FIRST MOCK EXAMINATIONS

SUBJECT: **MATHEMATICS**

NAME…………………………………………………..…………. DURATION:……………………………

**OBJECTIVE TEST**

Answer all questions in this shading paper by shading the correct answer on the shading sheet provided. Shade only one answer. Erase completely if you want to change the option selected.

1. If X = {Prime nos less than 13} and Y = {odd nos less than 13}. Find X n Y
2. {3,5,7,9,13}
3. {3, 5,7,11}
4. {3,5,7,11,13}
5. {3,5,7,9}
6. Given that V = {2, 4, 6, 8} and Q = {4, 6}. Find Q1 the complement of Q
7. {4,6}
8. {2,4,6,8}
9. {2,8}
10. {2,6,8}
11. If P = {2, 3, 5, 7} and Q = {2, 4, 6, 8}. Find P n Q
12. {2}
13. {3}
14. {4}
15. {5}

Use the Venn diagram below to answer questions 4 to 6

3

6

12

1

2

4

8 16

9,10,18,20

S

T

$$∪$$

1. List the members of the set S$∪$T.
2. {1,2,4}
3. {1,2,3,4,6,12}
4. {1,2,4,8,16}
5. {1,2,3,4,6,8,12,16}
6. List the elements of T**I** the complement of T.
7. {8,9,10,16,18,20}
8. {3,6,9,10,12,18,20}
9. {1,2,3,4,6,9,10,18,20}
10. {1,2,4,8,16}
11. List the members of the set (S$∪$T)’ the complement of S$∪$T.
12. {1,2,4}
13. {1,2,3,4,6,8,12,16}
14. {3,6,8,12,16}
15. {9,10,18,20}
16. Name the shaded portion in the Venn diagram below

A

B

1. AI
2. BI $∩ $A
3. AI $∩ $B
4. A $∪ $BI
5. How many subsets can be obtained from the set {1, 2, 3, 4}?
6. 16
7. 8
8. 4
9. 2
10. If Q = {7, 8, 9} and R = {5, 6, 7, 8}. Find n(Q $∪$ R).
11. 5
12. 8
13. 6
14. 7
15. Find the point whose image in (5, -4) when translated by the vector ()
16. (-7, -3)
17. (7,3)
18. (7, -3)
19. (-7, 3)
20. A translation T takes the point (1, 1) to the point (-3, 4). Find the image of the point (0,1).
21. (-2, -2)
22. (2, 4)
23. (3, 3)
24. (4, 2)
25. What is the image of the point (6, 3) under the reflection on the y – axis
26. (-6, -3)
27. (-6, 3)
28. (6, 3)
29. (6, -3)
30. Find the image of (-7, 6) under a clockwise rotation of 90$°$ about the origin
31. (7,6)
32. (-7,6)
33. (7, -6)
34. (6,7)
35. Kofi is facing East. Through how many degrees should be turn clockwise to face North?
36. 90$°$
37. 135$°$
38. 270$°$
39. 180$°$
40. The number of lines of symmetry of a rectangle are
41. 2
42. 4
43. 6
44. 1
45. The point (4, 5) is translated to the point (3, 1). Find the translation vector.
46. $\left(\begin{matrix}-1\\4\end{matrix}\right)$
47. $\left(\begin{matrix}1\\4\end{matrix}\right)$
48. $\left(\begin{matrix}1\\-4\end{matrix}\right)$
49. $\left(\begin{matrix}-4\\4\end{matrix}\right)$
50. The number of rotational symmetry of a kite is
51. 0
52. 1
53. 2
54. 3
55. The point P (3, 4) is rotated through an angle of 90$°$ anticlockwise about the origin 0. Find the range P of the rotation.
56. (3, -4)
57. (4, -3)
58. (-3, 4)
59. (-4, 3)
60. In an enlargement with scale factor K, which of the following statements is not true?
61. Each length is multiplied by K
62. Each angle remains same
63. The shape of the figure does not change
64. The size of the figure does not change
65. What is the mode of the following set of numbers 4,5,3,3,4,2,7,6,5,4,4,1.
66. 3
67. 4
68. 5
69. 6
70. If (x, y) maps to (x, 2y), find the image of (2 ½, - ¼ )
71. (2 ½, -2)
72. (2 ½, - ½)
73. (5, - ½)
74. (2, - ¼ )
75. Find the vector which translates the point (4, 5) to (3,2)?
76. $\left(\begin{matrix}-1\\-3\end{matrix}\right)$
77. $\left(\begin{matrix}-1\\3\end{matrix}\right)$
78. $\left(\begin{matrix}-1\\7\end{matrix}\right)$
79. $\left(\begin{matrix}7\\3\end{matrix}\right)$
80. If the two figures ABCD and PQRS below are similar, find the value of b

A

B

C

D

12cm

18cm

9cm

6cm

1. 60cm
2. 40cm
3. 33cm
4. 30cm

P

S

R

Q

5cm

10cm

15cm

20cm

The marks obtained by 10 boys in a test are; 0, 1, 3, 3, 4, 7, 8, 9, 9, 9.

