First Term Test (2020-2021)
Form Two Mathematics

Date : Time allowed :
1 hour

/70

Class: F.2____( ) Name: _____

Section A—Multiple Choice Questions (2 marks each, 10 marks)
Please put your answers in the boxes provided on P.2

1. It is given that $3(Px - Q)(x + 2) \equiv 6x^2 + 3x + R$, find the value of R.

A. -18
B. -6
C. 3
D. 18

2. $2p^2 - pq + qr - 2pr + 3q - 6p =$

A. $(2p - q)(p - r + 3)$.
B. $(2p + q)(p - r + 3)$.
C. $(2p - q)(p - r - 3)$.
D. $(2p + q)(p - r - 3)$.

3. If $p^3q = -4$ and $3p - 2q = 6$, then $20p^6q^3 - 30p^7q^2 =$

A. -960.
B. -480.
C. 480.
D. 960.

4. The sum of the units digit and the tens digit of a two-digit number is 12. If the two digits are interchanged, the new number is greater than the original number by 54. Let x be the tens digit and y be the units digit of the original number, which of the following pairs of simultaneous equations can be formed from the information given above?

A. $\begin{cases} x + y = 12 \\ yx - xy = 54 \end{cases}$

B. $\begin{cases} 10x + y = 12 \\ (10y + x) - (10x + y) = 54 \end{cases}$

C. $\begin{cases} x + y = 12 \\ (10x + y) - (10y + x) = 54 \end{cases}$

D. $\begin{cases} x + y = 12 \\ (10y + x) - (10x + y) = 54 \end{cases}$

5. The graph of the equation $3x - 2y + k = 0$ passes through the points $(3, 2)$ and $(1, a)$. Find the values of k and a.

A. $k = -5,\ a = 1$

B. $k = -5,\ a = -1$

C. $k = 5,\ a = 4$

D. $k = 5,\ a = -4$

1	2	3	4	5	Section A Total

Section B—Short Questions (31 marks)

6. Determine, with explanation, whether $\frac{(x+1)(2x-1)}{4} = \frac{x^2}{2} - \frac{1-x}{4}$ is an identity. (5 marks)

7. Solve the simultaneous equations $\begin{cases} 2x - 5y = 42 \\ 5x - 3y = 29 \end{cases}$ by the **<u>method of substitution</u>**. (5 marks)

8. Solve the simultaneous equations $\frac{6x+y}{5} = \frac{4x-5y}{9} = 3$ by the **<u>method of elimination</u>**. (5 marks)

9. (a) Factorize $y^3 + xy^2 - 7y^2$. (1 mark)

(b) Hence, factorize $y^3 + xy^2 - 7y^2 - y - x + 7$. (3 marks)

10. Factorize $50a^3 - 18a(a-2)^2$. (5 marks)

11. Expand $12\left(\frac{p^5}{3} - \frac{3q}{2}\right)\left(-\frac{3q}{2} - \frac{p^5}{3}\right)$. (4 marks)

12. (a) Expand $(a - 2x)^2$. (1 mark)

(b) Using the result of (a), expand $(a - 2b + 4c)^2$. (3 marks)

Section C—Long Questions (29 marks)

13. (a) Factorize $4x^2 - 12xy + 9y^2$. (1 mark)

(b) Using the result of (a), factorize $4(4p - q)^2 - 12(4p - q)(p + q) + 9(p + q)^2$. (4 marks)

14. (a) Solve the simultaneous equations $\begin{cases} 2x + 11y = 57 \\ 3x - 5y = 21 \end{cases}$. (4 marks)

(b) Using the result of (a), solve the simultaneous equations $\begin{cases} 2(a+b) + 11(a-b) = 57 \\ 3(a+b) - 5(a-b) = 21 \end{cases}$. (3 marks)

