

HILLRANGE SECONDARY SCHOOL ENTRANCE EXAM (2019/2020 SESSION)
MATHEMATICS

DURATION: 60 MINUTES

NAME I.D NUMBER.....

SECTION A:

Circle the letter that contains the correct answer.

1. Write in figures: Ten million, fifty-five thousand and five.

- A. 10 055 055
- B. 10 055 005
- C. 10 005 505
- D. 10 505 005
- E. 10 050 505

2. Simplify $6\frac{1}{2} \times 1\frac{1}{5} \div 5\frac{1}{5}$

- A. $1\frac{1}{2}$
- B. $1\frac{19}{52}$
- C. $2\frac{1}{4}$
- D. 3
- E. 13

3. What is the sum of all prime numbers between 21 and 32?

- A. 89
- B. 87
- C. 85
- D. 83
- E. 81

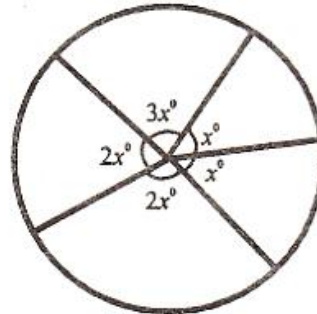
4. Express the result of $22 + \frac{1}{10} + \frac{11}{100} + \frac{9}{1000}$ as a decimal.

- A. 22.319
- B. 22.219
- C. 22.209
- D. 22.119
- E. 11.109

5. How hours are there in 4 days 7 hours?

- A. 117 hrs
- B. 113 hrs
- C. 103 hrs
- D. 98 hrs
- E. 93 hrs

6. Find the value of x in the pie chart below



- A. 360°
- B. 180°
- C. 90°
- D. 50°
- E. 40°

7. If the area of a square is 169 square units, what is the length of a side of the square?

- A. 3 units
- B. 6 units
- C. 11 units
- D. 12 units
- E. 13 units

8. Approximate 61,089 to the nearest ten

- A. 61,100
- B. 61,090
- C. 61,080
- D. 61,009
- E. 61,000

9. If one factor of 517 is 11, what is the other factor?

- A. 57
- B. 47
- C. 37
- D. 27
- E. 17

10. Express 0.05 as a percentage.

- A. 0.05%
- B. 0.5%
- C. 5%
- D. 50%
- E. 500%

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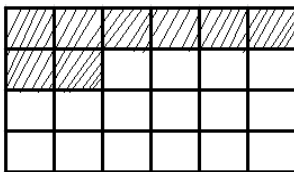
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11. Given that $17 \div x = 10$, find x.
 A. 0.7
 B. 1.7
 C. 2.7
 D. 3.7
 E. 4.7

12. A gardener ties up 100 bunches of flowers each containing 10 flowers. How many bunches could he have made if he had put 20 flowers in each bunch?
 A. 30
 B. 40
 C. 50
 D. 90
 E. 115

13. How many packets each weighing 480g can be made from a quantity weighing 60kg?
 A. 125
 B. 150
 C. 175
 D. 225
 E. 275

14. The figure below is divided into squares. What percentage of the figure is shaded?



- A. 20%
 B. 25%
 C. $33\frac{1}{3}\%$
 D. $37\frac{1}{2}\%$
 E. 50%
15. If 720 oranges are shared among three sisters in the ratio 2:3:4 respectively, how many oranges does the one who gets the most receive?

- A. 80
 B. 160
 C. 240
 D. 320
 E. 640

16. The population of a certain village some years ago was 50,000. It is now 56,500. What is the increase percent?
 A. 26%
 B. 17%
 C. 15%
 D. 13%
 E. 9%

17. Express $\frac{1}{4}$ as a decimal.
 A. 0.2
 B. 0.25
 C. 0.4
 D. 0.45
 E. 1.4

18. Three telecommunications mast lights flash at intervals of 15, 25 and 30 seconds, after how many seconds do they flash together next?
 A. 50 sec
 B. 75 sec
 C. 10 sec
 D. 100 sec
 E. 150 sec

19. A boy runs 800m in 3 minutes. What is his speed in kilometres per hour?
 A. 48
 B. 32
 C. 30
 D. 24
 E. 16

20. How many half-litre bottles can be filled from 100 litres of milk?
 A. 25
 B. 50
 C. 100
 D. 150
 E. 200

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21. **Look** at the following numbers: 13, 17, 2, 7, 19. Which of the following **is not** a prime number?

