Name:	 	
Teacher:		

SYDNEY TECHNICAL HIGH SCHOOL



MATHEMATICS YEAR 8 YEARLY EXAM 2010

Time Allowed: 70 minutes

Instructions:

Calculators may be used

Show all working and answers in spaces provided

Question		Marks
A	Rates and Ratio	/16
В	Statistics	/14
С	Equations	/16
D	Area, Volume, Surface Area	/15
Ε	Working Mathematically	/10
	TOTAL	/71

Section A: RATES AND RATIOS – 16 marks

L			Answers
	 Mrs Robinson buys flowers for \$4 per b 	unch and	
	sells them for \$10 per bunch. What is th	ne ratio of:	
	(a) Cost price to selling price	(1 mark)	(a)
	(b) Cost price to profit	(1 mark)	(b)
	2. Simplify the following ratios		
	(a) 112:64	(1 mark)	
	(b) 4.2:1.8	(1 mark)	(a)
	(c) 3:1 ⁴ / ₅	(1 mark)	(b)
	(d) 8ab:12bc	(1 mark)	(c) (d)
		(=	(d)
	3. Divide \$28 in two parts in the ratio 4:3		
	or of the factor 4.3	(1 mark)	
		(± mark)	
	4. Common brass contains copper and zinc		
	ratio 3:2. How much zinc is needed with	276g of	
	copper in order to form brass?	(1 mark)	
•	5. Molly and Tom invest \$6250 and \$5000	in a vear	
	respectively. Their profit in the first year		
	If they share the profit in the same ratio		
	contribution, how much profit does each		
	receive?		
		(2 marks)	
)	6. A rectangular paddock is 96m long and 6	0m wide.	
	What is the scale used if on a drawing the	e	
	paddock is 8cm long and 5cm wide?		
	<u> </u>	(2 marks)	
	7. A speedboat travels at a speed of 240km	/hr. How	
	long will it take the boat to travel 200m?		
	(2 marks)	
	8. The ratio of the populations of Town A ar	nd Town	
	B is 2:3, while the ratio of the population	s of	
	Town B and Town C is 5:3. If the total pop		
	is 19278, find the population of each tow		
	(2	2 marks)	

<u>Section B: STATISTICS – 14 marks</u>

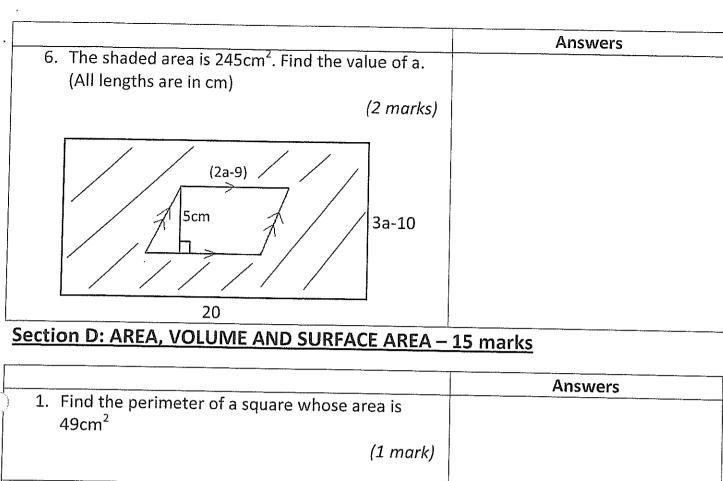
1 a) Complete	the frequen	ov dictribution t	- la la	Answers	
1. a) Complete A class of 30	students wa	ere asked how n	able.		
owned.	Stauciits WC	ore asked now n	iany pets triey		
Number of Pets (x)	Tally	Frequency (f)	fx		
0	-HIT				
1	-##[
2	-HITIIII				
3	1111				
-]]]				
	11	-			
	1				,,
	Total:	Σf=	Σfx=		٠
			(2 marks)		
c) Illustrate th	(as a fraction ne information	n) on by drawing a and use a ruler)	(1 mark) (1 mark) (1 mark) frequency (2 marks)	(ii) (iv)	
	ı g				

