Name: _____

Teacher: _____

SYDNEY TECHNICAL HIGH SCHOOL

Mathematics

YEAR 8

TERM 3 EXAMINATION

2013

Time Allowed: Section A Multiple Choice

Section B Short Answers

Instructions:

- Working time – 70 Minutes
- Attempt all questions
- Calculators may be used
- Diagrams are not drawn to scale

Section A	Section B	Total
/30	/32	/62

SECTION A

1. Simplify $5x - x - 3y + 6y$

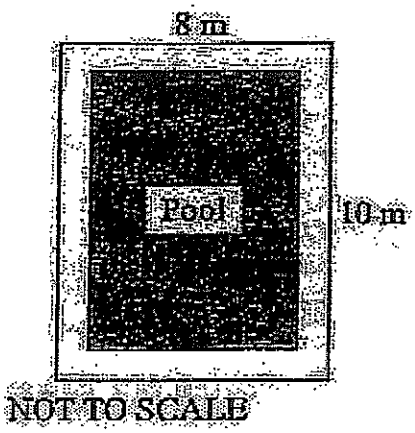
   A. $5 - 9y$ B. $5 + 3y$ C. $4x - 9y$ D. $4x + 3y$

2. Bruce weighs W kg and Ray is 3kg heavier than Bruce. Their total weight (in kg) is:

   A. 3W B. 4W C. W+3 D. 2W+3

3. If Thomas and Jonathan are to divide $9 is the ratio 7:8 respectively, then Jonathan will receive:

   A. $4.20 B. $4.60 C. $4.80 D. $5.40

4. 

A rectangular swimming pool has a tiled path around it. The path is 1 m wide.

The perimeter of the pool in metres is:

(A) 14 (B) 16 (C) 28 (D) 32

5. $3\frac{1}{4}$ written as a percentage is:

   A. 325% B. 3.25% C. 32.5% D. 0.325%

6. If 23 CD's cost $402.50, find the cost of 17 CD's at the same rate

A. $297.50 B. $105 C. $700 D. $391

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7. Which one of the following does <u>not</u> represent side lengths of a right angled triangle

A. 3,4,5 B. 0.3, 0.4, 0.5 C. $\sqrt{3}, \sqrt{4}, \sqrt{5}$ D. $\frac{3}{7}\frac{4}{7}\frac{5}{7}$

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8. The length and breadth of a rectangle are doubled.
What effect does this have on the perimeter and area of the rectangle?

a) Both the perimeter and the area are doubled.
b) Both the perimeter and the area are multiplied by 4.
c) The perimeter is multiplied by 4 and the area is doubled.
d) The perimeter is doubled and the area is multiplied by 4.

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9. A straight line was created using the following table of values

x	0	1	2	3
y	-6	-3	0	3

What are the x- and y- intercepts for this line?

a) x- intercepts = -6 y- intercepts = 2
b) x- intercepts = 0 y- intercepts = 0
c) x- intercepts = 2 y- intercepts = -6
d) x- intercepts = 3 y- intercepts = 3

10. Murray thinks of a number. He finds that his number is reduced to a third of its value when he increases it by 3 then halves the increased value. Which equation represents this information?

A. $\frac{x+3}{2} = \frac{x}{3}$ B. $x + 3 = \frac{x}{3}$ C. $\frac{x}{2} + 3 = \frac{x}{3}$ D. $\frac{x-3}{2} = \frac{x}{3}$

Use the following information to answer questions **11** and **12**

Sharyn surveyed her class to find the number of children in each family. She recorded the data in this table.