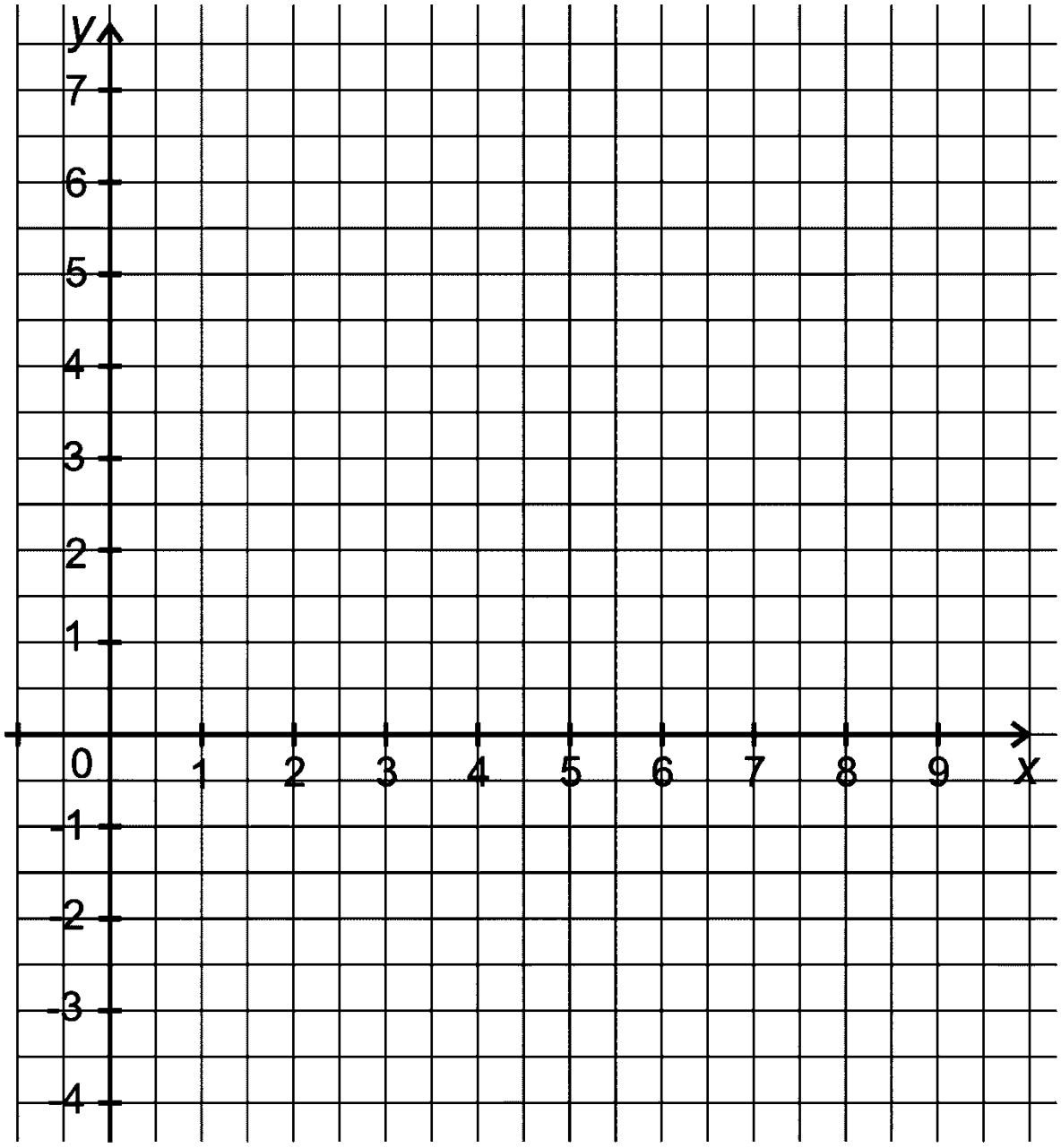
15. Dennis has some \$2 coins and some \$5 coins in his pocket. The total value of the coins is \$49. If the number of \$2 coins is higher than 2 times the number of \$5 coins by 2, find the total number of coins Dennis has. (5 marks)

16. If the graphs of the equations $ax + by = 19$ and $3ax - (2b - 1)y = 15$ intersect at $(5, 3)$, find the values of a and b. (5 marks)

17. By filling in **ALL THE BOXES** in the tables below, solve $\begin{cases} 4x + 2y = 15 \\ -x + 3y = -9 \end{cases}$ graphically. (6 marks)

$4x + 2y = 15$			
x			
y	5.5	1.5	-2.5

$-x + 3y = -9$			
x	0	3	6
y			



Therefore, the solution is _____.

END OF PAPER