

**SOUTHERN AFRICAN JUNIOR MATHEMATICS OLYMPIAD
FEMSISA MATHEMATICS OLYMPIAD
(SAJMO)**

GRADE FOUR

ROUND ONE

DATE: 28 – 31 MAY 2013

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.
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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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Grade Four Mathematics Olympiad

1. Find \square

$$\square + 30 = 66 - \square$$

- (A) 16 (B) 18 (C) 20 (D) 36

2. Which one of the following has the remainder 1?

- (A) $703 \div 3$ (B) $603 \div 4$ (C) $702 \div 7$ (D) $504 \div 8$

3. $BBB(3\text{digit number}) - AA(2\text{ digit number}) = 289$. What is AA?

- (A) 77 (B) 66 (C) 55 (D) 44

4. How many days from 20 February 2013 to 27 April 2013?

- (A) 64 (B) 65 (C) 66 (D) 67

5. The number four thousand and twelve can be written as

- (A) 4 112 (B) 4 012 (C) 4 102 (D) 4 0012

6. Three dozen apples cost R54. How much will 12 such apples cost at the same rate?

- (A) R24 (B) R22 (C) R20 (D) R18

7. What is the 8th number of this decreasing arithmetic sequence

68; 63; 58; 53; ...

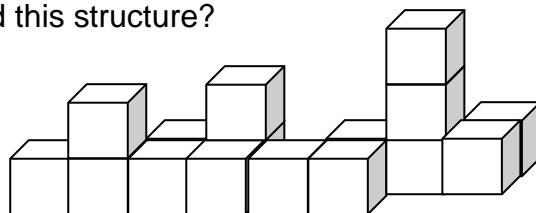
- (A) 33 (B) 38 (C) 43 (D) 48

8. The time on a digital clock is 07:35. What was the time on this clock 9 hours ago?



- (A) 08:35 (B) 10:25 (C) 10:35 (D) 11:35

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



- (A) 16 (B) 17 (C) 18 (D) 19

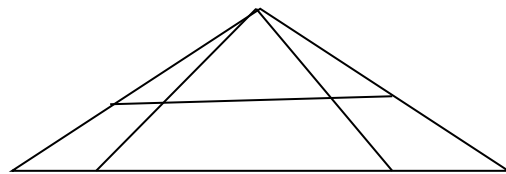
10. If Tina has a certain amount of money. After spending $\frac{1}{4}$ of the money and $\frac{1}{2}$ of the remainder she had R60 left. How much did she start off with?

- (A) R120 (B) R140 (C) R160 (D) R180

11. If today is Thursday the 21st of March 2013 then what day will it be 75 days from today?

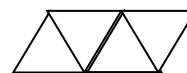
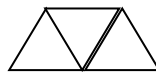
- (A) Saturday (B) Sunday (C) Monday (D) Tuesday

12. How many triangles of all sizes are there in the figure below?



- (A) 12 (B) 10 (C) 8 (D) 6

13. Which figure has 69 matchsticks ?



- (A) 32nd (B) 34th (C) 36th (D) 38th

The 1st figure has 3 matchsticks.

The 2nd has 5 matchsticks and the 3rd has 7 matchsticks and so on.

14. Len wanted to buy pens for the school. Which of these is the best choice?

- (A) 305c each (B) 4 for R10.95 (C) 7 for R19.05 (D) 11 for R32

15. A school has 450 learners. For every 5 males learners there were 4 female learners.. How many girls are there in the school?

- (A) 250 (B) 200 (C) 180 (D) 150

16. On 25 December Mary was 1 year and 70 days older than Abel. If Mary was 10 years then when will Abel's next birthday be?

