

2015 GRADE 9 JUNE EXAMINATION MEMORANDUM

KEY

a = accuracy mark

ca = continued accuracy mark

QUESTION1 [20 Marks]

1.1	D	✓✓ a	answer	(2)
1.2	B	✓✓ a	answer	(2)
1.3	C	✓✓ a	answer	(2)
1.4	B	✓✓ a	answer	(2)
1.5	C	✓✓ a	answer	(2)
1.6	C	✓✓ a	answer	(2)
1.7	B	✓✓ a	answer	(2)
1.8	A	✓ ✓a	answer	(2)
1.9	D	✓✓ a	answer	(2)
1.10	A	✓✓ a	answer	(2)

QUESTION 2 [18 Marks]

2.1	The number is 12	✓ a	Answer	(1)
2.2	$0,0000605 = \mathbf{6,05 \times 10^{-5}}$	✓ a	Answer	(1)
2.3	$\frac{3}{5} \times 30$ = 18 litres of red paint is needed	✓ a	Concept of ratio	
		✓ a	Answer	(2)
			(Answer only: 1 mark)	
2.4	$\frac{47.5}{9.5} \times 100$ = 500 kilograms of chips	✓a	Concept of proportion	
		✓a	Answer	(2)
			(Answer only: 1 mark)	
2.5	Mr Ndlovu's speed: $\frac{720}{7} = 102,86 \text{ km/h}$ Mrs Moyo's speed: $\frac{1540}{15} = 102,67 \text{ km/h}$ Mr Ndlovu has a higher average speed.	✓a	Both calculations	
		✓ca	Conclusion	(2)
			(Answer only: 1 mark)	

QUESTION 2 CONTINUED

2.6.1	$A = P(1 + in)$ $= 35\,000(1 + 0,14 \times 5)$ $= R59\,500$	<p>✓a Correct formula</p> <p>✓a Correct substitution</p> <p>✓ca Answer (3)</p> <p>Incorrect formula: 1 mark for the substitution of i, n and P. (1)</p> <p>(1)</p>
2.6.2	<p>Percentage of loan $= \frac{3.25}{5} \times 100$</p> <p>$= 65\%$</p> <p>OR</p> <p>Percentage of loan $= \frac{39}{60} \times 100$</p> <p>$= 65\%$</p> <p>OR:</p> <p>Amount paid in 39 months $= \frac{59500}{60} \times 39$</p> <p>$= R38\,675$</p> <p>Percentage paid $= \frac{38675}{59500} \times 100$</p> <p>$= 65\%$</p>	<p>✓a Concept</p> <p>✓ca Answer (2)</p> <p>✓a Concept</p> <p>✓ca Answer</p> <p>✓a Concept</p> <p>✓ca Answer</p>
2.7	$A = (1 + i)^n$ $= 7\,500(1 + 0,11)^3$ $= R10\,257,23$	<p>✓a Correct formula</p> <p>✓a Correct substitution</p> <p>✓ca Answer (3)</p> <p>Incorrect formula: 1 mark for the substitution of i, n and P. (1)</p>
2.8	$97 \times 53 = 5141$ $95 \times 73 = 6935$ $93 \times 75 = 6975$ <p>The numbers are 93 and 75</p>	<p>✓a Reasonable comparative calculations shown</p> <p>✓a Conclusion (2)</p>

QUESTION 3 [16 Marks]

3.1.1	$(-4x^3)^2$ $= 16x^6$	✓a 1 mark for co-efficient i.e. 16 ✓a 1 mark for the power i.e. x^6 (2)
3.1.2	$\frac{p^{-3}}{p^{-5}}$ $= p^2$	✓a Answer (1)
3.1.3	$4p - \frac{12p^3q^0}{6p^2}$ $= 4p - 2p$ $= 2p$	✓a Simplification of fraction i.e. $2p$ ✓ca Answer: Adding like terms. (2)
3.2.1	$3(x^2 + 3) + 2x(x + 1)$ $= 3x^2 + 9 + 2x^2 + 2x$ $= 5x^2 + 2x + 9$	✓a ✓a Distributive law for both terms ✓ca Answer: adding like terms. (3)
3.2.2	$(a - 2)(3 + 2a)$ $= 3a + 2a^2 - 6 - 4a$ $= 2a^2 - a - 6$	✓a ✓ca Distributive law ✓ca Answer: Adding like terms (3)
3.2.3	$4a^2 + 2a - (a - 2)^2$ $= 4a^2 + 2a - (a^2 - 4a + 4)$ $= 4a^2 + 2a - a^2 + 4a - 4$ $= 3a^2 + 6a - 4$	✓a Squaring the binomial ✓ca Multiplying through by -1 ✓ca Answer: Adding like terms (3)
3.3	$x^2 - ax + 5 = (x - 5)(x + b)$ $x^2 - ax + 5 = x^2 - 5x + bx - 5b$ $\therefore \mathbf{b} = -1 \text{ and } \mathbf{a} = 6$	✓a ✓a Value of a and b (2)