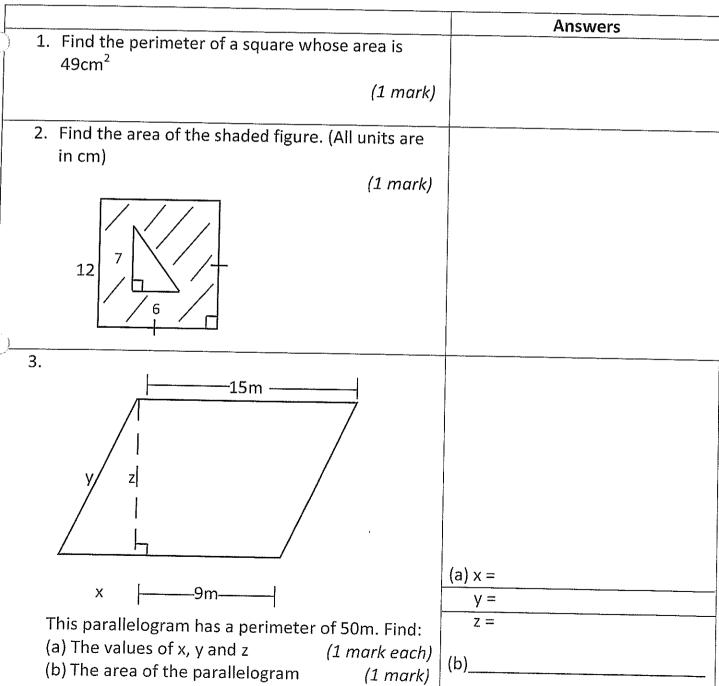
			Answers
2. From t	he Stem and Leaf Plot, find		
Stem	Leaf		
24	27		
25	24668		
26	01359		
28	5668		
(a) Med		(1 mark)	(a)
(b) Mod		(1 mark)	(b)
(c) Rang	ge	(1 mark)	(c)
	an of 5 scores is 14. A sixth o the data set. What is the		
		(2 marks)	