Score x	*Frequency* f
1	3
2	5
3	4
4	2
5	2
6	1
7	1

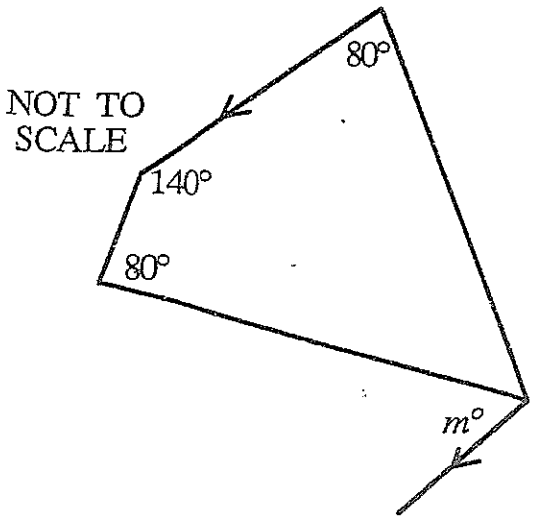
11. What is the score with the highest frequency?

A. 2 B. 3 C. 4 D. 5

12. What is the total number of children in all the families?

A. 7 B. 18 C. 28 D. 56

13.



Find the value of m

(A) 20

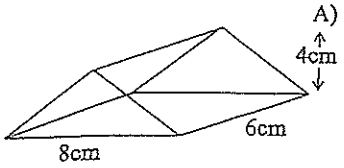
(B) 40

(C) 60

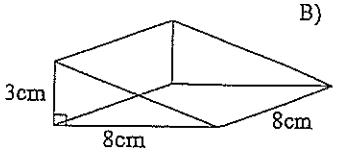
(D) 80

14. The diagram below shows four chocolate blocks. Gloria chose the block which had the largest amount of chocolate. Which one did she choose?

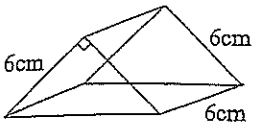
A)



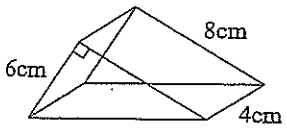
B)



C)



D)



15.

Score	*Frequency*
5	3
6	1
7	2
8	7

For this set of scores, which of the following statements is correct?

A. There are 4 scores and their mean is 6.5
B. There are 4 scores and their mean is 7
C. There are 13 scores and their mean is 6.5
D. There are 13 scores and their mean is 7

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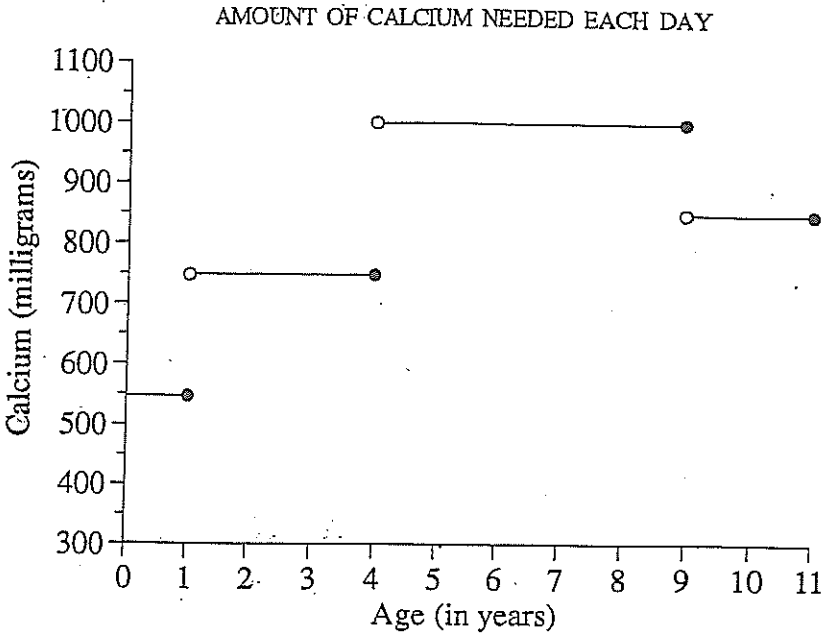
16. If $q = 2p^2 - 3$ and $p = -3$ then q equals:

A. -21 B. 15 C. 33 D. -33

17. The graph below shows how much calcium children need each day.



Jade is 18 months old. Peter is 10 years old.

