

Stanmore Secondary School

Department of Mathematics

Grade 9 - First Controlled Test 2015

Time: 1.5 Hour

Max Marks: 75

Examiner: Mr S. Naidoo

Moderator: Mr D. Umichand

Name: _____ Grade 9: ____

Question One

Given the list of numbers: 11; $\sqrt{6}$; 8; $\sqrt{-35}$; 81 write down

1.1 a prime number : 11 ✓

1.2 an irrational number : $\sqrt{6}$ ✓

1.3 a factor of 48 : 8 ✓

1.4 a square number : 81 ✓

1.5 an unreal number : $\sqrt{-35}$ ✓

[5]

Question Two

Find the HCF and LCM of 36 and 84 using prime factors. Show all working

2	36	2	84	HCF = $2 \times 3 = 12$ ✓✓
2	18	2	42	LCM = $2^2 \times 3^2 \times 7 = 252$ ✓✓
3	9	3	21	
3	3	7	7	
	1		1	

[6]

Question Three

3.1 The distance from Phoenix to Richards Bay is 240km. At an average speed of 80km/h, how long will you take to travel from Phoenix to Richards Bay? (Show all working)

$$t = \frac{d}{s}$$

$$= \frac{240}{80} \text{ ✓}$$

$$= 3 \text{ hours } \text{ ✓}$$

[2]

3.2 If 30 sweets costs R9. What will be the cost of a 50 sweets? (Show all working)

$$1 \text{ sweet} = \frac{9}{30} \text{ ✓}$$

$$= 0,3 \text{ ✓}$$

$$50 \text{ sweets} = 50 \times 0,3 \text{ ✓}$$

$$= R15 \text{ ✓}$$

[4]

Question Four

4.1 Wayne wants to invest R8500. He is not sure whether to invest his money using Simple Interest or Compound Interest. Simple Interest offers 15% for 3 years and Compound Interest offers 14% for 3 years. Which option should Wayne choose (Show all working) [4]

Simple Interest

$$SI = \frac{p \times n \times r}{100}$$

$$SI = \frac{8500 \times 3 \times 15}{100} \checkmark$$

$$= 3825$$

Compound Interest

$$A = P(1 + i)^n$$

$$A = 8500 \left(1 + \frac{14}{100}\right)^3 \checkmark$$

$$= 4093,12 \checkmark (12593,12)$$

CJ is better option \checkmark

4.2 Wayne notices that a local electronic store is selling a LED 3D television for R15000. He decides to buy the TV on hire purchase. A deposit of 15% is required and thereafter interest will be calculated using Simple Interest at 7% for 2 years.

4.2.1 Calculate the deposit [2]

$$\frac{15}{100} \times \frac{15000}{1} \checkmark$$

$$= 2250 \checkmark$$

4.2.2 Calculate the amount owing after the deposit is paid [2]

$$15000 - 2250 \checkmark$$

$$= 12750 \checkmark$$

4.2.3 Calculate the interest charged on the TV [2]

$$SI = \frac{12750 \times 7 \times 2}{100} \checkmark$$

$$= 1785 \checkmark$$

4.2.4 Calculate how much Wayne will pay after 2 years [1]

$$1785 + 12750$$

$$= 14535 \checkmark$$

4.2.5 Calculate Wayne's monthly instalment for the TV [2]

$$\frac{14535}{24} \checkmark$$

$$= 605,63 \checkmark$$

Question Five

Multiply

5.1 $6(2p + 1) - 3p - 2$

$$12p + 6 - 3p - 2 \checkmark$$

$$9p + 4 \checkmark$$

[2]

5.2 $(p - 3)(p - 7)$

$$p^2 - 7p - 3p + 21$$

$$p^2 - 10p + 21 \checkmark$$

[3]

5.3 $(3k - 2)(3k + 2)$

$9k^2 - 4$

[2]

5.4 $(4 - 3a)^2$

$(4 - 3a)(4 - 3a)$

$= 16 - 12a - 12a + 9a^2$

$= 16 - 24a + 9a^2$ [3]

Question Six

Factorise fully

6.1 $4ab - 8ac - 12ad$

$4a(b - 2c - 3d)$

[2]

6.2 $x^2 - 144$

$(x + 12)(x - 12)$

[2]

6.3 $x^2 - 14x + 45$

$(x - 9)(x - 5)$

[2]

6.4 $2y^2 + 14y + 20$

$2(y^2 + 7y + 10)$

$2(y + 2)(y + 5)$

[3]

Question Seven

Solve for x

7.1 $4(x - 3) = 6(2x - 4) - 4$

$4x - 12 = 12x - 24 - 4$

$4(-12)x = -24 - 4 + 12$

$-8x = -16$

$x = +2$

[4]

7.2 $\frac{x}{4} - 3 = 8$

$\frac{x}{4} = 8 + 3$

$\frac{x}{4} = 11$

$x = 11 \times 4$

$x = 44$

[3]

7.3 $2^{x+1} = 16$

$2^{x+1} = 2^4$

$x + 1 = 4$

$x = 4 - 1$

$x = 3$

[3]

Question Eight

Calculate:

if $x = 2$ find the value of

$3x^2 + 5x - 7$

$3(2)^2 + 5(2) - 7$

$3(4) + 10 - 7$

$12 + 10 - 7$

15

[4]

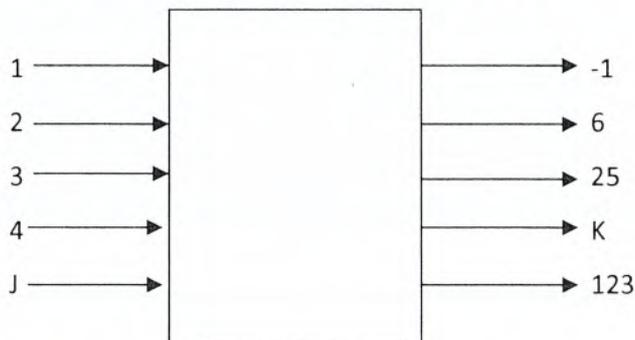
Question Eight

Complete the following:

8.1 5; 8; 11; 14; 17 ✓ [1]

8.2 1; 3; 6; 10; 15; 21 ✓ [1]

Use the flow diagram to answer the questions below



8.1 Determine the output K.

62 ✓✓

[2]

8.2 Determine the input J.

5 ✓✓

[2]

8.3 Write in words the relationship between the input and output.

cube the input and subtract 2 ✓✓

[2]

Question Nine:

Solve the following problem using an equation.

“the sum of three consecutive even integers is equal to 78”. Find the numbers. (Show all working)

$x + x + 1 + x + 2 = 78$ ✓✓

$3x = 78 - 3$

$\frac{3x}{3} = \frac{75}{3}$ ✓

25, 26, 27

$x = 25$ ✓

[4]