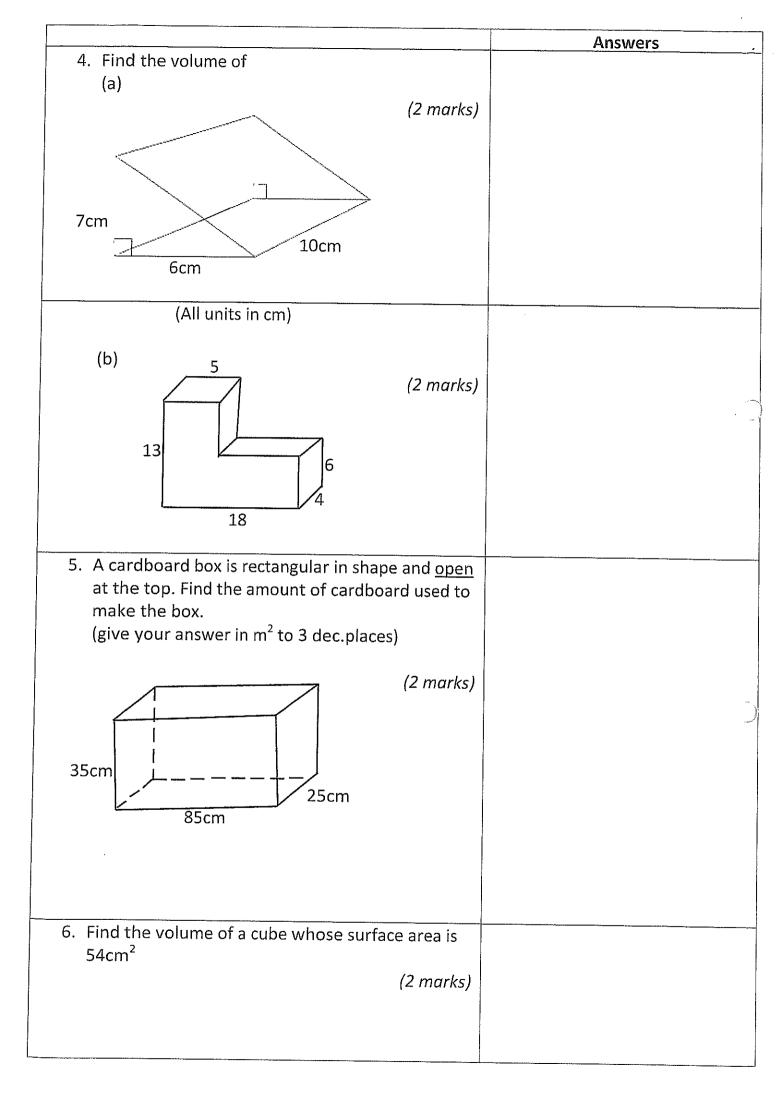
Section C: EQUATIONS – 16 marks

-			Answers
	1. Solve the following equations		
	(a) 2p + 4 = 18	(1 mark)	(a)
	(b) $u - 6 = 9$	(1 mark)	(b)
	(c) 7x + 8 = 5x -12	(2 marks)	(c)
	(d) 7(u+7) – 10u = 5(3–4u)	(2 marks)	(d)

	Answers
2. If $E = mv^2$ find the value of:	,
(a) E when m=8 and v=3 (1 mark)	(a)
(b) V when E = 198 and m=11 (correct to 1 dec.place where V is positive) (1 mark)	(b)
3. The sum of 3 consecutive odd numbers in 57. Find the numbers. Show full working.	
(2 marks)	
4. Form an equation, then solve it to find the value	
of x	
(2 marks)	
(3x-10) cm	
(x+9) cm	
Perimeter=38cm	
5. Solve $4(9-c) \le 16$ and graph the solution set	
on the number line.	
(2 marks)	
0	







	Answers
7. If the side lengths of a rectangular prism are doubled, how many times greater is the volume?	
(1 mark)	
ection E: WORKING MATHEMATICALLY – 10 marks	
	Answers

	Answers
1. Find the value of all pronumerals, giving reasons	
(1 mark each)	
50°	a = Reason:
d° a°x	b = Reason:
68°	c = Reason:
NOT DRAWN TO SCALE	d = Reason:
2. A farmer wishes to construct a fence around a paddock with the given dimensions. 22 m 70 m	
(a) Find the value of x (1 mark) (b) Calculate the perimeter of the paddock (1 mark)	(a)(b)
(c) Determine the cost of fencing the paddock if fencing materials cost \$35 per metre. (1 mark)	(c)

	Answers
 I have some coins in a money box, either 20 cents or 5 cents. I have 6 more 5 cent coins than 20 cent coins. My money is worth \$2.55 altogether. (let x be the number of 20 cent pieces) 	
(a) Write an expression for the number of 5 cent pieces in terms of x (1 mark)	(a)
(b) Form an equation to solve and determine how many of each coin I have. (2 marks)	(b)

Name:	SOL	UT	IONS	
Teacher:				

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• Show all working and answers in spaces provided

Question		Marks
· A	Rates and Ratio	/16
В	Statistics .	/14
С	Equations	/16
D	Area, Volume, Surface Area	/15
Е	Working Mathematically	/10
	TOTAL	/71