How much more calcium each day does Peter need then Jade?

(A) 100mg (B) 150mg (C) 250mg (D) 300mg

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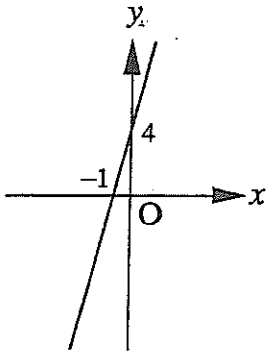
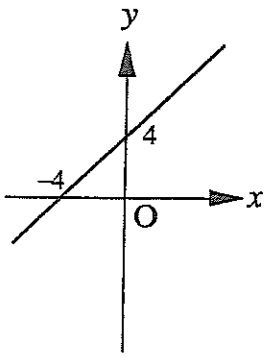
18. Which is the graph of $y = x + 4$?

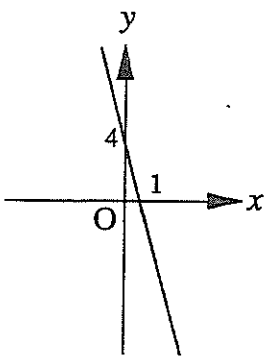
(A)



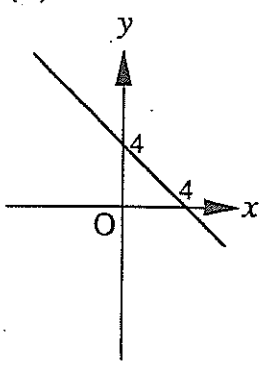
(B)



(C)



(D)



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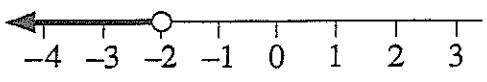
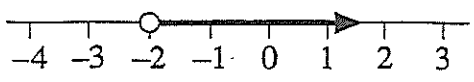
19. The graph that illustrates the solution of $-3x > 6$ is:

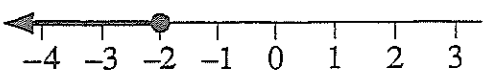
(A)



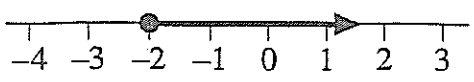
(B)



(C)



(D)



20. Simplify $3x + 2x^0$

(A) $3x$ (B) $3x + 1$ (C) $3x + 2$ (D) $5x$

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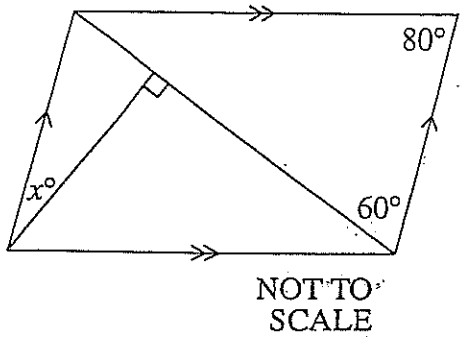
21. The difference between the mode and the median for the scores 13,12,4,13, and 3 is

(A) 1 (B) 3 (C) 4 (D) 9

22.



NOT TO SCALE

$x =$

(A) 20

(B) 30

(C) 40

(D) 50

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23. $\frac{a^3}{20} \div \frac{a}{4} =$

(A) $\frac{a^2}{5}$ (B) $\frac{5}{a^2}$ (C) $\frac{a^3}{5}$ (D) $\frac{5}{a^3}$

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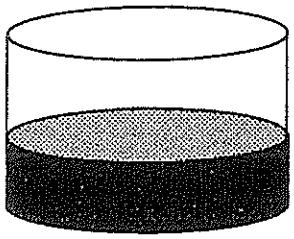
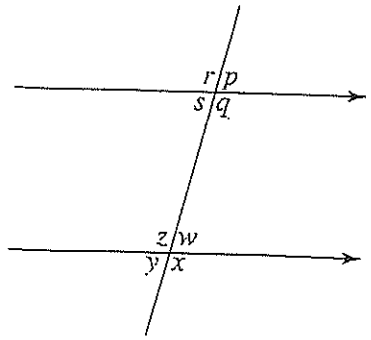
24. When this tank is $\frac{2}{5}$ full there are 12 000 L in it. The total capacity of the tank is