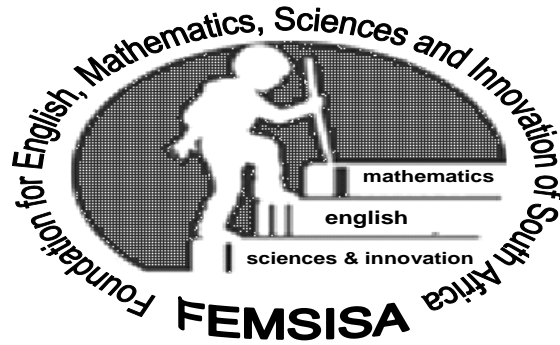
- (A) 16 September (B) 18 September (C) 16 October (D) 18 October

17. Taz removed all multiples of 2 and 3 from the numbers 50 to 100?
How many numbers remained?
(A) 17 (B) 18 (C) 18 (D) 19
18. The Indian Professional League had 9 teams. Each team played every other team twice. Two matches were played each day except for every third day when only one match was played.. How many days did these two round fixtures take?
(A) 40 (B) 41 (C) 42 (D) 43
19. Sandra said she had R24 less than twice the amount Phil had. In total they had R411. How much did Phil have?
(A) R125 (B) R135 (C) R145 (D) R155
20. An equal number of 50 cent; 20 cent and 5 cent pieces were in the container. When added the total amount was R72. How many 5 cent pieces were there?
(A) 92 (B) 96 (C) 100 (D) 104

MARKS : Numbers 1-15 : $15 \times 1 = 15$

Numbers 16-20: $5 \times 2 = 10$

TOTAL: 25



SOUTHERN AFRICAN JUNIOR MATHEMATICS OLYMPIAD
FEMSISA MATHEMATICS OLYMPIAD

(SAJMO)

GRADE FIVE

ROUND ONE

DATE: 28 – 31 MAY 2013

TIME: 90 MINUTES

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10. Which is the largest?

- (A) 9.685kl (B) 9.608kl (C) 9.700kl (D) 9,688kl

11. If 10 metres of material cost R37,95 then what will 2 metres of material at the same rate cost?

- (A) R7.59 (B) R7.50 (C) R7.49 (D) R7.40

12. Cedric had twice as many 20 cent pieces as 50 cent pieces. The total amount was R360. How many 20 cent pieces did Cedric have?

- (A) 600 (B) 700 (C) 800 (D) 900

13. Determine the larger number.

When the two numbers are added the answer is 38.
The difference of the two numbers is 18.

- (A) 18 (B) 24 (C) 26 (D) 28

14. A carpenter cuts up a timber into 6 pieces in 20 minutes. How long in minutes will it take to cut the timber into 8 pieces working at the same rate?

- (A) 24 (B) 28 (C) 30 (D) 32

15. Study the following problem. Do you know what (*) is doing to the 2 numbers?

$$3 * 6 = 0 \qquad 4 * 5 = 4 \qquad 5 * 5 = 7$$

After you have discovered what (*) is doing then find the answer to
 $8 * 6$

- (A) 9 (B) 12 (C) 15 (D) 18

16. Penny had a secret number. When the number was doubled and 15 subtracted from it the result was 25. What was Penny's secret number?

- (A) 20 (B) 21 (C) 22 (D) 23

17. ABCD is a rectangular field with poles placed 2m apart. There were 20 poles on the length and 15 on the width. Find the perimeter of ABCD(distance all round)

- (A) 126 m (B) 128 m (C) 130 m (D) 132 m

18. The numbers on three cards were added 2 at a time to give 34; 32 and 30. Find the smallest number.

- (A) 12 (B) 14 (C) 16 (D) 18

19. Des was given a $\frac{1}{4}$ discount on the initial price. He paid R480.
What was the initial price of the article?

