Kangaroo.Study
GEP Selection
MOCK EXAM 2023

Subject: Maths

Total Duration: 1 hour 50 minutes

Name:_____

INSTRUCTIONS TO PUPILS

1. Do not turn over this page until you are told to do so.

2. Follow all instructions carefully.

3. Q1-Q24: choose the correct answer.

4. Q25-Q48: write your answer.

1. Finding the missing number.

$$\frac{117}{78} = \frac{78}{(\ )}$$

A. 26
B. 39
C. 52
D. 65
E. 6084

2. 122 days after today is Monday. What is today?
A. Friday
B. Saturday
C. Wednesday
D. Thursday
E. Monday

3. A teacher gives 145 stickers to 28 students. Each boy receives 4 stickers while each girl receives 7 stickers. How many more boys than girls are there?
A. 17
B. 11
C. 6
D. 28
E. 13

4. The weight of 1 bottle of coke is equal to the weight of 1 cup of tea and 1 cup of milk. The weight of 2 cups of milk is equal to the weight of 1 cup of tea. Therefore, how many cups of milk weigh the same as 2 bottles of coke?
A. 2
B. 3
C. 4
D. 5
E. 6

5. As shown in the figure, A and B are the midpoints of their respective sides. What fraction of the entire figure is shaded?
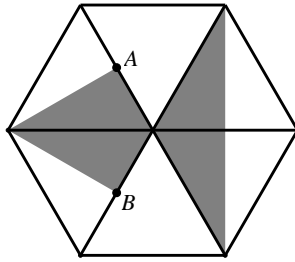
A. $\dfrac{1}{6}$

B. $\dfrac{1}{4}$

C. $\dfrac{1}{3}$

D. $\dfrac{1}{2}$

E. $\dfrac{2}{5}$

6. A rectangle has a perimeter of 48m, and its length is 14m. What is its width?
A. 34m
B. 20m
C. 17m
D. 12m
E. 10m

7. Extend your right hand, starting from the thumb, and count from 1 in the order of "thumb, index finger, middle finger, ring finger, little finger, ring finger, middle finger, index finger, thumb, index finger, ..." So, which finger does it reach when counting to 206?
A. thumb
B. index finger
C. middle finger
D. ring finger
E. little finger

8. There is a type of three-digit number, where the digit in the ones digit is the same as the digit in the hundreds digit, and the digit in the tens digit is no more than the digit in the hundreds digit. How many such three-digit numbers are there?
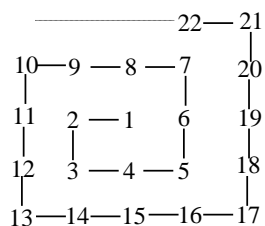A. 55
B. 54
C. 45
D. 44
E. 36

9. There are two classes, A and B. After 11 people of class A go to class B, class A has 2 people less than class B. How many more people are in class A than in class B in the beginning?
A. 9
B. 13
C. 20
D. 22
E. 24

10. Thers are some letters: ILIKEEATPEACHPEACHPEACH…, how many "E" are there in the first 100 letters?
A. 18
B. 19
C. 20
D. 21
E. 22

11. As shown in the figure, 2 is at the first corner, 3 is at the second corner, 5 is at the third corner, 7 is at the fourth corner, ... So, what is the number at the tenth corner?

```
                    22— 21
                          |
   10—9 — 8 —7     20
    |          |          |
   11    2 — 1   6     19
    |    |      |          |
   12   3 — 4 — 5    18
    |                     |
   13—14—15—16—17
```

A. 36
B. 32
C. 31
D. 30
E. 26

12. Which of the following fractions is between $\dfrac{13}{24}$ and $\dfrac{5}{9}$?

A. $\dfrac{1}{2}$

B. $\dfrac{7}{12}$

C. $\dfrac{15}{32}$

D. $\dfrac{17}{36}$

E. $\dfrac{79}{144}$

13. How many 4-digit numbers can be formed using 6, 5, 4, 3, 0 without repetition?
A. 625
B. 500
C. 120
D. 96
E. 24

14. Alex has some tokens. He spent $\frac{1}{20}$ of the token to exchange for an eraser, and $\frac{2}{5}$ to exchange for a blind box. What fraction of his original tokens are left?

