

GRADE 8 - JUNE 2012 MEMO [150]

TASK 1:

- a) 20 ✓
- b) 1 500 000 000 ✓
- c) 64 ✓
- d) 15 ✓
- e) 3000 ✓
- f) 2016 ✓
- g) 2019 ✓
- h) 13 ✓

(8)

TASK 2:

a)
$$\begin{array}{r} 2 \overline{) 252} \\ \underline{2} \\ 3 \\ \underline{3} \\ 7 \\ \underline{7} \\ 1 \end{array}$$

$252 = 2^2 \cdot 3^2 \cdot 7$

- ✓ first step any method
- ✓ second step any method
- ✓ final answer

(4)

b) $LCM = 2^3 \cdot 3^2 \cdot 5^4 \cdot 7 \cdot 11 \cdot 47$

(3)

c) On sheet

TASK 3:

- a) i) A = 20 ✓
- B = 40 ✓
- C = 16 ✓
- D = ~~20~~ ✓

(4)

ii) 28 ✓

(2)

4n ✓

(2)

iii) $4(n-1)$ OR $4n-4$ ✓

c) 841 ✓

(2)

TASK 4:

b) $A = \frac{2(2)^3}{(2^2+1)^2}$ ✓
 $= \frac{16}{25}$ ✓

(3)

c) NO - sum of digits (26) not ÷ by 3 ✓

(2)

ii) Yes - ends in zero ✓

(2)

iii) $T = \frac{2897000}{500}$ ✓
 $= 5794$ ✓

(1)

iv) W = 200 ✓

(1)

TASK 5:

a) $w+w = 2w$ ✓

b) $5x+5$ DNS ✓

c) $9y-y = 8y$ ✓

(4)

d) $8z-8$ DNS ✓

(1)

e) $9a-7a+3a = 5a$ ✓

(2)

f) $5b-6-7b+10 = -2b+4$ ✓

(2)

g) $\frac{14c-20}{2} = 7c-10$ ✓

(3)

h) $3(d+2)+4(2d-3) = 3d+6+8d-12 = 11d-6$ ✓

(4)

i) $e \times 7 + 2 \times e \times 4 - 4 \div 2 + 3(2+3 \times 2) = 7e + 8e - 2 + 24 = 15e + 22$ ✓

(3)

j) $\frac{1}{2}(6f-18) + \frac{3}{4}(4f+8) = 3f-9+3f+6 = 6f-3$ ✓

k) $12 \times m - 27m \div 3 - 8(m-7) + \frac{6m-54m+12m}{2} = 12m - 9m - 8m + 56 + 11m + \frac{6+3 \times 2}{4} - \frac{2m-10}{8} - 4! - 4(m+10) + 3 - m + 5 - 24 - 4m - 40 = m$ ✓ All or nothing

(2)

TASK 6:

a) $3a=60 \therefore a=20$ ✓

(3)

b) $b-12=10 \therefore b=22$ ✓

(2)

c) $\frac{c}{6}=2 \therefore c=12$ ✓

(3)

d) $4d-15=-3 \therefore 4d=12 \therefore d=3$ ✓

e) $5e+6=3e-8 \therefore 2e=-14 \therefore e=-7$ ✓

$$f) \frac{2f-7}{3} - 2 = 9$$

$$\frac{2f-7}{3} = 11 \checkmark$$

$$2f-7 = 33 \checkmark$$

$$2f = 40$$

$$f = 20 \checkmark$$

(3)

$$g) 5g - 2g + 8 = 3(g+2) + 2$$

$$3g + 8 \checkmark = 3g + 8 \checkmark$$

Identity - true for all values of g (3)

$$h) 2(h-5) - (h+1) = 3 + 2(4h-1)$$

$$2h - 10 - h - 1 = 3 + 8h - 2 \checkmark$$

$$h - 11 = 8h + 1$$

$$7h = -12$$

$$h = \frac{-12}{7} \checkmark$$

(5)

TASK 7:

$$a) A = (-4; 5) \checkmark$$

(2)

$$b) B = (0; 1) \checkmark$$

(2)

c) On sheet

d) Rotation about the origin (1)

