SOUTHERN AFRICAN JUNIOR MATHEMATICS OLYMPIAD
FEMSISA MATHEMATICS OLYMPIAD
(SAJMO)

GRADE FOUR

ROUND ONE

DATE: 4-8 JUNE 2012

TIME: 90 MINUTES

Instructions:

1.   This booklet has 20 multiple choice questions.

2.   Use the answer sheet provided.

         Circle the letter corresponding to your answer.

3.   All working details must be done in the space provided.

3.   Calculators are not permitted..

4.   Diagrams are not necessarily drawn to scale.

5.   The first 15 problems carry one mark each and the next 5 carry 2 marks each. In order to qualify for the second round you need 7 out of 25 marks.

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8.   Visit the website: www.femssisa.org.za

Grade Four Mathematics Olympiad

1. Find ☐

☐ – 10 = 16 - ☐

    (A) 10   (B) 11   (C) 12   (D) 13

2. Which one of the following has the largest remainder?

    (A) $803 \div 4$ (B) $1607 \div 8$ (C) $705 \div 7$ (D) $604 \div 6$

3. How many people are there in a queue if the middle person is the 13th in the queue ?

    (A) 22   (B) 23   (C) 24   (D) 25

4. How many days from 9 February 2012 to 9 April 2012?
    (A) 60   (B) 61   (C) 62   (D) 63

5. The number three thousand , one hundred and one can be written as
    (A) 3 110   (B) 3 011   (C) 3 101   (D) 3 001

6. Six teddy bears cost R122. How much will 12 such teddy bears cost at the same rate?
    (A) R61   (B) R224   (C) R244   (D) R284

7. What is the 10th number of this addition sequence
6; 10; 14; 18; …
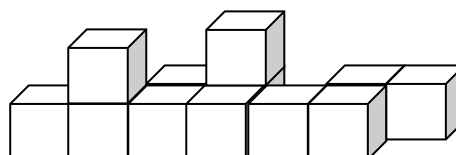   (A) 40   (B) 42   (C) 46   (D) 50

8. What time did the clock show 3 hours and 50 minutes ago?

    (A) 06:20   (B) 07:20   (C) 06:30   (D) 07:30

9. How many blocks were used to build this structure?

(A) 9   (B)10   (C) 11   (D) 12

10. If Cindy has a certain amount of money. After spending $\frac{1}{4}$ of the money she has R60 left. How much did she start off with?

     (A) R72   (B) R76   (C) R80   (D) R84
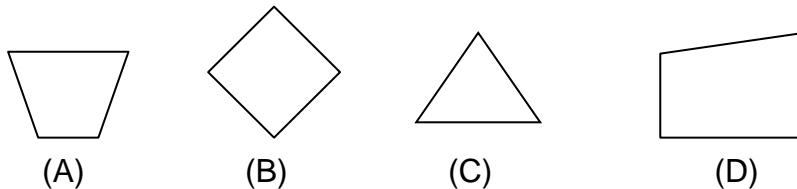
11. If today is Thursday the 24th of March 2012 then what day will it be 54 days from today?
     (A) Tuesday   (B) Wednesday   (C) Thursday   (D) Saturday

12. How many triangles of all sizes are there in the figure below?
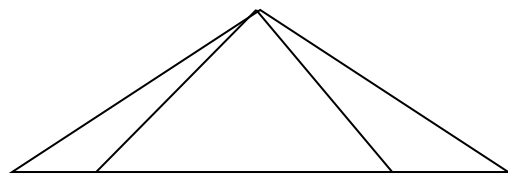
     (A) 4   (B) 5   (C) 6   (D) 7

13. Which shape is the odd one ?

     (A)   (B)   (C)   (D)

14. Speedy wants to buy some health cakes. Which of these is the best choice?

     (A) 275c each   (B) 3 for R7   (C) 5 for R11   (D) 9 for R20

15. A club has 120 members. There are $1\frac{1}{2}$ more girls than boys. How many boys are there in the club.
     (A) 24   (B) 48   (C) 60   (D) 72

16. On 24 January 2012 Penny was 2 years 91 days older than Sammy. If Penny was 14 years old then what was the date of birth of Sammy?
   (A) 24 April 2000 (B) 24 April 2001 (C) 24 May 2000
     (D) 24 May 2001