Use the information to answer questions 24 to 26

1. Find the medium score
2. 3
3. 4
4. 6
5. 7
6. Calculate the mean score
7. 4.4
8. 5.3
9. 6
10. 6.4
11. How many failed the test if the past mark was 6?
12. 7
13. 13
14. 42
15. 12

In the figure, below triangle MON is an enlargement of triangle MON, with the center O. Use the information to answers question 27 and 28

MI

NI

N

M

O

12cm

6cm

9cm

1. Find the scale factor of the enlargement
2. 9
3. 3
4. 2
5. -2
6. Find |OM|
7. 9
8. 6
9. 4.5
10. 3

In the following diagram, rectangle OABC is enlarged into rectangle OA, B, C from centre O.

OC = 5cm, OA = 2cm, and AA1 = 1 cm. Use the diagram to answer question 29 to 30

O

A

AI

B

CI

C

BI

2cm

5cm

1cm

1. Find the scale factor of the enlargement
2. 1
3. 1.5
4. 2
5. 2.5
6. Calculate OCI
7. 7.5cm
8. 8cm
9. 9cm
10. 12cm

Use the information to answer question 31 to 34

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Age (Yrs) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| No. of children | 3 | 4 | 2 | 5 | 4 | 4 | 6 | 4 | 2 | 1 |

1. What is the modal age?
2. 10
3. 7
4. 5
5. 4
6. How many children are 7 or more years old?
7. 28
8. 22
9. 13
10. 6
11. What is the average of children above 7 years?
12. 6.2
13. 2.6
14. 4.4
15. 8.8
16. Find the relative frequency if a child’s age is more than 7
17. 6/17
18. 7/34
19. 7/17
20. 6/34
21. There are 40 beads in a box, some are black and some are white. The chances that one bead is chosen at random from the box is black is ¼. Find the number of black beads.
22. 10
23. 4
24. 15
25. 5
26. The mean of the numbers 3, 2, 3, 4, x, 8, 9 and 5 is 5. Find the value of x.
27. 2
28. 3
29. 5
30. 6

In the diagram below MNO is the mirror of image of MPO. Use it to answer questions 37 and 38.

M

O

P

N

R

1. What is the line of symmetry?
2. PN
3. MR
4. RO
5. MO
6. Find the image of PR
7. RN
8. PM
9. RO
10. MN
11. A bag contains 15 red balls and 9 blue balls. Find the probability of picking a blue ball at random from the bag.
12. ¾
13. 3/8
14. 5/9
15. 1/9
16. A school has a population of 600 out of which 120 are girls. What is the probability of meeting a pupil in the school who is a boy?
17. $^{1}/\_{4}$
18. $^{1}/\_{5}$
19. $^{3}/\_{5}$
20. $^{4}/\_{5}$

**SECTION B**

Answer only four questions from this paper. All questions carry equal marks.

1. i. Using a ruler and pair of compasses only, construct a triangle PQR such that PQ = 10cm and angle PQR = 45$°$ and QR = 8cm.

b. i. Construct a perpendicular from R to meet line PQ at E

 ii. Measure |RE|

c. Calculate the area of triangle PQR

2. If m = $\left(\begin{matrix}3\\4\end{matrix}\right)$ and n = $\left(\begin{matrix}-1\\4\end{matrix}\right)$, find 3m – 2n

b. The diagram below shows an illustration trapezium EFGH with EH parallel to FG and FEG =134$°$, find

 i. X

 ii. Y

E

F

H

G

$$Y°$$

$$134°$$

$$X°$$

c. solve for x if ½ - 3x = 3 + 2x / 3

3. C opy and complete the table below for the relation y = 3 – 2x

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| X | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| Y = 3-2x |  | 7 |  | 3 |  | -1 | -3 |

b. i. using a scale of 2cm: 2units on the y – axis and 2cm: 2units on x – axis, draw two perpendicular axes OX and OY.

ii. On the same graph sheet draw the graphs y = 3 – 2x.

c. when 12 is added to a certain number and the result is multiplied by 4, the result is 60. Find the number.

4. If AB = $\left(\begin{matrix}2\\2\end{matrix}\right)$ + $\left(\begin{matrix}3\\4\end{matrix}\right)$ + $\left(\begin{matrix}4\\6\end{matrix}\right)$, find the |AB|.

b. the following marks were obtained by students in a Mathematics class test.

10 2 6 4 7 8 8 6 8 7

9 8 10 6 8 6 6 2 2 2

1. construct a frequency distribution for the above information
2. find the modal mark
3. find the median
4. find the mean, correct to 2 d.p
5. find the range

5. Some pupils in Pantang J.H.S were asked whether they could play football (F) or basketball (B) or both. 4 could play football only and 13 could play basketball only. If 26 could play both games and 7 could not play any of the games

a. illustrate the information on a Venn diagram

b. from the Venn diagram find

i. the number of pupils in Pantang JHS

ii. the number of pupils who could play football

c. the probability of selecting a pupil at random who could play basketball

6. a. Using a scale of 2cm to 2 unit on both axes, Ox and Oy.

b. On this graph sheet, mark the x – axis from -10 to 10 and the y – axis from -10 to 10.

c. Draw the image, triangle PQR with coordinates P(2, 2), Q(4, 6) and R(6, 2)

d. Draw the image triangle PIQIRI of triangle PQR under a reflection in the line y – axis, where P PI, Q QI and R RI. Write down the coordinates of PI, QI and RI.

e. The image triangle PII QII RII of triangle PQR under a rotation of 180$°$ about the origin, where P PII, Q QII and R RII. Write down the coordinates of PII, QII and RII.

f. Find PIRI

g. Find the equation of the line QIIRII.