams are NOT drawn to scale.

Instructions:

1. Print your **Name**, **School Name** and **Year** 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. If $2^n + 2^n = 2^m$, then
A. $n + n = m$ B. $n + 1 = m$ C. $4n = m$ D. $m + 1 = n$ E. $n^2 = m$
2. Evaluation of $8^3 \times 8^2 \times 8^{-5}$ is
3. The simplest form of 1.5: 2.5 is
4. $2^{(2^3)}$
 $\frac{(2^2)^3}{(2^2)^3}$ equals
A. 0 B. $\frac{1}{4}$ C. 1 D. $\frac{4}{3}$ E. 4
5. Which of the following numbers gives 240 when added to its own square?
A. 15 B. 16 C. 18 D. 20 E. 25
6. If $f(x) = 3x + 2$ and $g(x) = x^2 - 2$ then $f(2) - g(3)$ is
A. -1 B. -2 C. 1 D. 2 E. 4
7. The average of four numbers is 48. If 8 subtracted from each number the average of the four new numbers is:
A. 16 B. 40 C. 46 D. 44 E. 6
8. A secondary school has a rectangular playing field. The length and breadth of the playing field is increased by 20%. What is the percentage increase in the area of the playing field?
A. 40 B. 44 C. 144 D. 400 E. 20
9. In an attempt to factorise $f(x) = x^4 + 5x^3 + 2x^2 - 8x$ a student obtained the factors $x(x-1)(x+2)(x-4)$. The factor which is not correct is
A. x B. $(x-1)$ C. $(x+2)$ D. $(x-4)$ E. all factors are correct.
10. Which of the following is not true?
A. $\sqrt{ab} = \sqrt{a} \cdot \sqrt{b}$ B. $\sqrt{\frac{a}{b}} = \frac{\sqrt{a}}{\sqrt{b}}$ C. $\sqrt{a+b} = \sqrt{a} + \sqrt{b}$
D. $\sqrt[3]{a} = a^{\frac{1}{3}}$ E. $\sqrt{pq} = (pq)^{\frac{1}{2}}$
11. If $9^1 = 9$, $9^2 = 81$, $9^3 = 729$, The last digit of the number 9^{100} is ?
A. 1 B. 2 C. 3 D. 9 E. 0

12. The value of $\frac{(\sqrt{8}-\sqrt{2})}{\sqrt{2}}$ is:
A. $2 - \sqrt{2}$ B. $\sqrt{2}$ C. $\sqrt{8} - 1$ D. 1 E. 2
13. $7(x-y) - 3(2x - 3y)$ equals:
A. $x - 15y$ B. $x + 2y$ C. $x - 3y$ D. $x - 6y$ E. $x + 7y$
14. Bobby chooses five tiles with the letters of his name and places them into a bag. He randomly selects one tile after another. 
What is the probability that he chooses the tiles in the same order as his name?
A. 5% B. 1% C. 15% D. 10% E. 20%
15. The lengths in centimeters, of the sides of a triangle are 2x, 3x, and 5x. If the perimeter of this triangle is 60 cm, then the difference in centimeters, between the lengths of the largest and shortest sides is:
A. 5 B. 12 C. 15 D. 18 E. 30
16. If $p = q(r - \frac{1}{s})$, then r equals
A. $\frac{p}{q} - s$ B. $\frac{q}{qs - p}$ C. $\frac{ps + q}{qs}$ D. $\frac{qs}{ps + q}$ E. $\frac{1}{qs - p}$
17. What is the area of a garden shown on the right?

A. 12 B. 10 C. 14 D. 15 E. 20
18. Find the sum of the series: $1/2 + 1/4 + 1/8 + 1/16 + \dots$
A. 1 B. 2 C. 1.5 D. Infinity E. 0.5
19. Given $6^{x+y} = 36$ and $6^{x+5y} = 216$, then x is equal to:
A. $\frac{1}{4}$ B. $\frac{3}{4}$ C. $\frac{5}{4}$ D. $\frac{3}{2}$ E. $\frac{7}{4}$
20. There are four sisters who all have their birthday on 26th of December but they are of different ages. How old is the eldest sister if the product of their ages is 792 and youngest sister is more than one year old.
A. 11 years B. 9 years C. 13 years D. 8 years E. 24 years
21. The time taken for a wheel, turning at 1000 revolutions per minutes, to turn through an angle of 1radian is (1 revolution is 2π radian)
A. $33\frac{1}{3}\pi$ sec B. $\frac{3}{100\pi}$ sec C. $\frac{3}{50\pi}$ sec
D. 0.006 sec E. 0.012π sec