- (A) R540 (B) R600 (C) R640 (D) R700

20. Red and white beads totaling 122 are arranged as follows:-
W R WW RR WW RRR WW RRRR WW RRRR
.....

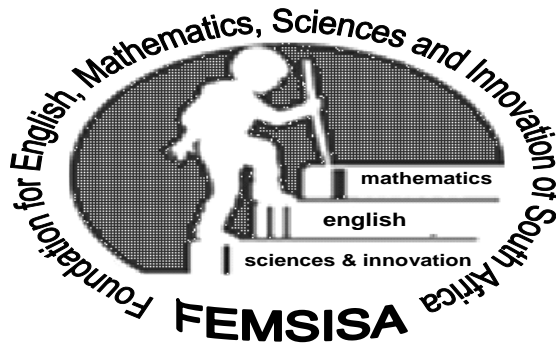
How many are red beads?

- (A) 94 (B) 95 (C) 96 (D) 97

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 SIX
ROUND ONE
DATE: 28 – 31 MAY 2013
TIME: 90 MINUTES

Instructions:

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Grade Six Mathematics Olympiad

- Evaluate : $4 + \frac{1}{2} \times 4$
(A) 30 (B) 6 (C) 4 (D) 2
- What is $(7 \div 6)$ correct to 2 decimal digits?
(A) 200 (B) 202 (C) 222 (D) 204
- If $4n + 4 = 44$ then $n = \dots$
(A) 22 (B) 20 (C) 18 (D) 16
- Evaluate $98 \times 97 - 97 \times 97$
(A) 7800 (B) 7700 (C) 8000 (D) 8400
- What is the best estimate of 600 g of chocolates at R49.99 per kg?
(A) 5 (B) 6 (C) 7 (D) 8
- In the following subtraction problem find $A+B+C$
$$\begin{array}{r} A B C \\ \underline{C A} \\ 5 \ 1 \ 9 \end{array}$$

(A) 9 (B) 10 (C) 11 (D) 12
- If $\frac{5}{8}$ of the blocks in the stack is 240 then find half of the blocks in the stack.
(A) 120 (B) 124 (C) 128 (D) 132
- Donovan missed the 400 metres school record which was 48.6 seconds by 0,7seconds. What was Donovan's time?
(A) 21.5sec (B) 22.8sec (C) 23.8sec (D) 24.3sec
- The actual distance between Zenith and Harlem is 660km. The map distance is 44cm. The map distance between Zenith and Pomeroy is 26cm. What is the actual distance between Zenith and Pomeroy.
(A) 27cm (B) 28cm (C) 29cm (D) 30cm
- If $\frac{1}{4} + \frac{5}{n} = \frac{2}{3}$ then the value of 'n' is...
(A) 5 (B) 4 (C) 3 (D) 2

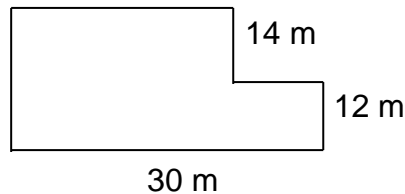
11. Find the following product:-
 $(60 - 5) \times (60 - 10) \times (60 - 15) \times (60 - 20) \times \dots$

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

12. If 12% of $n = R60$ 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 school hall has 48 rows. Each row has 22 seats. The cost of tickets for a concert varied. A ticket in the first 10 rows cost R80 and for the next 36 rows R60. The revenue for a full house concert is...

- (A) $22(10 \times 80 + 36 \times 60)$ (B) $22(10 \times 80 + 22 \times 60)$
(C) $22 \times 10 \times 80 + 36 \times 60$ (D) $48 \times 22 \times 80 + 22 \times 60$

15. If 8 peaches cost R4.99 then what will a person pay for 36 such peaches at the same rate?

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

16. 100 natural numbers were arranged from 1 to 100. Every 3rd number was struck off. Of the remaining numbers every 4th number was struck off. How many odd numbers remained?

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

17. The width of a rectangular garden is one and half times less than its length. If the perimeter is 150 metres then find the width.

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

18. A superstore added 80% to the cost of an item. At a sale a discount of 20% was given. What is the actual mark up as a %?

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

19. How many lines of symmetry does the following figure (made up of 5 equal squares) have if the extra square can be used ?