- A. 2
- B. 7
- C. 13
- D. 17
- E. 19

- D. $\frac{15}{32}$
- E. $\frac{19}{32}$

22. A photo measuring 10cm by 7cm is pasted on to a rectangular card so that a border of 2cm is left all around. What is the area of the border?

- A. 38cm^2
- B. 52cm^2
- C. 56cm^2
- D. 62cm^2
- E. 84cm^2

23. **Out** of 40 pupils who attended the French class, only 15 were present at the beginning. What percentage was late?

- A. $87\frac{1}{2}\%$
- B. $66\frac{2}{3}\%$
- C. $62\frac{1}{2}\%$
- D. $37\frac{1}{2}\%$
- E. $31\frac{1}{4}\%$

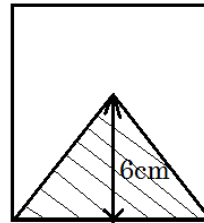
24. If 12 men can construct a road in 20 days, how many more men must be employed to do it in 15 days?

- A. 3
- B. 4
- C. 8
- D. 9
- E. 16

25. I spent $\frac{7}{32}$ of my income on housing, $\frac{1}{4}$ of it on food, and $\frac{1}{8}$ on transport. What fraction of my income did I have left?

- A. $\frac{7}{32}$
- B. $\frac{9}{32}$
- C. $\frac{13}{32}$

26. The diagram below shows a square of side 10cm. The shaded triangle of height 6cm is cut off. Find the area of the remaining diagram.



- A. 30 cm^2
- B. 40 cm^2
- C. 60 cm^2
- D. $66\frac{2}{3}\text{ cm}^2$
- E. 70 cm^2

27. Paschal sold a shirt of ₦1,200 and made a profit of 25%. What was the cost price?

- A. ₦48.00
- B. ₦480.00
- C. ₦960.00
- D. ₦1,008.00
- E. ₦1,500.00

28. How many degrees will a girl turn from North-West to South-East?

- A. 270°
- B. 180°
- C. 90°
- D. 45°
- E. 22°

29. If a man walks 84 kilometres every week, how many kilometres can he walk in 12 days?

- A. 96 km
- B. 120 km
- C. 144 km
- D. 122 km
- E. 72 km

30. Convert 7,200 seconds to minutes

- A. 12 minutes

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- B. 30 minutes
- C. 60 minutes
- D. 90 minutes
- E. 120 minutes

- A. 1,000 litres
- B. 1,670 litres
- C. 10,000 litres
- D. 12,000 litres
- E. 60,000 litres

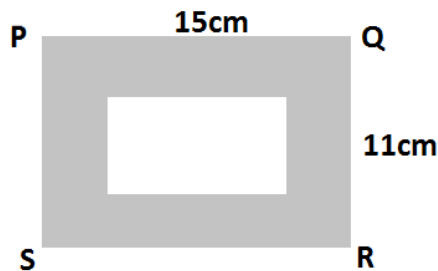
31. A man deposits ₦400 000 with a bank which pays 5% simple interest per annum. After how many years will the money in his savings grow to ₦500 000?

- A. 20 years
- B. 15 years
- C. 10 years
- D. 5 years
- E. 4 years

35. A bicycle wheel has a radius of 28cm. How far does it travel in four complete turns? (Take $\pi = \frac{22}{7}$)

- A. 176cm
- B. 704cm
- C. 824cm
- D. 826cm
- E. 934cm

32. In the diagram below, PQRS is a rectangle. The shaded part is 1cm wide all round, what is the perimeter of the inner rectangle?



- A. 22cm
- B. 44cm
- C. 48cm
- D. 52cm
- E. 117cm

36. A car travels at an average speed of 80 kilometres per hour. How many minutes does it take to travel from Owerri to a village a distance of 24 kilometres?

