Downloaded from Stanmorephysics.com

GRADE 9 MATHEMATICS TEST
MARKS : 50 JUNE 2022
TIME: 1HR

INSTRUCTIONS AND INFORMATION

Read the following instructions carefully before answering the questions.

1. This question paper consists of 4 questions.
2. Answer ALL the questions.
3. Clearly show ALL calculations, diagrams, graphs, et cetera that you have used in determining your answers.
4. Number the answers correctly according to the numbering system used in this question paper.
5 Write legibly and present your work neatly.

Stanmorephysics.com

QUESTION 1

1.1 This a multiple choice question, write only the number and the letter of the correct answer

1.1.1 Study the pattern below and determine the terms represented by m and n.
$2 ; 5 ; 8 ; m ; \ldots ; 17 ; n ; \ldots$
A $m = 10 \; and \; n = 13$
B $m = 11 \; and \; n = 21$
C $m = 9 \; and \; n = 20$
D $m = 11 \; and \; n = 20$ (1)

1.1.2 If $2x + 8 = 16$, then $x =$
A 1
B -4
C 1,6
D 4 (1)

Downloaded from Stanmorephysics.com

1.1.3 The following table shows the number of days a number of men take to complete a task

Number of men	1	5	10	15
Time taken (hrs)	20	4	x	$\frac{4}{3}$

The value of x is:

A 200

B 2

C $\frac{4}{5}$

D 8 (1)

1.1.4 The general rule (T_n) of the pattern 3 ; 7 ; 11 ; 15 is:

A $T_n = -4n + 2$

B $T_n = 4n + 1$

C $T_n = 4n - 1$

D $T_n = -4n + 1$ (1)

1.2 Match the correct word problem in a Column A with the corresponding equation in Column B

COLUMN A	COLUMN B
1.2.1 A number is increased by six equals ten.	***A***. $2x + 5 = 9$
1.2.2 A certain number is increased by five equals thirty.	***B***. $x^2 = 16$
1.2.3 Twice a number plus five equals to nine.	***C***. $3(2) + x = 15$
1.2.4 A number multiplied by itself equals sixteen.	***D***. $x + 6 = 10$
1.2.5 Three doubled and added to a number equals fifteen.	***E***. $x + 5 = 30$

(5)

[9]

Downloaded from Stanmorephysics.com

QUESTION 2

2.1 For each of the following, write the next two numbers in the sequence:

2.1.1 5; 13; 18; 23; .... (2)

2.1.2 $-12; -18; -24;$ ... (2)

2.2 Study the pattern below and answer the questions that follow.

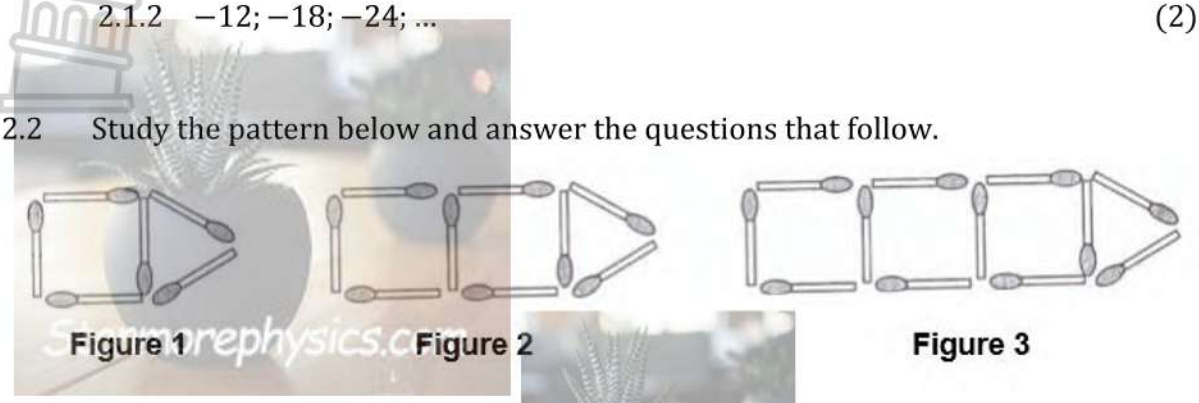

Figure 1 Figure 2 Figure 3

2.2.1 Determine the number of matches in figure 4 and figure 5 if the pattern is continued. (2)

2.2.2 Determine a simplified rule for the n^{th} term. (3)

2.2.3 Use your answer in 2.2.2 to determine the number of matchsticks in the 30th figure. (2)

2.2.4 Use your answer in 2.2.2 and determine which figure would have 1503 matchsticks. (3)

[14]

