Name: _			·
Teacher:	:	•	_

# **ROSEBANK COLLEGE**



# YEAR 10 **TERM I TEST**

### **COMMON MATHEMATICS**

Time Allowed:

I Period

Topics:

Surface Area and Volume; Ratio

Weight:

20%

Instructions to Students: Calculators permitted

Show any necessary working

#### Outcomes to be assessed:

- MS4.2 Calculates surface area of rectangular and triangular prisms and volume of right prisms and cylinders
- MS5.2.2 Applies formulae to find the surface area of right cylinders and volume of right pyramids, cones and spheres, and calculates the surface area and volume of composite solids
- Operates with fractions, decimals, percentages and ratios NS4.3

Name:	
Teacher:	

SECTION 1:

SHORT ANSWER QUESTIONS

All linear units are in centimetres, unless otherwise stated.  SURFACE AREA AND VOLUME			
Questions	Working	Answer	Marks
I. Name the solid formed	by each net.		
a)		a)	
b)		b);	
, i			
2a. What is the total surface Each side is 4 cm	e area of the <b>closed cube</b> below?	Surface Are	a
			<del>.</del>
			. /
<b>2b.</b> What is the total surface a with base dimensions 5 cm and	area of this closed rectangular prism d 6 cm; prism height = 8 cm	Surface Are	ea V

Questions	Workin	g Answer	Marks
3. Find the surface area of this cylinder with	Curved Surface Area = (Use $C = 2\pi rh$ )	Total Surface Area =	
no lid (to the nearest cm²). Base radius = 6 cm			
height = <b>8 cm</b>	·		
	Base Area (circle) =		
8	·		
And the second of the second o	-		
4. Complete the	2 Triangles =	Total surface	
working steps shown to find the surface area of			
this triangular prism.	Back Rectangle =		
(all units are in centimetres)			
5	·		•
	Front Rectangle =		
3			
4 10	Base Rectangle =		. ,
	* 1		
	, .		
5. Find the volume of		of Volume =	
this triangular prism. (all centimetres)	base and H is height of the prism		
	•		<b>v</b>
5			
3			
4 10			
•			
:			

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Questions	Working	Answer Marks
6. Find the volume of this pyramid if its base area is 12.5 cm <sup>2</sup> and height is 5 cm.		Volume =
Formula V = 1/3 A x h		
		2
a) What is the capacity, in millilitres, of this solid, if its volume is 600 cm <sup>3</sup> ?		a)
		b)
b) Convert this capacity to <b>Litres</b> .		
8. Find the volume of		Volume =
the hemisphere below, to one decimal place, if the diameter is 12 cm.	7	
Note: The volume of a sphere is given by:		
$V = \frac{4}{3}\pi r^3.$	ę.	,
	s .	
		2

Questions		Working	Answer Marks
9. This regular prism has an end which is a semicircle joined to a square. Find the shaded end area and hence find the prism's volume, correct to (1), decimal place. Each side of the square is 10 cm.	End Area =		a) End area =
30 cm	Volume =	/	b) Volume =
10. The cone shaped storage tank below is completely filled with grain. All units are in metres. Top radius is 5m and height is 3m			Volume of Cone =
Find the volume of the			·
tank to the nearest $m^3$ . Note: The volume of a cone is given by: $V = \frac{1}{3}\pi r^2 h$			2
II. Find the height of the cone (to the nearest cm) Slant height = 39 cm Base Radius = 15 cm			Height =
15			2

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**SECTION 2:** 

Name: Teacher: SHORT ANSWER QUESTIONS

Questions	Working	Answer Marks
A jar has red and blue ollies. If there are 6 red or every 5 blue lollies in the jar:  Peol of Find how many green	a)	a)
ollies if there are 65 blue. Find how many red ollies if the total number of red and green follies in the jar is 13	<b>b</b> 0	b)
2.  a) If you mix 7½ cups of flour with 2½ cups of milk, what is the ratio of flour to	a)	a)
milk in its simplest form?  b) If you mix 25 grams  of salt with every kilogram  of meat; what is the simplified  ratio of salt to meat?	b)	<b>b)</b>
3. A rectangle has a length of 10 cm and a breadth of 5 cm. Find the simplified ratio of the length to the perimeter.	•	
4. The lengths of the sides of a triangle are in the ratio 2:3:4. If the perimeter of the triangle is 45 cm, find the length of the	•	
shortest side.  5. Express 20 minutes to 4 hours as a ratio in its simplest form.		