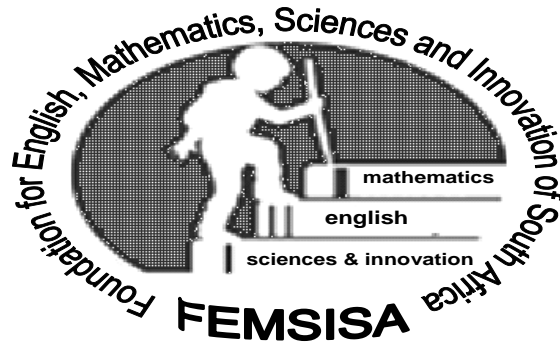


- (A) 19 (B) 21 (C) 23 (D) 24

20. Three digit numbers are made from 1; 3; 6; and n . If the sum of all these 3 digit numbers is then find the value of n.

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

MARKS : Numbers 1-15 : $15 \times 1 = 15$
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TOTAL: 25



SOUTHERN AFRICAN JUNIOR MATHEMATICS OLYMPIAD
FEMSISA MATHEMATICS OLYMPIAD
(SAJMO)
GRADE SEVEN
ROUND ONE
DATE: 28 – 31 MAY 2013
TIME: 90 MINUTES

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Grade Seven Mathematics Olympiad

1. Evaluate

$$14 + 40 \div 4$$

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

2. Write down the value of

$$0.4 \times 5 \times 0.04$$

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

3. Find the value of

$$\frac{4}{5} \times \left(\frac{5}{6} - \frac{5}{8} \right)$$

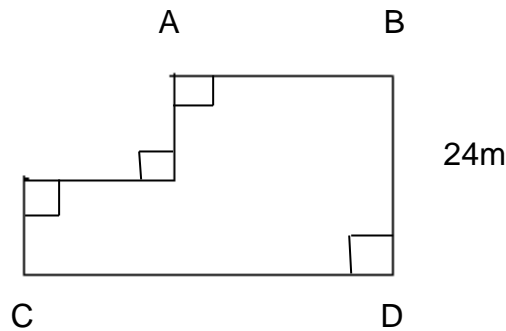
- (A) $\frac{1}{2}$ (B) $\frac{1}{3}$ (C) $\frac{1}{4}$ (D) $\frac{1}{5}$ (E) $\frac{1}{6}$

4. Find the value of:

$$110 \times 110 - 110 \times 109$$

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

5. Find the length of CD in metres if the perimeter of the figure = 100 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 **smallest** 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.

$$\begin{array}{r} 345 \\ 235 \\ \underline{222} \\ \underline{2050} \end{array}$$

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 $\frac{4}{15}$

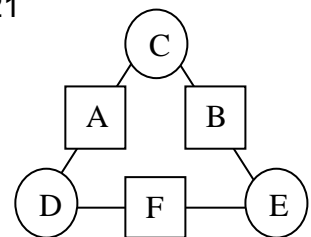
- (A) $0.2\dot{7}$ (B) $0.2\dot{6}$ (C) $0.2\dot{8}$ (D) $0.2\dot{9}$ (E) $0.2\dot{3}$

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 Des 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

$1 \times 2 \times 3 + 2 = 8$

$2 \times 3 \times 4 + 3 = 27$

$3 \times 4 \times 5 + 4 = 64$

.....

$a \times b \times c + b = 15625$

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.

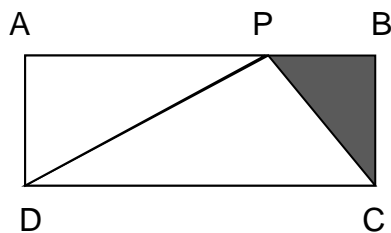
Determine the largest number that could have been present.

- (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 $\triangle ADP$ is 3 times the area of $\triangle PBC$. What is the area of $\triangle PBC$?



- (A) 5 (B) 22.5 (C) 7.5 (D) 12.5 (E) 15

MARKS : Numbers 1-15 : 15 X 1 = 15

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