17. Dicky had a secret number.
    Les found half of this number.
    Peter found one third of Les's number.
    Naven added 6 to the number to obtain 22. What is Dicky's secret Number?
    (A) 96   (B) 84   (C) 72   (D) 60

18. The Indian Professional League had 9 teams. Each team played every other
    team twice. Two matches were played each day. How many days did these two
    round fixtures take?
    (A) 24   (B) 36   (C) 48   (D) 72

19. Peggy said she had R10 more than twice the amount Lily had. In total they had
    R148. How much did Peggy have?
    (A) R36   (B) R46   (C) R92   (D) R102

20. The total number of legs needed to make 3 leg and 5 leg tables is 307. If the
    number of 5 leg and 3 leg tables is 75 then determine the number of 3 leg tables.

    (A) 18   (B) 24   (C) 30   (D) 34   (E) 41

MARKS : Numbers 1-15 :15 X 1 = 15
        Numbers 16-20: 5 x 2 = 10
TOTAL: 25
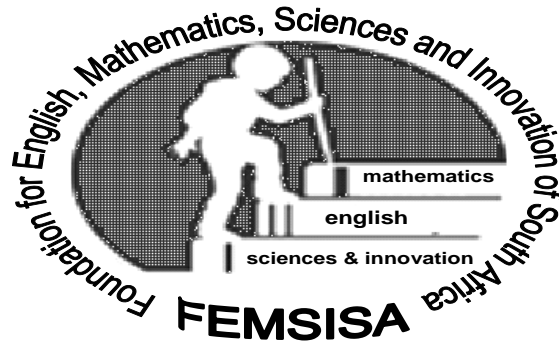
SOUTHERN AFRICAN JUNIOR MATHEMATICS OLYMPIAD
FEMSISA MATHEMATICS OLYMPIAD
(SAJMO)
GRADE FIVE
ROUND ONE
DATE: 4-8 JUNE 2012
TIME: 90 MINUTES

Instructions:

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2.   Use the answer sheet provided.

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Grade Five Mathematics Olympiad

1. 10 + 10 x 6 =

    (A) 60   (B) 70   (C) 80   (D) 120

2.   (15 - ☐) x 3 = 36

    (A) 0   (B) 1   (C) 2   (D) 3

3.   If 15 x 12 = 180   then   15 x 120=

    (A) 1500   (B) 1800   (C) 2100   (D) 2400

4. The estimation of R13,90 + R6,61 is

    (A) R21   (B) R23   (C) R25   (D) R27

5. How many times can 20 be subtracted from 2020 ?

    (A) 80   (B) 90   (C) 101   (D) 110

6. . How many days are there from 20 December 2011 to 20 March 2012 ?
    (A) 88   (B) 89   (C) 90   (D) 91

7.   If 101 x 15 = 1515   then   101 x 14 =…

    (A) 100 x 15 + 15   (B) 1515 - 101   (C) 1515 -15   (D) 1530

8. How many 150 ml bottles of juice can be filled from 9100ml container of juice ?

    (A) 60   (B) 61   (C) 62   (D) 65

9. If $\frac{2}{3}$ of my money is R70 the how much money do I have ?

    (A) R 95   (B) R 100   (C) R 105   (D) R115

10. Which is the smallest?

    (A) 7.500m   (B) 7.051m   (C) 7.050m   (D) 7,046

11. If 2 litres of milk cost R17,93 then what will 10 litres of milk at the same rate cost?

    (A) R79.65   (B) R89.65   (C) R109.65   (D) R179.30

12. An equal number of 10cent and 20cent pieces were obtained from R150 notes. How many 10cent pieces were obtained?

    (A) R50   (B) R75   (C) R100   (D) R125

13. Nigel said that if he was 4 years older he will be twice Tracy's age. Their combined ages is 41. How old is Nigel?

    (A) 24   (B) 25   (C) 26   (D) 30

14. At a sale you received a discount of ¼ of the price. The price of an item after discount was R48. What was the original price of the item?