Section A: RATES AND RATIOS - 16 marks

1. Mrs Robinson buys flowers for \$4 per bunch and sells them for \$10 per bunch. What is the ratio of: (a) Cost price to selling price (1 mark) (b) Cost price to profit (1 mark) (c) 3.12.64 (d) 4.21.8 (d) 8ab:12bc (d) 8ab:12bc (d) 8ab:12bc (d) 8ab:12bc (d) 8ab:12bc (e) 5.3 (d) 2a.3c 3. Divide \$28 in two parts in the ratio 4:3 (1 mark) (2.5.3 (d) 2a.3c 3. Divide \$28 in two parts in the ratio 4:3 (1 mark) (2.5.3 (d) 2a.3c 4. Common brass contains copper and zinc in the ratio 3:2. How much zinc is needed with 276g of copper in order to form brass? (1 mark) (5. Molly and Tom invest \$6250 and \$5000 in a year respectively. Their profit in the first year is \$8973. If they share the profit in the same ratio as their contribution, how much profit does each one receive? (2 marks) 6. A rectangular paddock is 96m long and 60m wide. What is the scale used if on a drawing the paddock is 8cm long and 5cm wide? (2 marks) 7. A speedboat travels at a speed of 240km/hr. How long will it take the boat to travel 200m? (2 marks) 7. The ratio of the populations of Town A and Town B is 2:3, while the ratio of the population of Town B and Town C is 5:3. If the total population is 19278, find the population of each town. 7. Common brass contains copper and zinc in the ratio of the population of each town. 7. The ratio of the population of each town. 7. The ratio of the population of each town.			Answers
(a) Cost price to selling price (1 mark) (b) Cost price to profit (2 mark) 2. Simplify the following ratios (a) 112:64 (b) 4.2:1.8 (c) 3:1½ (d) 8ab:12bc (d) 8ab:12bc (d) 8ab:12bc (d) 8ab:12bc (1 mark) 4. Common brass contains copper and zinc in the ratio 3:2. How much zinc is needed with 276g of copper in order to form brass? (1 mark) 5. Molly and Tom invest \$6250 and \$5000 in a year respectively. Their profit in the first year is \$8973. If they share the profit in the same ratio as their contribution, how much profit does each one receive? (2 marks) 6. A rectangular paddock is 96m long and 60m wide. What is the scale used if on a drawing the paddock is 8cm long and 5cm wide? (2 marks) 7. A speedboat travels at a speed of 240km/hr. How long will it take the boat to travel 200m? (2 marks) 7. The ratio of the populations of Town A and Town B is 2:3, while the ratio of the populations of Town B and Town C is 5:3. If the total population is 19278, find the population of each town.	1. Mrs Robinson buys flowers for \$4 per b	unch and	
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is 19278, find the population of each town. Toun C - 5103	Town B and Town C is 5:3. If the total pop	ulation	
	is 19278, find the population of each tow	n.	T030 (. 5:00
(2 marks)	<i>,</i> -		100170 - 3103
	(2	: marks)	

Section B: STATISTICS – 14 marks

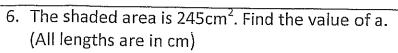
1 -1 0-				Answers
1. a) Com	plete the frequence	cy distribution t	able.	
owned.	of 30 students we	re asked now m	iany pets they	¹
Number of	Pets Tally	Frequency	fx	
(x)		(f)	1/4	
0	-HIT	5	0	
1	-HT11	П	7	
2	-HTIIII	q		-
3	1111		18	-
4		1	12.	- .
5		2	8	
6 .		2	10	
	Total:	7f= 0 c		
	· · ·	Σf= 30	Σfx= L	
b) From t	he table above, c	alculate:	(2 marks)	
(i) Mo		alculate.	(1 mark)	(i) ?
(ii) Ra			(1 mark)	
(iii) M	•		(1 mark)	(iii) 7
(iv) M	ean (as a fraction)		(1 mark)	(iv) 6/30 = 2 30
	te the information		•	130 - 430
9 T histog	ram. (label axes a	nd use a ruler)	requertey	
0		,	(2 marks)	
5			•	
7 +				
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5	10 m			
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2+		*		
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			, , , , , , , , , , , , , , , , , , ,	
0 1	10 mber of p	5 (oc)		
What percenta	nge of students ha	ed either 2 or 3	l netc?	
•	J - 1 - 2 - 4 - 4 - 4 - 11 C		(1 mark)	(d) $43\frac{1}{3}$

			Answers	
2. From t	he Stem and Leaf Plot, f	ind		
Stem_	Leaf			
24	2 7			
25	24668			
26	01359			
28	5668			
(a) Med (b) Mod (c) Rang	e	(1 mark) (1 mark) (1 mark)	(a) 2LD - 5 (b) 256, 286 (c) 46	
	an of 5 scores is 14. A size the data set. What is t		15	:)