A. $\frac{17}{20}$

B. $\frac{3}{5}$

C. $\frac{13}{20}$

D. $\frac{11}{20}$

E. $\frac{9}{20}$

15. There is a number sequence: 3, 4, 5, …, 111, 112. How many digits are there in total?
A. 226
B. 224
C. 223
D. 222
E. 218

16. Alex removed 17 pieces from the solid square arranged with chess pieces, reducing its horizontal and vertical rows by one, forming a smaller solid square. How many pieces were there in the original solid square?
A. 81
B. 64
C. 49
D. 256
E. 289

17. Teacher Fang, Teacher Gao, and Teacher Zheng each have a consistent daily speed of grading "Daily Practice." The three of them together graded 600 questions in 3 days. If they grade for 5 days each, Teacher Fang will grade 250 more questions than Teacher Gao. If they grade for 7 days each, Teacher Zheng will grade 140 fewer questions than Teacher Fang. How many questions does Teacher Fang grade each day?
A. 30
B. 50
C. 70
D. 90
E. 110

18. There are two trees. Originally, the number of birds on the first tree was three times the number of birds on the second tree. After 5 birds from the first tree flew to the second tree, the first tree now still has 4 more birds than the second tree. How many birds are on the first tree now?
A. 9
B. 21
C. 7
D. 3
E. 16

19. Alex is 9 years old this year, and his father said to him, "When you are my age, I will be already 69 years old." How old is his father this year?
A. 48
B. 49
C. 39
D. 38
E. 29

20. There are 120 apples in the fruit store. $\frac{5}{12}$ of them were sold on the first day, and

$\frac{1}{3}$ of them were sold on the second day. How many apples are left?

A. 30
B. 40
C. 50
D. 70
E. 90

21. If the length of the diagonal of a square is 6cm, what is its area in square centimetres?

A. 36
B. 24
C. 18
D. 12
E. 9

22. 60 students stood in a line facing the teacher. Labelled as 1, 2, 3, …, 59 and 60 from left to right, then the teacher asked the students who are a multiple of 3 to raise hand, and then asked the students who are a multiple of 4 to raise hand. How many students only raise hand once?

A. 35
B. 5
C. 20
D. 15
E. 30

23. If the width of a rectangle remains unchanged and the length increases by 8 meters, the area will increase by 72 square meters; If the length is unchanged and the width is reduced by 4 meters, the area will be reduced by 48 square meters. What is the original area of the rectangle? (In m^2)
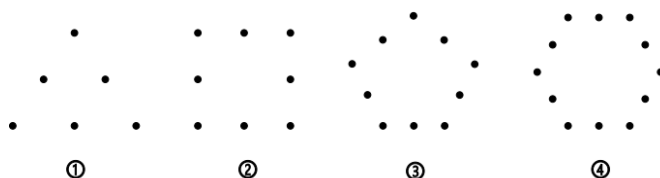
A. 32
B. 48
C. 60
D. 96
E. 108

24. $\overline{AA} \times \overline{BB} = \overline{CDE}$. The same letter represents the same number, and different letters represent different numbers. What is the sum of A and B?

A. 4
B. 5
C. 6
D. 7
E. 8

25. Use 0, 2, 3, 4, 5 to form a three-digit number and a two- digit number, and minimize the difference between the two numbers. What is the minimum difference?

26. How many points are there in the 8th figure?

①   ②   ③   ④

27. There are three different types of bottles A, B, and C. B can hold twice the capacity of water as A, while A can hold 30ml more than three times the capacity of C. One B bottle and three C bottles can hold a total of 2L 160ml. How much water can one A bottle hold?

28. There is a number sequence: 1, 3, 7, 15, 31, …, what is the 9th number?

29. Place the numbers 3~9 into the circles below so that the sum of any three numbers along the same line equals 18. What is the number in the middle circle?
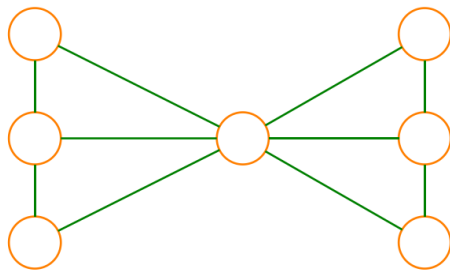
30. Some students go for an outing, and if each car seats 10 people, there will be 6 people left; If each car seats 13 people, there will be 3 cars left. How many students are there?

31. Fill in numbers 1 to 9 in the space so that the 9 numbers in each row, column, and area marked with bold lines cannot be repeated. What is the sum of the numbers represented by the four letters A, B, C and D?

	2	3	4	5	6	7	1	D
4	5	1	7		8	3	2	6
6	7	9	2	3	1	8		
3	8	2	6		5	9	7	
5	6	4	9	8		C	3	2
	9	7	3	B	2	5	6	8
7	4		5	6	3		9	1
2	1			7	9	4	5	3
9		A		2	4		8	7

32. The sum of four numbers A, B, C, and D is 549. If A adds 2, B subtracts 2, C times 2, and D divided by 2, all four numbers are equal. Find the value of A.