    (A) R54   (B) R60   (C) R64   (D) R68

15. Study the following problem. Do you know what (*) is doing to the 2 numbers?
        2*5 = 10   3*5 = 12   4*5 = 14
    After you have discovered what (*) is doing then find the answer to
                (2*6)*7

    (A) 29   (B) 30   (C) 31   (D) 32

16. The time on an analogue clock is 5 o'clock. Find the smaller angle between the minute hand and hour hand,

    (A) 120^0 (B) 135^0 (C) 150^0 (D) 165^0

17. A rectangular picture fame measured 100cm = AB+BC+CD+DA.If the length is 10 cm more than its width then find the width.

   (A) 20cm   (B) 22cm   (C) 24cm   (D) 30cm

18. In a Mathematics Test Amy scored 3 marks more than Benny. Benny scored 3 marks more than Calvin. Calvin scored 3 marks more than Desmond. If all 4 scored 126 marks then what mark was scored by Calvin?

   (A) 27   (B) 30   (C) 33   (D) 36

19. Damian added $\frac{1}{3}$ of the initial price of an article to the initial price and obtained R420.
   What was the initial price of the article?

   (A) R280   (B) R300   (C) R310   (D) R315

20. Jeremy numbered the houses on a straight road from 20 to 150 using different digits. How many 5's and 6's did Jeremy use?

   (A) 44   (B) 46   (C) 48   (D) 50
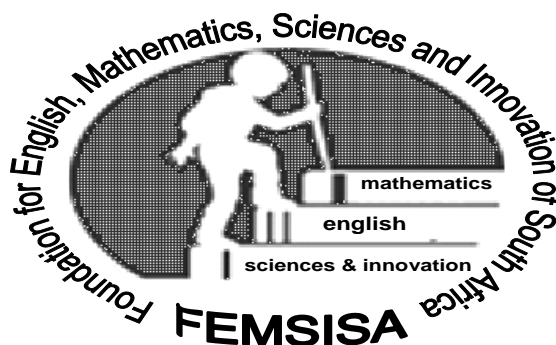
SOUTHERN AFRICAN JUNIOR MATHEMATICS OLYMPIAD
FEMSISA MATHEMATICS OLYMPIAD
(SAJMO)
GRADE SIX
ROUND ONE
DATE: 4-8 JUNE 2012
TIME: 90 MINUTES

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Grade Six Mathematics Olympiad

1. Evaluate : 24 - 9 x 2

   (A) 30   (B) 6   (C) 4   (D) 2

2. How many 20's are there in 4080?.

   (A) 200   (B) 202   (C) 222   (D) 204

3. If 3n – 2 = 52 then n =…

   (A) 22   (B) 20   (C) 18   (D) 16

4. Evaluate 23 x 78 + 77 x 78

   (A) 780   (B) 770   (C) 800   (D) 840

5. How many natural numbers below 100 has its sum of its digits equal to 7?

   (A) 5   (B) 6   (C) 7   (D) 8

6. In the following addition problem find A+B+C
   A B C
   A B C
   A B C
   7 3 C

   (A) 9   (B) 10   (C) 11   (D) 12

7. If $\frac{3}{5}$ of the apples in the box is 72 then find the total number of apples in the
   box..

   (A) 40   (B) 124   (C) 128   (D) 132

8. Donovan beat the 200 metres school record which was 24.3 seconds by
   1,5seconds. What was the new record?

   (A) 21.5sec   (B) 22.8sec   (C) 23.8sec   (D) 24.3sec

9. The actual distance between Laxton and Gardenia is 300km. The map distance
is 20cm. The distance between Gardenia and Lindon is 400km. What is the amp
distance between Gardenia and Lindon.

   (A) 27cm   (B) 28cm   (C) 29cm   (D) 30cm

10. How many of the following decimal fractions lie between 0.3 and 0.4?
    0.035; 0.35; 0.0.33; 0.05;0.09; 0.339; 0.401

    (A) 5   (B) 4   (C) 3   (D) 2
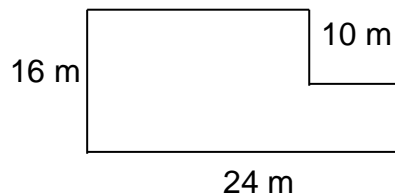
11. Determine the fraction midway between $\frac{2}{5}$ and $\frac{3}{4}$.