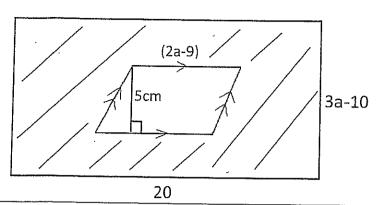
Section C: EQUATIONS – 16 marks

		Answers
 Solve the following equations 	<u> </u>	
(a) 2p + 4 = 18	(1 mark)	(a)
(b) $u - 6 = 9$	(1 mark)	(b) $u = 15$
(c) $7x + 8 = 5x - 12$	(2 marks)	(c) 7.0c-50c = -12-8
(d) 7(u+7) — 10u = 5(3—4u)	(2 marks)	2x = -20 $x = -10$ (d)
	·	(d)

	۶,	Answore
	2. If $E = mv^2$ find the value of:	Answers
	(a) E when m=8 and v=3 (1 mark)	(a) 72
	(b) V when E = 198 and m=11 (correct to 1 dec.place where V is positive) (1 mark)	(b) 4·2
	3. The sum of 3 consecutive odd numbers in 57. Find the numbers. Show full working. (2 marks)	n+n+2+n+4=57 $3n+6=57$ $3n=51$ $n=17$ Numbers are $17,19,21$
A CONTRACT	4. Form an equation, then solve it to find the value of x (2 marks) (3x-10) cm (x+9) cm Perimeter=38cm	30c-10+30c-10+0x+9=39 $70c-11=38$ $70c=49$ $3c=7$
*	5. Solve 4(9-c) ≤ 16 and graph the solution set on the number line. (2 marks)	36-4c≤ 16 -4c ≤-20, c>5



(2 marks)



	Answers
	Rectangle = 60a-200
	parm = 10 a - 45
	Shaded = 50a-155
	50a-155=245
	50 a = 400
-	a=8
ı	

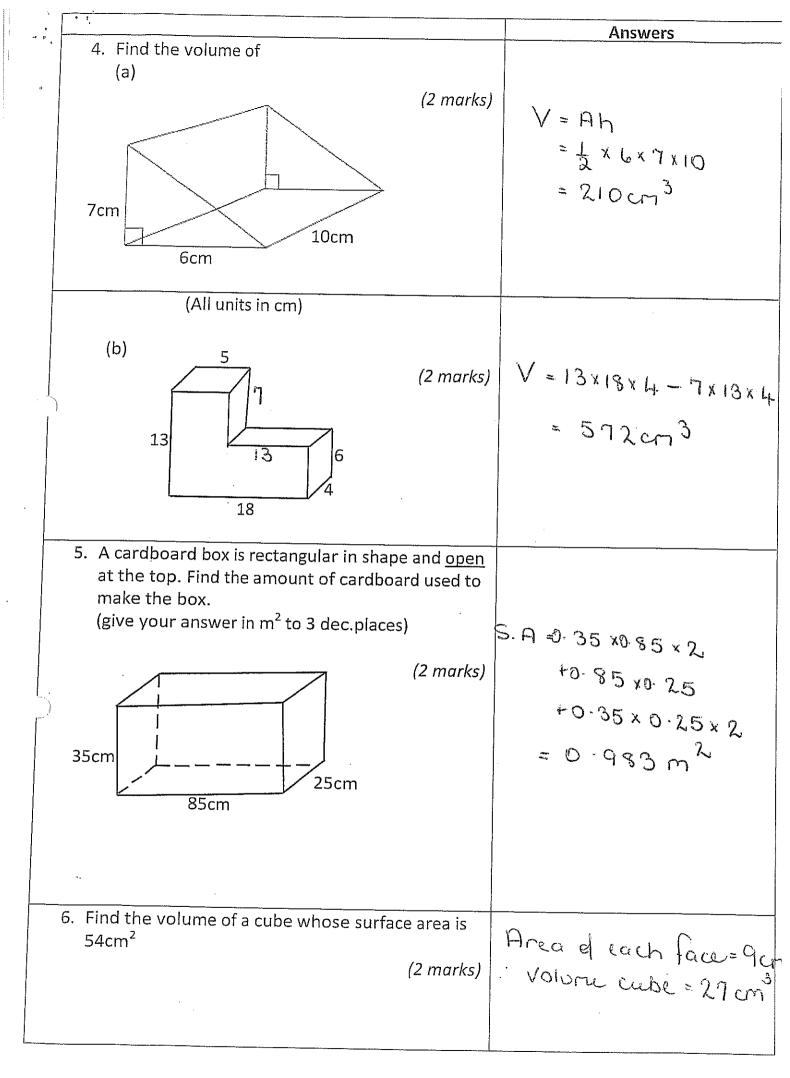
Section D: AREA, VOLUME AND SURFACE AREA - 15 marks