(A) 4 800 L (B) 6 000 L

(C) 18 000 L (D) 30 000 L

25. State which angle is alternate to angle z



(A) p (B) q (C) z (D) y

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26. The ratio of boys to girls in a class is 3:2. Today there are 12 boys in the class. Tomorrow 2 new boys will be enrolled.

The ratio of boys to girls will then be

(A) 5:2 (B) 7:1 (C) 7:4 (D) 7:9

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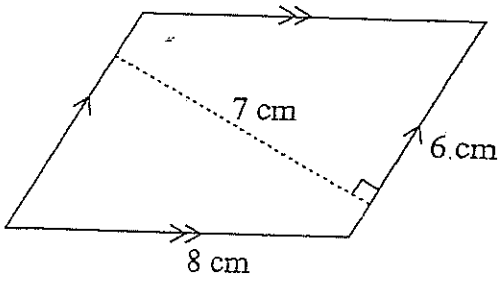
27. The area of the parallelogram is



(A) $21cm^2$
(B) $24cm^2$
(C) $42cm^2$
(D) $48cm^2$

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28. Which of the following points lies on the line $y = 3x - 2$

(A) (2,3) (B) (1,-3) (C) (0,2) (D) (-1,-5)

29. The mean of five scores is 14. A sixth score of 20 is added to the data set. The mean of the six scores is:

(A) 15 (B) 16 (C) 17 (D) 18

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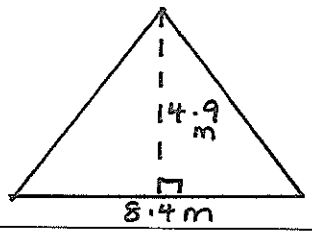
30. $0.032kg =$

(A) 0.32g (B) 3.2g (C) 32g (D) 320g

SECTION B

QUESTION 1 (6 marks)	ANSWERS
a) Simplify 21:14	
b) Factorise $10fg - 25gh + 20g^2$	
c) Solve $12b - 6 = 54$	
d) Find the area of 	
e) Convert 24kg/hr to tonnes per day	
f) The ratio of width to length in a rectangle is 3:5. If the length is 75cm, find its width	
QUESTION 2 (6 marks)	
a) Divide 26 lollies in the ratio 2:3:8	
b) Let $E = mv^2$. Find E if $m = 2.5$ and $v = 8$	
c) Find the perimeter of a square whose area is $64cm^2$	
d) Simplify $3 : 1\frac{4}{5}$	

e) Find the median of the data presented in the stem and leaf plot

Stem	Leaf
6	0 1 6 9
7	2 2 7
8	4 5 6 6 6 7
9	0 2

f) In which quadrant does the point (2, -8) lie?

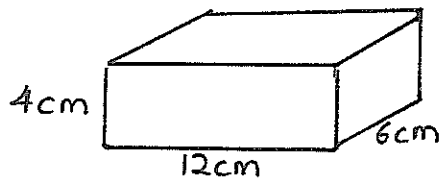
QUESTION 3 (7 marks)

a) Find the actual distance between two points which are drawn 7cm apart on a map with a scale of 1:2500

b) Which 2 lines are parallel in the following equations

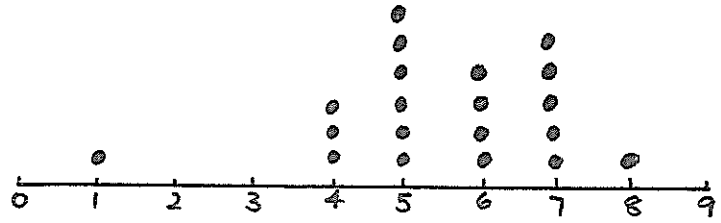
(A) $y = 2x$ **(B)** $y = x + 2$ **(C)** $y = 2x + 3$ **(D)** $y = -2x + 3$

c) Find the total surface area of



d) The sum of 3 consecutive numbers is 78. What are the numbers?

e)



(i) Which score (s), if any, are outliers?
(ii) Which score is the mode?
(iii) What is the range?