    (A) $\frac{11}{20}$ (B) $\frac{23}{40}$ (C) $\frac{13}{20}$ (D) $\frac{27}{40}$

12. If 9% of n = R36 then find the value of n.

    (A) R270   (B) R320   (C) R360   (D) R400

13. Determine the perimeter of the following figure.

    (A) 90m   (B) 80m   (C) 72m   (D) 60m

14. A hall has 36 rows. Each row has 24 seats. There were 20 seats which were
    vacant. The cost of tickets for the show was R40 each. What is the expected
    revenue if everyone paid in rands?

    (A) (36x24-20)x40   (B) 36x24x40
    (C) 36x24x40-20   (D) 36x22x40

15. How much will 5 litres of juice cost if 1.5 litres cost R4.02? The rate is same.

    (A) R12.00   (B) R12,80   (C) R13,40   (D) R14,00

16. Two guards are off duty every 5th day and every 6th day respectively? There must
    be at least one guard on duty. Both are off duty on a certain date. In a 91 day
    period, after this date, how many times must a relief guard work?

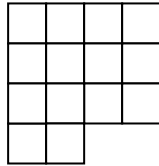   (A) 6   (B) 7   (C) 8   (D) 9

17. The area of a lawn is 60m^2 but its perimeter is 34 m. Determine the width of this
    lawn in metres?

    (A) 17   (B) 15   (C) 10   (D) 5

18. A company added 20% administrative costs on a product and then another 30% profit. What was the total added to this product as a %?

    (A) 10   (B) 50   (C) 56   (D) 60

19. How many squares of all sizes are there in the following figure?

    (A) 19   (B) 21   (C) 23   (D) 24
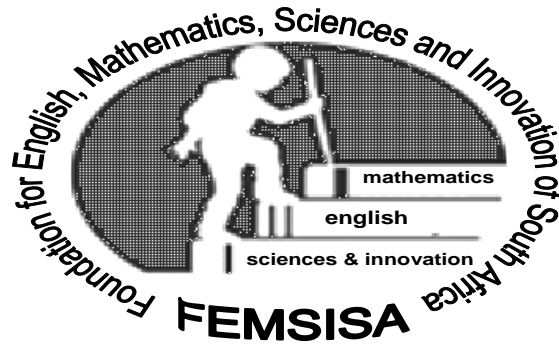
20. Calculate the sum of the following fractions.

$$\frac{1}{1.3} + \frac{1}{3.5} + \frac{1}{5.7} + \frac{1}{7.9} \ldots + \frac{1}{23.25}$$

    (A) $\frac{8}{25}$ (B) $\frac{12}{25}$ (C) $\frac{14}{25}$ (D) $\frac{16}{25}$

MARKS : Numbers 1-15 :15 X 1 = 15
Numbers 16-20: 5 x 2 = 10
TOTAL: 25

SOUTHERN AFRICAN JUNIOR MATHEMATICS OLYMPIAD
FEMSISA MATHEMATICS OLYMPIAD
(SAJMO)
GRADE SEVEN
ROUND ONE
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Grade Seven Mathematics Olympiad

1. Evaluate

   4 + 5x6

   (A) 29   (B) 34   (C) 54   (D) 60   (E) 120

2. Write down the value of

   1.1 x 1.1 x0.1

   (A) 0.121   (B) 1.21   (C) 12.1   (D) 0.0121   (E) 1.0121

3. Find the value of
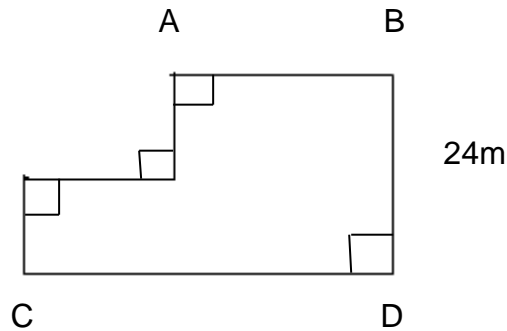
   $\frac{4}{5} \times (\frac{5}{6} - \frac{5}{8})$

   (A) $\frac{1}{2}$ (B) $\frac{1}{3}$ (C) $\frac{1}{4}$ (D) $\frac{1}{5}$ (E) $\frac{1}{6}$

4. Find the value of:

   110 x 110 – 110 x109

   (A) 109   (B) 1109   (C) 110   (D) 111   (E) 1210

5. Find the length of CD in metres if the perimeter of the figure = 80 m:-

   (A) 66   (B) 33   (C) 30   (D) 26   (E) 24

6. When 2105 is divided by n the remainder is 25. What is the highest value n can have?

   (A) 26   (B) 52   (C) 65   (D) 104   (E) 2080

7. The product of 2 numbers is 2064 . If one number is 5 less than the other number then find the larger number.

   (A) 60   (B) 56   (C) 52   (D) 48   (E) 44

8. Did you know that water is measured in kl (kilolitres)? If a household uses 37 kl for 31 days then estimate how many litres this household uses per day?