	Answers	
 Find the perimeter of a square whose area is 49cm² (1 mark) 	28 cm	
2. Find the area of the shaded figure. (All units are in cm)		
(1 mark)	$A = 12 \times 12 - \frac{1}{2} \times 7 \times 6$ = 123cm ²	
12 7	= 123cm²	

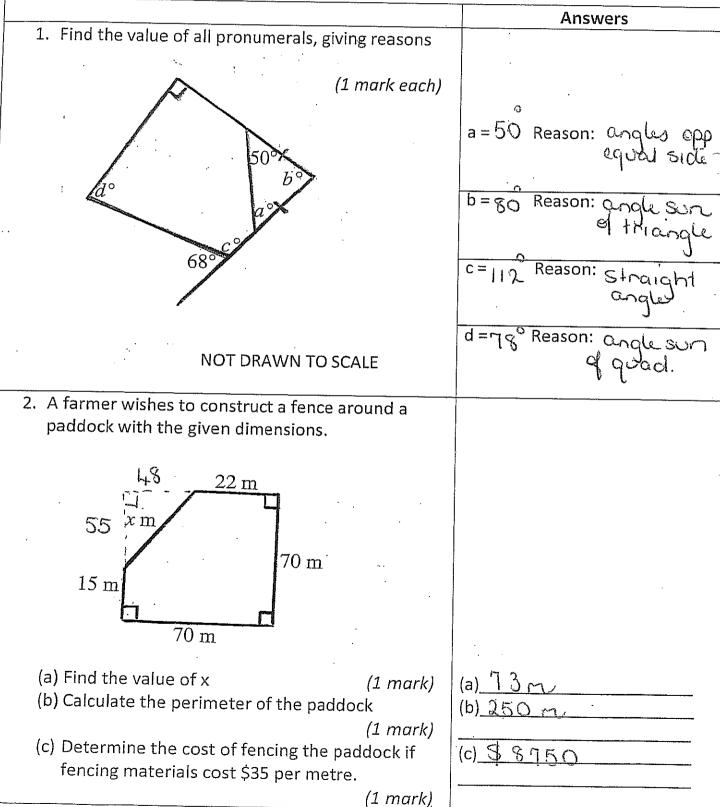
(a) x = 6 cm	
Y=10cm	
z = 8 cm	-
(b) 120 cm ²	

This parallelogram has a perimeter of 50m. Find:

- (a) The values of x, y and z
- (1 mark each)
- (b) The area of the parallelogram
- (1 mark)



	Answers
7. If the side lengths of a rectangular prism are doubled, how many times greater is the volume?	
(1 mark)	8
ection E: WORKING MATHEMATICALLY – 10 marks	



	Answers
 I have some coins in a money box, either 20 cents or 5 cents. I have 6 more 5 cent coins than 20 cent coins. My money is worth \$2.55 altogether. (let x be the number of 20 cent pieces) 	
(a) Write an expression for the number of 5 cent pieces in terms of x (1 mark)	(a) <u>OC+ (</u> e
(b) Form an equation to solve and determine how many of each coin I have. (2 marks)	(b) $20 \propto + 5 (x + 4) = 255$ $25 \propto + 30 = 255$ 3c = 9 9, 20 cent coins and 15, 5 cent coins

. . .