(i) _____
(ii) _____
(iii) _____

QUESTION 4 (7 marks)

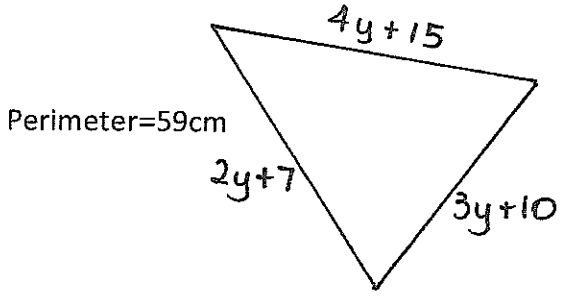
a) Expand $(2x-1)^2$

b) A cubic fish tank has side length of 40cm

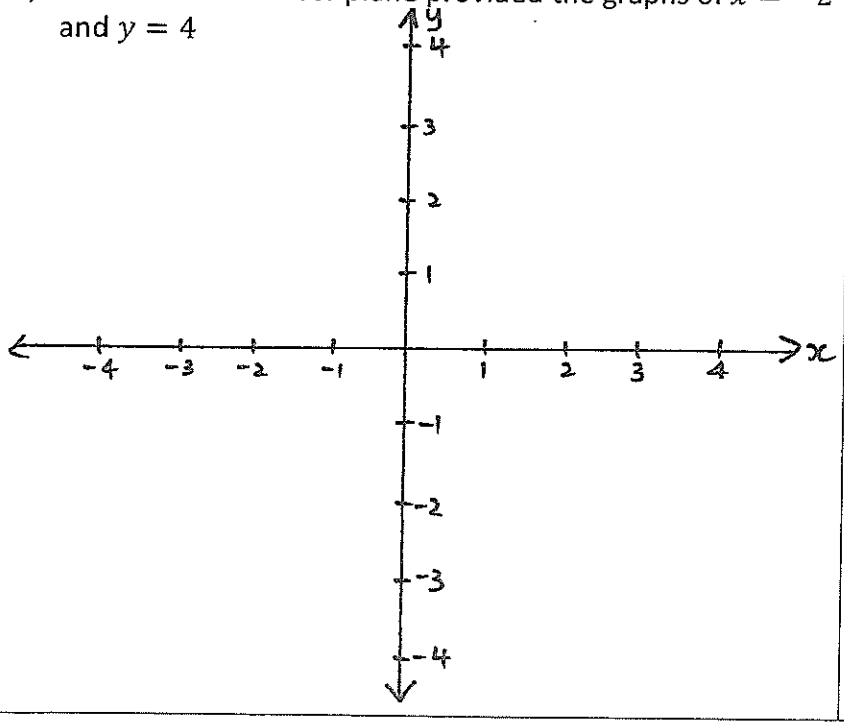
(i)Find the volume of the tank in cm^3 (i)_____

(ii) Find the capacity of the tank in litres (ii)_____

c) Form an equation using the given perimeter to find the value of the pronumeral.



d) Draw on the number plane provided the graphs of $x=-2$ and $y=4$

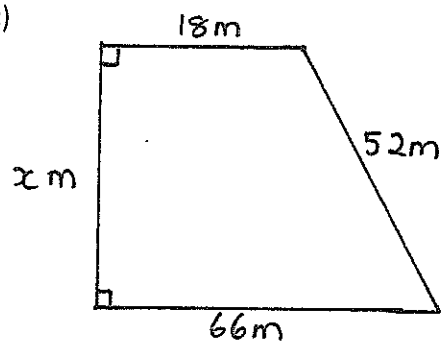


QUESTION 5 (6 marks)

a) A fruit picker can pick 480 oranges in 3 hours. At this rate, how long will the fruit picker take to pick 200 oranges. Give your answer in hours and minutes.