- A. 12 min
- B. 16 min
- C. 18 min
- D. 20 min
- E. 32 min

33. The days of the week are: Thursday, Sunday, Wednesday, Friday, Saturday, Monday and Tuesday. Which day of the week is the median day, if Sunday is the first day of the week?

- A. Friday
- B. Thursday
- C. Wednesday
- D. Tuesday
- E. Monday

37. Kenechukwu buys articles at 5 for ₦2,000 and sells them at ₦600 each. What is his profit percent?

- A. 10%
- B. 20%
- C. 30%
- D. 40%
- E. 50%

34. 7,000 litres of water is pumped out of a tank in 42 minutes. How many litres could be pumped out in one hour at the same rate?

38. Jonathan has 650 litres of palm oil and Munachi has 900 litres. How many litres should Munachi give to Jonathan so that they may both have the same amount?

- A. 75
- B. 65
- C. 85
- D. 125
- E. 150

39. In four competitions, the times taken by Kingsley for the 100 metres race were: 10.5 seconds, 10.1 seconds, 10.3

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seconds and 10.7 seconds. What was the average time for the 4 competitions?

- A. 10.4 seconds
- B. 10.6 seconds
- C. 21.2 seconds
- D. 25 seconds
- E. 42.4 seconds

- A. 1540cm^3
- B. 15cm^3
- C. 54cm^3
- D. 1640cm^3
- E. 540cm^3

40. A man who earns ₦48 000 a month has to pay 25k as tax on every Naira. How much tax does he pay for the month?

- A. ₦48 000
- B. ₦12 000
- C. ₦10 000
- D. ₦4800
- E. ₦1200

41. A triangle has an area of 144cm^2 . If the height is 24cm, what is the length of the base?

- A. 15 cm
- B. 14 cm
- C. 13 cm
- D. 12 cm
- E. 10 cm

42. Find the area of a circle whose diameter is 14cm. Take $\pi = \frac{22}{7}$.

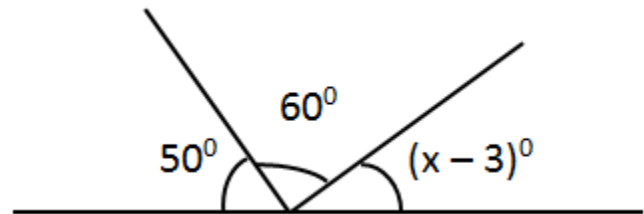
- A. 38.5cm^2
- B. 77cm^2
- C. 100cm^2
- D. 136cm^2
- E. 154cm^2

43. A cinema house has 28 rows each with 15 seats. Another one has 21 rows, and the total number of seats is the same. How many seats are there in each row in the second cinema?

- A. 15
- B. 20
- C. 25
- D. 30
- E. 35

44. Find the volume of a cylinder, given the radius as 7cm and height 10cm.

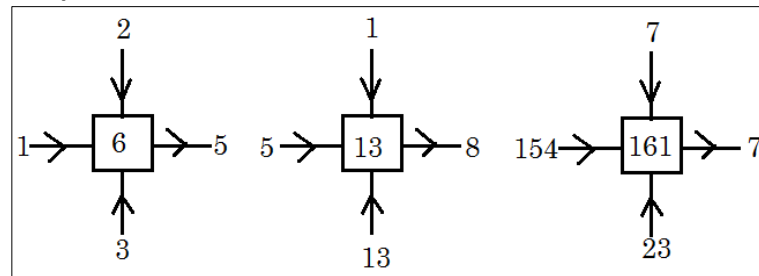
45. Find the value of x in the diagram given below:



- A. 73°
- B. 70°
- C. 113°
- D. 110°
- E. 143°

SECTION B: QUANTITATIVE REASONING
ANSWER ALL QUESTIONS WITH THE SAMPLES GIVEN

Sample:



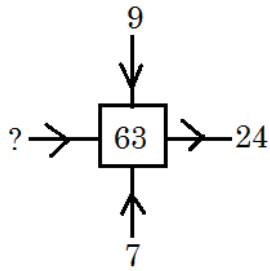
Use the above sample to answer questions 46 – 50.

46.