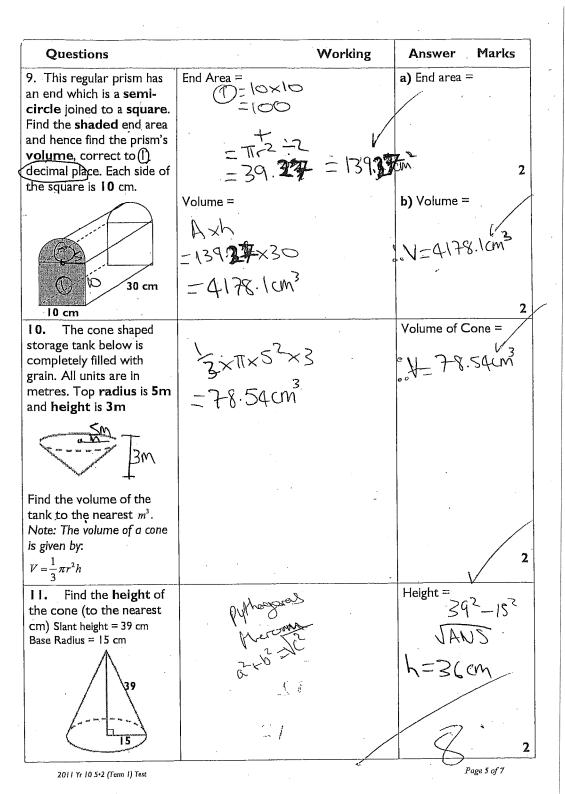
ANSWERS Name: Teacher:

SHORT ANSWER QUESTIONS SECTION I:

All linear units are in centimetres, unless otherwise stated.  SURFACE AREA AND VOLUME			
Questions	Working	Answer	Marks
. Name the solid formed by each i	nët.		
		a) Cylinde	
		triangula Prism	lear /
What is the total surface area of Each side is 4 cm	the closed cube below? $4 \times 4 = 16 \times 6$ $= 96$	Surface Area	V
<b>2b.</b> What is the total surface area of the with base dimensions 5 cm and 6 cm; p	nis closed rectangular prism brism height = 8 cm $(6 \times 8) \times 2 = 96$ $(6 \times 5) \times 2 = 60$ $(8 \times 5) \times 2 = 80$	Surface Are	
5	(8×2)×5=80		

Questions		Working	Answer i	Marks
3. Find the surface area of this cylinder with no lid (to the nearest cm²).  Base radius = 6 cm height = 8 cm	Curved Surface Area = $(Use\ C = 2\pi rh)$ $2 \times \Pi \times 6 \times 8$ $-301 \cdot 66$		Total Surface Area =	
8	Base Area (circle) = Tx  5113.	-113.1 =	414.7cm	3
4. Complete the working steps shown to find the surface area of this triangular prism. (all units are in centimetres)	2 Triangles = $\frac{1}{2}6xh$ = $\frac{1}{2}$ Back Rectangle = $\frac{3}{2}$ Front Rectangle = $\frac{5}{2}$	=36 .5	Total surface a	50 +40
4	4x10 = 0	40		3
5. Find the volume of this triangular prism. (all centimetres)	Use V = AH, where A is base and H is height of t $V = 2 \times 3 \times 4 \times 4$	he prism	Volume =	
			A	3

Questions	Working	Answer Marks
	T T OT KING	Volume =
his pyramid if its base area is 12.5 cm <sup>2</sup> and a leight is 5 cm.	3×12.5×5	1.0=20.83 cm
	=20.83cm	
Formula V = 1/3 A × h		2
7.		<del>                                     </del>
a) What is the capacity, in millilitres, of this solid, if its volume is 600 cm <sup>3</sup> ?	A)=600 ml B=0.6L	a) (00ml/
	B=0.6L	
		b) O.((
b) Convert this capacity to <b>Litres</b> .		
D E 111 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		Volume =
8. Find the volume of the hemisphere below, to one decimal place, if the diameter is 12 cm.	$\frac{4}{3} \times \pi \times 6^{3} - 2$ = 452.39 cm <sup>3</sup>	· N-A-52.39
Note: The volume of a sphere is given by: $V = \frac{4}{2}\pi r^3.$	=452.34 cm <sup>2</sup>	
$v = \frac{\pi}{3}\pi r$		



## Name:

SECTION 2:

Teacher: SHORT ANSWER QUESTIONS

	RATIOS	
Questions Freeh	green the Working	Answer Marks
I. A jar has red and green lollies. If there are 6 green to for every 5 blue marbles in the jar:	a) 6-5-1-2 × 65	a)
<ul> <li>a) Find how many green lollies if there are 65 blue.</li> <li>b) Find how many red lollies if the total number of red and green lollies in the jar is 132.</li> </ul>	b) - 78	b) (1)
a) If you mix 7½ cups of flour with 2½ cups of milk, what is the ratio of flour to milk in its simplest form?	a) 7.5:2.5 =7.5-25=3:1	a) (2)
b) If you mix 25 grams of salt with every kilogram of meat; what is the simplified ratio of salt to meat?	b)0.25:1 X	b) 25g: 1000g
3. A rectangle has a length of 10 cm and a breadth of 5 cm. Find the simplified ratio of the length to the perimeter.	1 5 = 1:2	length: perimeter 10:30  1:3
4. The lengths of the sides of a triangle are in the ratio 2:3:4. If the perimeter of the triangle is 45 cm, find the length of the shortest side.	2.3:4	: Shockest side
5. Express 20 minutes to 4 hours as a ratio in its simplest form.	=1:12 / or }	2