b) If $M = \frac{5k}{18}$, find K when $M = 10$

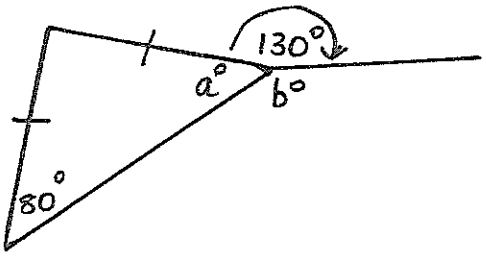
c)



(i) Find the value of x (i)_____

(ii) Find the area of the trapezium (ii)_____

d)



a =_____

Find a and b

b =_____

Name: _____

Teacher: _____

SECTION A: MULTIPLE CHOICE

Instructions:

- Circle the letter that best answers the question
- One mark each

1.	A	B	C	D	16.	A	B	C	D
2.	A	B	C	D	17.	A	B	C	D
3.	A	B	C	D	18.	A	B	C	D
4.	A	B	C	D	19.	A	B	C	D
5.	A	B	C	D	20.	A	B	C	D
6.	A	B	C	D	21.	A	B	C	D
7.	A	B	C	D	22.	A	B	C	D
8.	A	B	C	D	23.	A	B	C	D
9.	A	B	C	D	24.	A	B	C	D
10.	A	B	C	D	25.	A	B	C	D
11.	A	B	C	D	26.	A	B	C	D
12.	A	B	C	D	27.	A	B	C	D
13.	A	B	C	D	28.	A	B	C	D
14.	A	B	C	D	29.	A	B	C	D
15.	A	B	C	D	30.	A	B	C	D

Yr8 ANSWERS

Name: _____

Teacher: _____

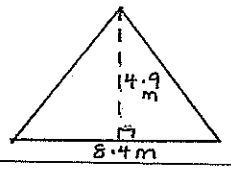
SECTION A: MULTIPLE CHOICE

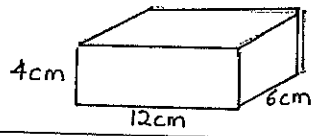
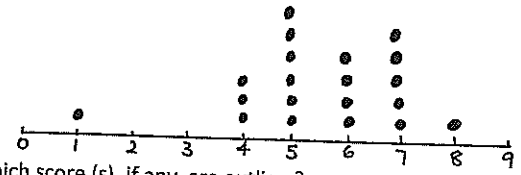
Instructions:

- Circle the letter that best answers the question
- One mark each

1.	A	B	C	**D**
2.	A	B	C	**D**
3.	A	B	**C**	D
4.	A	B	**C**	D
5.	**A**	B	C	D
6.	**A**	B	C	D
7.	A	B	**C**	D
8.	A	B	C	**D**
9.	A	B	**C**	D
10.	**A**	B	C	D
11.	**A**	B	C	D
12.	A	B	C	**D**
13.	A	**B**	C	D
14.	A	B	**C**	D
15.	A	B	C	**D**
16.	A	**B**	C	D
17.	**A**	B	C	D
18.	A	**B**	C	D
19.	**A**	B	C	D
20.	A	B	**C**	D
21.	**A**	B	C	D
22.	A	**B**	C	D
23.	**A**	B	C	D
24.	A	B	C	**D**
25.	A	**B**	C	D
26.	A	B	**C**	D
27.	A	B	**C**	D
28.	A	B	C	**D**
29.	**A**	B	C	D
30.	A	B	**C**	D