33. If the sum of 9 consecutive odd numbers is 99, what is the largest odd number among these numbers?

34. A rectangle of perimeter 60 cm is cut into 3 same pieces to form a square, as shown below. What is the perimeter of the square?
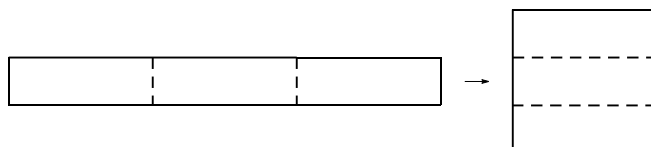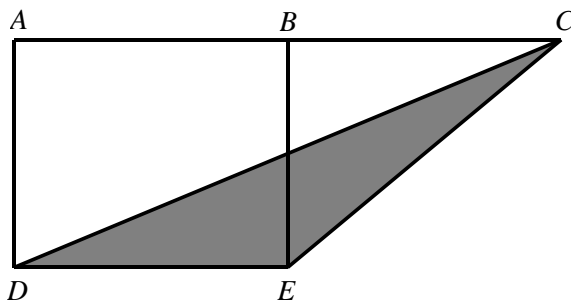
35. The perimeter of a rectangle is 56 meters, and its length is 4 meters more than its width. What is the area of this rectangle?

36. When there are 39 white circles, how many black circles are there?
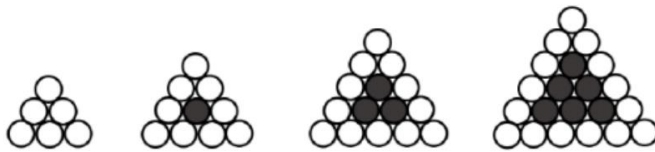
37. March 3rd, 2023 is Friday. What day is June 12th, 2024?

38. There is a rectangle *ABED*. AB=BC, what fraction of the entire figure is shaded?

39. A big clock strikes once at one o'clock, with equal intervals between adjacent strikes; At 5 o'clock, it knocks 5 times, taking 13 seconds to finish; At 8 o'clock, it knocks 8 times, taking 22 seconds to finish. At 10 o'clock, it knocks 10 times, how many seconds will it take to finish?

40. Three people plant 20 trees within 2 hours, with each person planting trees at the same speed and remaining unchanged. How many more people do they need to plant 150 trees in 300 minutes?

41. The teacher divided 38 students into 3 groups. The first group has 6 fewer students than the sum of the second and third groups. If two students from the second group go to the third group, then the numbers of people in these two groups are equal. How many people are actually in the second group?

42. What is the perimeter of the following figure? (In meters)
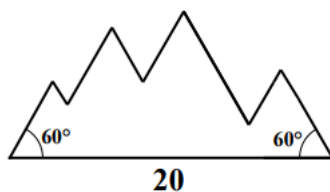
43. If the sum of the 4 numbers below is 1992, what is the sum of A, B, C and D?

$$
\begin{array}{r}
A \\
A\ B \\
A\ B\ C \\
+\ A\ B\ C\ D \\
\hline
\end{array}
$$

44. Alex, Ben and Cindy have some cards. Among them, 49 cards are not Alex's, 43 cards are not Ben's, and 54 cards are not Cindy's. How many cards does Cindy have?

45. Starting from 1 and following the order of 4, 10, 16, 22..., we have written a total of 123 digits. What is the last digit?

46. As shown in the figure, by arranging the whole numbers starting from 1 according to the same pattern, you can obtain many squares. For example, 1-4 form the first square, and 5-16 form the second square. What is the number at the bottom right corner of the 8th square?

43	44	45	46	47	48	49	50
42	21	22	23	24	25	26	51
41	20	7	8	9	10	27	52
40	19	6	1	2	11	28	53
39	18	5	4	3	12	29	54
38	17	16	15	14	13	30	55
37	36	35	34	33	32	31	56
⋯	63	62	61	60	59	58	57

47. In the table shown in the figure, the first row is ORANGE that repeatedly appears, and the second row is PEAR that repeatedly appears. Form a group of letters above and below each column, for example, the first group is (OP), and the second group is (RE). So what is the 55th group?

O	R	A	N	G	E	O	R	A	……
P	E	A	R	P	E	A	R	P	……

48. The teacher divided the pens among the students. If the teacher gave each girl 5 pens and each boy 3 pens, there would be 10 pens left. If the teacher gave 4 pens to everyone, it happens to be done. How many more boys than girls?