QUESTION 4 [14 Marks]

4.1	$\frac{1}{5}x - 1 = 10$ $1x - 5 = 50$ $x = 55$ <p>OR</p> $\frac{1}{5}x - 1 = 10$ $\frac{1}{5}x = 11$ $x = 55$	<p>✓a Common denominator of 5</p> <p>✓ca Answer (2)</p> <p>✓a Adding 1 to both sides</p> <p>✓ca Multiplying both sides by 5</p>
4.2	$x^3 = -64$ $x = -4$	<p>✓a Answer (1)</p>
4.3	$\frac{2x-3}{2} + \frac{2x}{3} = 1$ $\frac{3(2x-3) + 2(2x)}{6} = \frac{6}{6}$ $6x - 9 + 4x = 6$ $10x = 15$ $x = 1,5 \text{ or } \frac{3}{2}$	<p>✓a Creating a common denominator Not nec. to show the denominator.</p> <p>✓ca Distribution</p> <p>✓ca Collecting like terms</p> <p>✓ca Answer</p> <p>Marking should stop after the second error i.e. if the creation of the common denominator and the continued distribution are both incorrect. (4)</p>
4.4	$2^x - 1 = 31$ $2^x = 32$ $2^x = 2^5$ $x = 5$	<p>✓a Adding 1 to both sides</p> <p>✓ca Writing RHS as a power of 2</p> <p>✓ca Answer (3)</p>
4.5	$x(x - 3) = (x - 1)(x + 1)$ $x^2 - 3x = x^2 - 1$ $-3x = -1$ $x = \frac{1}{3}$	<p>✓a ✓a Distribution on each side</p> <p>✓ca Subtracting x^2 from both sides</p> <p>✓ca Answer (4)</p>

QUESTION 5 [5 Marks]

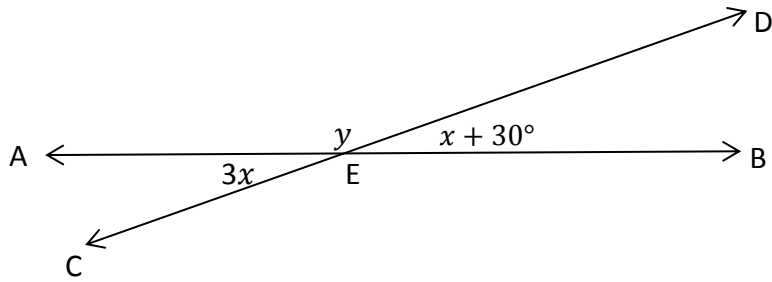
5.1	Missing numbers are 28 and 44	✓a ✓a One mark per answer (2)
5.2	Correct formula is $y = 8x - 4$	✓a Answer (1)
5.3	$y = 8x - 4$ $92 = 8x - 4$ $96 = 8x$ $12 = x$ Shape number 12 consists of 92 sticks If the formula $y = 3x + 1$ is chosen in Q 5.2: $y = 3x + 1$ $92 = 3x + 1$	✓a Subst. of $y = 92$ ✓a Correct answer (2) (Answer only: 1 mark) ✓ca Subst. of $y = 92$ No further marks as x must be a natural number.

QUESTION 6 [4 Marks]

6.1.1	They are all quadrilaterals. OR They are all 4 sided figures. OR The sum of the interior angles of each of the figures is 360° . OR They are all closed figures	✓a Any correct answer (1)
6.1.2	A kite	✓a Answer (1)
6.1.3	A square and a rhombus	✓a One mark for both answers. (1)
6.2	$\triangle DEF$ and $\triangle KHG$	✓a Answer. Order of vertices irrelevant (1) If the answer is written mathematically i.e. $\triangle DEF \equiv \triangle KHG$ then the order must be correct.