TASK 8:

$$a) i) A = (-6; 2) \checkmark$$

$$A' = (-2; 0) \checkmark$$

(4)

ii) Translation - 4 units right; 2 down (2)

$$iii) (x; y) \rightarrow (x+4; y-2) \checkmark$$

(2)

$$b) i) A'' = (6; 2) \checkmark$$

(2)

ii) Reflection in y -axis (2)

$$iii) (x; y) \rightarrow (-x; y) \checkmark$$

(2)

$$c) i) A''' = (-2; -6) \checkmark$$

(2)

ii) Rotation - 90° anti-clockwise about origin (2)

$$iii) (x; y) \rightarrow (-y; x) \checkmark$$

(2)

TASK 9:

$$a) 1 \times 10^{10} \text{ or just } 10^{10} \checkmark$$

(1)

$$b) 1,6 \times 10^{11} \checkmark$$

(1)

$$c) 2,998 \times 10^5 \checkmark$$

(2)

$$d) 31\,560\,000 \checkmark$$

(1)

$$e) i) 17 \checkmark$$

(1)

$$ii) \frac{2 \times 10^{13}}{10^6}$$

$$= 2 \times 10^7$$

$$= 20\,000\,000 \text{ km} \checkmark$$

(1)

TASK 10:

$$a) FC = 5 \text{ cm} \text{ (Pythag triple)} \quad (2)$$

$$b) 5^2 + 5^2 = 13^2 \text{ (Pythag in } \triangle FSC)$$

$$5^2 = 144$$

$$5C = 12 \checkmark$$

or Pythag triple (3)

$$c) ZY^2 = 4^2 + 9^2 \checkmark \text{ (Pythag in } \triangle XYZ)$$

$$ZY^2 = 16 + 81$$

$$= 97$$

$$\therefore ZY = \sqrt{97} \checkmark$$

(3)

TASK 11:

House Number: 41

Tel. No. : 65 231 \checkmark

(1)

[150]

Answer Sheet

Name:

Task 2c)

Number	Prime	Real	Non-Real	Rational	Irrational	Multiple of 2
53	✓	✓	✗	✓	✗	✗
$\sqrt{-25}$	✗	✗	✓	✗	✗	✗
-1,3	✗	✓	✗	✓	✗	✗
$\sqrt{1\frac{7}{9}}$	✗	✓	✗	✓	✗	✗
256	✗	✓	✗	✓	✗	✓

(7)

Task 3b)

Building Number	1	2	3	4	5	10	n
Number of squares wide	1	3	5	7	9	19	$2n-1$
Perimeter	4	12	20	28	36	76	$8n-4$ or equivalent

(6)

Task 3d)

Building Number	1	2	3	4	5	10	n
Number of pillars (dots)	4	12	24	40	60	220	$2n^2+2n$

(4)

Task 4a)

a	5	6	-1	0	$\frac{3}{4}$
b	2	8	-1	0	$\frac{5}{6}$
c	-8	9	5	-1	$\frac{8}{6}$
$3a-2(b+1)$	9		-3	-2	
$a-c$	13	-3	-6		$-\frac{1}{12}$
$a \times b$			1	0	$\frac{5}{8}$
$\frac{a}{b}$				undefined	$\frac{9}{10}$
$6b^2$	24		6		

(14)

Answer Sheet

Name:

Task 3c)

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$\sqrt{-25}$	✗	✗	✓	✗	✗	✗
-1,3	✗	✓	✗	✓	✗	✗
$\sqrt{1\frac{7}{9}}$	✗	✓	✗	✓	✗	✗
256	✗	✓	✗	✓	✗	✓

(7)

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Building Number	1	2	3	4	5	10	n
Number of squares wide	1	3	5	7	9	19	$2n-1$
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(6)

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(4)

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b	2	8	-1	0	$\frac{5}{6}$
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$3a-2(b+1)$	9		-3	-2	
$a-c$	13	-3	-6		$-\frac{1}{12}$
$a \times b$			1	0	$\frac{5}{8}$
$\frac{a}{b}$				Undefined	$\frac{9}{10}$
$6b^2$	24		6		

(14)