   (A) 1100   (B) 1200   (C) 1300   (D) 1400   (E) 1500

9. The following addition is done in base 6.

345
235
222
――――
2050

What is the answer to 555 + 444 + 333 in base 6?
(A) 2220   (B) 1420   (C) 2216   (D) 1332   (E) 1422

10. Determine this 3 digit number

X	Y	Z

The sum of Y and Z equals X.
The difference between X and Y is twice the difference between Y and Z.
The sum of X and Z is 7.
(A) 651   (B) 643   (C) 532   (D) 754   (E) 842

11. Give the value of natural number m such that this 5 digit number 13m5m is divisible by 9.
(A) 2   (B) 3   (C) 4   (D) 6   (E) 9

12. Rewrite as a recurring decimal fraction $\frac{4}{15}$
(A) $0.2\dot{7}$ (B) $0.2\dot{6}$ (C) $0.\dot{2}\dot{8}$ (D) $0.29\dot{}$ (E) $0.2\dot{3}$

13. If the sum of the 7 consecutive days of the month starting from Monday is 63 then give the date of the last Tuesday of that month.
(A) 27th   (B) 28th   (C) 29th   (D) 30th   (E) 31st

14. The product of the two numbers in the two circles gives the number in the square between them. If A = 48; B = 60 and F = 20 then give the value C+D+E.
(A) 17   (B) 18   (C) 19   (D) 20   (E) 21

.
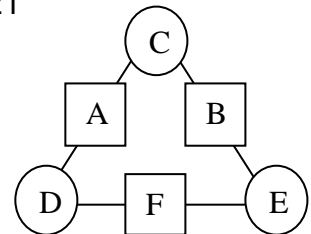
15. Des had twice as much money as Enver. After each spent an equal amount Enver had $\frac{3}{4}$ of his money left whilst Enver had R24 left. How much more money did Des have than Enver at the start?

(A) R48   (B) R60   (C) R72   (D) R96   (E) R108

16. Two fractions have the same denominator. The sum of their numerators is

    15. $\frac{a}{b}; \frac{c}{b}$

$$b - a = 1; \text{ and } b - c = 2$$

Find the sum of the two fractions.

(A) $1\frac{2}{3}$ (B) $1\frac{1}{6}$ (C) $1\frac{1}{3}$ (D) $1\frac{5}{6}$ (E) $1\frac{3}{4}$

17. Here is a pretty pattern

   1x2x3+2   = 8
   2x3x4+3   = 27
   3x4x5+4   = 64
   …………………..
   $a \, x \, b \, x \, c + b$ = 15625

Find the value of c; the highest in the product.

(A) 24   (B) 25   (C) 26   (D) 27   (E) 28

18. 108 apples and 180 oranges were shared equally among all the people present. Determine the largest number that could have been present.

(A) 24   (B) 28   (C) 32   (D) 36   (E) 40

19. At a cultural show every learner paid 10th learner paid R10 less for the ticket. The total amount collected R4350. How many people attended this cultural show?

(A) 50   (B) 75   (C) 150   (D) 175   (E) 200

20. The area of rectangle ABCD is 60cm². The area of ΔADP is 3 times the area of ΔPBC. What is the area of ΔPRC?
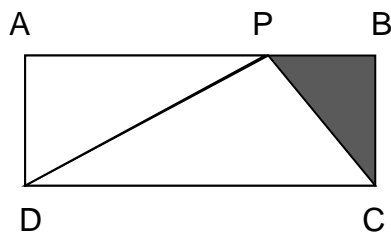
(A) 5   (B) 22.5   (C) 7.5   (D) 12.5   (E) 15

MARKS : Numbers 1-15 :15 X 1 = 15
Numbers 16-20: 5 x 2 = 10
TOTAL: 25