

Level M - Form 1 - Applied Mathematics: Patterns, Functions, Algebra

Sample Question

What number goes in the box to make this number sentence true?

$$15 \div \square = 5$$

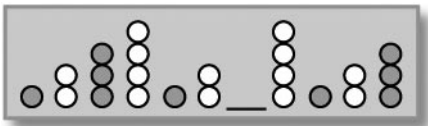
- A 1
- B 2
- C 3
- D 4





Level M - Form 1 - Applied Mathematics: Patterns, Functions, Algebra

1. What operation sign goes in the box to make this number sentence true?

$$1 \square 1 = 0$$

- A +
 B -
 C \times
 D \div
2. Which figure is missing from the pattern in the box?



- F 
 G 
 H 
 J 
3. Which group of numbers is missing from this number sequence?

$$1, 6, 11, 16, \underline{\quad}, \underline{\quad}, \underline{\quad}, 36$$

- A 17, 18, 19
 B 21, 26, 31
 C 18, 22, 28
 D 26, 27, 38

The table shows input numbers that have been changed by a certain rule to get output numbers. Use the table to do Numbers 4 through 5.

Input	Output
2	9
3	12
5	18
1	6

4. Which of these could be the rule for changing the input numbers to output numbers?
 F Add 6, then subtract 1.
 G Add 7.
 H Add 1, then multiply by 3.
 J Multiply by 4.
5. If the input is 7, what is the output?
 A 24
 B 12
 C 14
 D 28

6. Jan is five years older than Tammy. If t is Tammy's age, which expression represents Jan's age?

F $t + 5$

G $t - 5$

H $5t$

J $t \div 5$

7. Which group of numbers is missing from this number sequence?

45, 39, 33, 27, _____, _____, _____, 3

A 26, 25, 24

B 24, 21, 18

C 21, 15, 9

D 22, 17, 12

8. Here is a section of a wallpaper border Jeremiah is hanging on his office wall. Which of these best describes the repeating pattern of shapes in the border?



- F shaded, unshaded, shaded, unshaded
G unshaded triangle, unshaded diamond, shaded square
H square, diamond, triangle, diamond
J square, diamond, square, diamond

9. What number goes in the box to make this number sentence true?

$$17 - \square = 11$$

- A 5
 - B 6
 - C 7
 - D 8
10. If $12 + n = 87$, what is the value of n ?
- F 75
 - G 99
 - H 77
 - J 97

The table shows input numbers that have been changed by a certain rule to get output numbers. Use the table to do Numbers 11 through 12.

Input	5	6	7	8
Output	10	13	16	19

11. What is the rule used to change the input number to the output number?
- A Add 5.
 - B Multiply by 2.
 - C Multiply by 2, add 1.
 - D Multiply by 3, subtract 5.
12. If 10 is the input number, what will be the output number?
- F 30
 - G 25
 - H 22
 - J 21

13. Each box shows a pattern of repeating shapes. Which pattern needs a square in the blank space?



14. Which figure comes next in this repeating pattern?



15. What number is missing from this sequence?

10, 5, 12, 7, ____, 9

- A 12
- B 8
- C 14
- D 2

16. Which number is missing from this number sequence?

15, 18, 13, ____, 11, 14, 9, 12

- F 16
- G 8
- H 12
- J 3

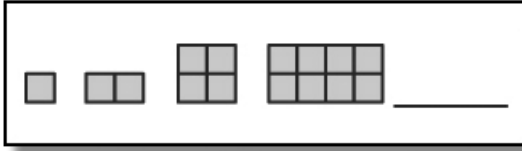
17. Bob is 6 inches shorter than Tim. If t is Tim's height, which expression represents Bob's height?

- A $6 + t$
- B $6 - t$
- C $6t$
- D $t - 6$

18. Given the equation $x + 5 = y$, what is the value of y when $x = 7$?

- F $y = 2$
- G $y = 12$
- H $y = 35$
- J $y = 75$

19. If the pattern formed by the squares continues, how many squares are in the next shape?



- A 10
- B 12
- C 16
- D 18

20. Which group of numbers is missing from this number sequence?

3, 8, 5, 10, 7, _____, _____, _____, 11, 16

- F 8, 9, 10
- G 12, 9, 14
- H 10, 5, 8
- J 10, 13, 16