QUESTION 3

3.1 Simplify

3.1.1 $-3(5x - 8)$ (2)

3.1.2 $(3x - 4)(4x + 7)$ (3)

3.2 Factorise

3.2.1 $9x^2 - 121y^2$ (2)

3.2.2 $x^2 + 13x + 30$ (2)

3,2.3 $3x^2 - 15x - 18$ (3)

[12]

Downloaded from Stanmorephysics.com

QUESTION 4

4.1 Calculate the value of $3x^3 - 2x^2 - 9x + 2$ if $x = -2$. (2)

4.2 Solve for x.

4.2.1 $3x + 10 = 2x - 30$ (2)

4.2.2 $7 - (x + 1) = 9 - (x - 1)$ (3)

4.2.3 $x - \frac{x-1}{2} = 3$ (3)

4.2.4 $4x^2 - 7x = 0$ (3)

4.2.5 $2^{x+1} = 32$ (2)

[15]

Stanmorephysics.com

Stanmorephysics.com

TOTAL : 50 MARKS

Downloaded from Stanmorephysics.com

GRADE 9 MATHS MEMORANDUM

MARKS : 50 JUNE 2022

QUESTION 1

1.1.1 D ✓

1.1.2 D ✓

1.1.3 B ✓

1.1.4 C ✓

1.2.1 D ✓

1.2.2 E ✓

1.2.3 A ✓

1.2.4 B ✓

1.2.5 C ✓

(9)

QUESTION 2

2.1.1 28 , 33 ✓✓ (2)

2.1.2 −30 , −36 ✓ ✓ (2)

2.2.1 *Figure* 4 15 ✓

Figure 5 18 ✓ (2)

2.2.2 $Tn = 3n + 3$ ✓✓✓ (3)

Downloaded from Stanmorephysics.com

2.2.3 $T30 = 3(30) - 3$ ✓

$= 87$ ✓ (2)

2.2.4 $3n + 3 = 1503$ ✓

$3n = 1500$ ✓

$n = 500$ ✓ (3)

QUESTION 3

3.1.1 $-3(5x - 8)$

$-15x + 24$ ✓ ✓ (2)

3.1.2 $(3x - 4)(4x + 7)$

$12x^2 + 21x - 16x - 28$ ✓✓

$12x^2 + 5x - 28$ ✓ (3)

3.2.1 $9x^2 - 121y^2$

$(3x + 11y)(3x - 11y)$ ✓✓ (2)

3.2.2 $x^2 + 13x + 30$

$(x + 10)(x + 3)$ ✓✓ (2)

3.2.3 $3x^2 - 15x - 18$

$3(x^2 - 5x - 6)$ ✓

$3(x - 6)(x + 1)$ ✓ ✓ (3)

Downloaded from Stanmorephysics.com

QUESTION 4

4.1 $3x^3 - 2x^2 - 9x + 2$

$3(-2)^9 - 2(-2)^2 - 9(-2) + 2$ ✓

-12 ✓ (2)

4.2.1 $3x + 10 = 2x - 30$

$3x - 2x = -30 - 10$ ✓

$x = -40$ ✓ (2)

4.2.2 $7 - (x + 1) = 9 - (x - 1)$

$7 - x - 1 = 9 - x + 1$ ✓

$-x + x = 9 + 1 - 7$ ✓

$0 \neq 3$ ✓ (3)

4.2.3 $x - \frac{x-1}{2} = 3$

$2x - (x - 1) = 6$ ✓

$2x - x + 1 = 6$ ✓

$x = 5$ ✓ (3)

4.2.4 $4x^2 - 7x = 0$

$x(4x - 7) = 0$ ✓

$x = 0$ ✓ *or* $4x = 7$

$x = \frac{7}{4}$ ✓ (3)

4.2.5 $2^{x+1} = 32$

$2^{x+1} = 2^5$ ✓

$x + 1 = 5$

$x = 4$ ✓ (2)