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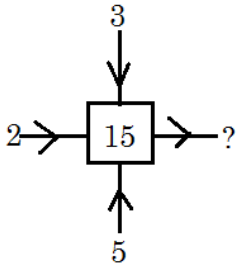
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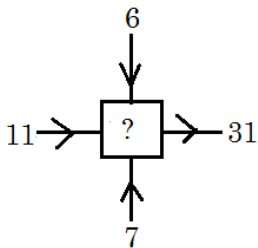
- A. 21
- B. 23
- C. 39
- D. 49
- E. 63

47.



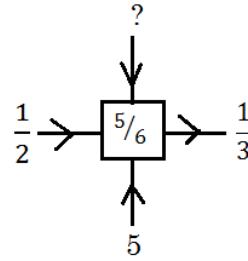
- A. 9
- B. 11
- C. 13
- D. 15
- E. 17

48.



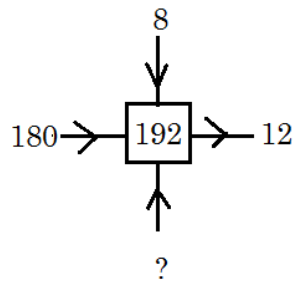
- A. 42
- B. 55
- C. 66
- D. 77
- E. 127

49.



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

50.



- A. 24
- B. 49
- C. 56
- D. 154
- E. 161

SAMPLE B

$7 \text{ Y } 2 = 16$	$10 \text{ Y } 7 = 27$
$5 \text{ Y } 7 = 17$	$0 \text{ Y } 4 = 4$

Use the above sample to answer questions 51 – 55.

51. $8 \text{ Y } 3 = ?$

- A. 5
- B. 11
- C. 15
- D. 19
- E. 24

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52. $4Y5 = ?$

- A. -1
- B. 1
- C. 9
- D. 13
- E. 20

- A. 5
- B. 7
- C. 9
- D. 11
- E. 13

53. $4Y? = 8$

- A. -4
- B. 0
- C. 2
- D. 4
- E. 32

58. $\binom{16}{12} - \binom{8}{8} = \binom{8}{?}$

- A. 2
- B. 4
- C. 6
- D. 8
- E. 10

54. $?Y4 = 24$

- A. 6
- B. 8
- C. 10
- D. 12
- E. 20

59. $\binom{0}{-5} + \binom{5}{?} = \binom{5}{5}$

- A. 10
- B. 5
- C. 2
- D. 1
- E. 0

55. $3Y(5Y6) = ?$

- A. 21
- B. 22
- C. 25
- D. 27
- E. 29

60. $\binom{-\frac{1}{3}}{\frac{3}{4}} + \binom{?}{\frac{1}{4}} = \binom{1}{1}$

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

Sample:

$\binom{5}{5} + \binom{1}{3} = \binom{6}{8}; \binom{4}{2} + \binom{5}{10} = \binom{9}{12}$
 $\binom{5}{6} - \binom{4}{17} = \binom{1}{-11}; \binom{16}{13} - \binom{11}{7} = \binom{5}{6}$

Use above sample to answer questions 56 – 60.

56. $\binom{8}{2} + \binom{4}{3} = \binom{?}{5}$

- A. 5
- B. 7
- C. 9
- D. 11
- E. 12

57. $\binom{8}{?} - \binom{7}{7} = \binom{1}{4}$

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ANSWERS

- | | | |
|-------|-------|-------|
| 1. B | 21. A | 41. D |
| 2. A | 22. E | 42. E |
| 3. D | 23. C | 43. B |
| 4. B | 24. B | 44. A |
| 5. B | 25. C | 45. A |
| 6. E | 26. E | 46. C |
| 7. E | 27. C | 47. C |
| 8. B | 28. B | 48. A |
| 9. B | 29. C | 49. B |
| 10. C | 30. E | 50. A |
| 11. B | 31. D | 51. D |
| 12. C | 32. B | 52. D |
| 13. A | 33. C | 53. B |
| 14. C | 34. C | 54. C |
| 15. D | 35. B | 55. B |
| 16. D | 36. C | 56. E |
| 17. B | 37. E | 57. D |
| 18. E | 38. D | 58. B |
| 19. E | 39. A | 59. A |
| 20. E | 40. B | 60. B |