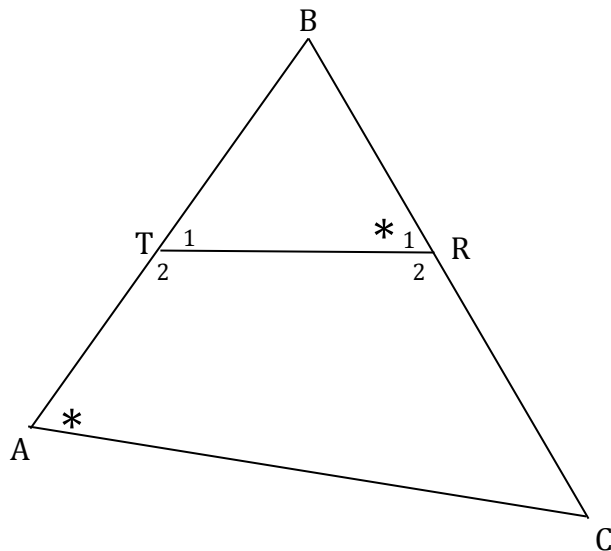
QUESTION 7 [23 Marks]

7.1



	Statement	Reason	
7.1.1	$3x = x + 30^\circ$ $2x = 30^\circ$ $x = 15$	Vertically opposite angles	✓a Statement ✓a Reason ✓ca Answer: Calculation (3)
7.1.2	$3x + y = 180^\circ$ $3(15^\circ) + y = 180^\circ$ $y = 135^\circ$ OR $x + 30^\circ + y = 180^\circ$ $15^\circ + 30^\circ + y = 180^\circ$ $y = 135^\circ$	Adj. angles on a straight line Adj. angles on a straight line	✓a Statement ✓a Reason ✓ca Answer: Calculation (3) ✓a Statement ✓a Reason ✓ca Answer: Calculation

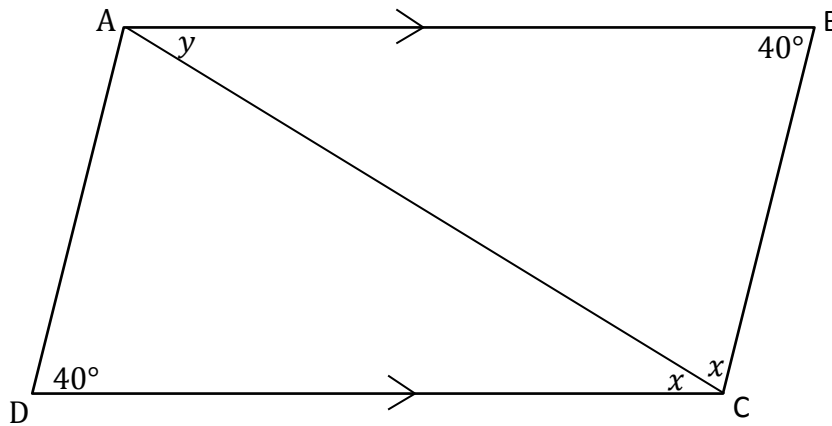
7.2



	Statement	Reason	
7.2	In $\triangle ABC$ and $\triangle RBT$ $\hat{A} = \hat{R}_1$ $\hat{B} = \hat{B}$ $\hat{C} = \hat{T}_1$ $\therefore \triangle ABC \parallel \triangle RBT$	Given Common Interior angles of triangle OR Sum of angles in triangle AAA	✓a Statement and reason ✓a Statement and reason ✓a Statement and reason ✓a Reason (4)

QUESTION 7 CONTINUED

7.3



	Statement	Reason	
7.3.1	$40^\circ + 2x = 180^\circ$ $2x = 140^\circ$ $x = 70^\circ$	Co-interior angles on AB//DC	✓a Statement ✓a Reason ✓ca Answer: Calculation (3)
7.3.2	$x = y$ $y = 70^\circ$ OR $x + y + 40^\circ = 180^\circ$ $70^\circ + y + 40^\circ = 180^\circ$ $y = 70^\circ$	Alternate angles on AB//DC Interior angles of triangle	✓a Reason ✓ca Answer ✓a Statement and reason ✓ca Answer: Calculation (2)
7.3.3	$x = 70^\circ$ $\therefore x + x + 40^\circ = 180^\circ$ $\therefore AD//CB$ OR $\widehat{DAC} = 70^\circ$ $\widehat{ACB} = 70^\circ$ $\therefore AD//CB$	Proved above Co-interior angles are supplementary Interior angles of a triangle Both equal 70° Alternate angles are equal	✓a Statement and reason ✓a Statement ✓a Reason (3) ✓a Statement and reason ✓a Statement and reason ✓a Reason

QUESTION 7 CONTINUED