SECTION B

QUESTION 1 (6 marks)	ANSWERS
a) Simplify 21:14	3 : 2
b) Factorise $10fg - 25gh + 20g^2$	$5g(2f - 5h + 4g)$
c) Solve $12b - 6 = 54$	$12b = 60$ $b = 5$
d) Find the area of 	$A = 20.58m^2$
e) Convert 24kg/hr to tonnes per day 576kg/day	0.576t/day
f) The ratio of width to length in a rectangle is 3:5. If the length is 75cm, find its width W L 75	45cm
QUESTION 2 (6 marks)	
a) Divide 26 lollies in the ratio 2:3:8	4, 6, 16
b) Let $E = mv^2$. Find E if $m = 2.5$ and $v = 8$ $E = 2.5 \times 64$	$E = 160$
c) Find the perimeter of a square whose area is $64cm^2$ 8 cm	$P = 32cm$
d) Simplify 3: $1\frac{4}{5}$ $3 : \frac{9}{5} = 15 : 9$	5 : 3

e) Find the median of the data presented in the stem and leaf plot Stem | Leaf 6 | 0 1 6 9 7 | 2 2 7 8 | 4 5 6 6 6 7 9 | 0 2	84
f) In which quadrant does the point (2, -8) lie?	4th
QUESTION 3 (7 marks)	
a) Find the actual distance between two points which are drawn 7cm apart on a map with a scale of 1:2500	175m
b) Which 2 lines are parallel in the following equations (A) $y = 2x$ (B) $y = x + 2$ (C) $y = 2x + 3$ (D) $y = -2x + 3$	A + C
c) Find the total surface area of 	$SA = 4 \times 12 \times 2 + 12 \times 6 \times 2 + 4 \times 6 \times 2$ $= 288cm^2$
d) The sum of 3 consecutive numbers is 78. What are the numbers? $x + x + 1 + x + 2 = 78$ $3x + 3 = 78$ $3x = 75$ $x = 25$	25, 26, 27
e)  (i) Which score (s), if any, are outliers? (ii) Which score is the mode? (iii) What is the range?	(i) 1 (ii) 5 (iii) 8 - 1 = 7

QUESTION 4 (7 marks)

a) Expand $(2x-1)^2$

$4x^2-4x+1$

b) A cubic fish tank has side length of 40cm

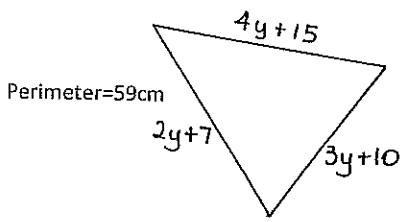
(i) Find the volume of the tank in cm^3

(i) $V = 40^3 = 64000cm^3$

(ii) Find the capacity of the tank in litres $1L = 1000cm^3$

(ii) $64L$

c) Form an equation using the given perimeter to find the value of the pronumeral.



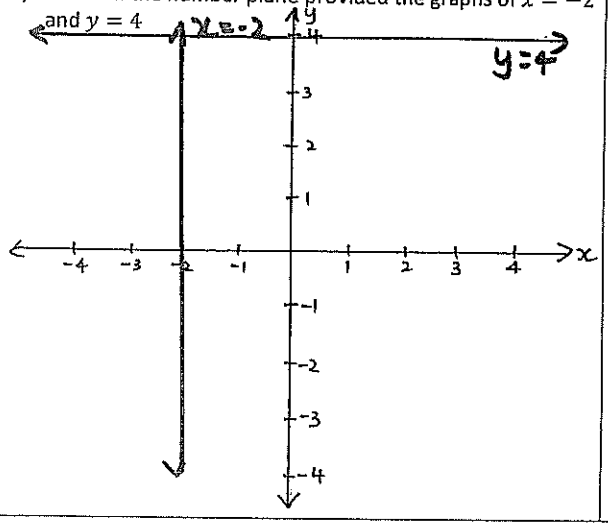
$9y+32=59$

$9y=27$

$y=3$

$y=3$

d) Draw on the number plane provided the graphs of $x=-2$ and $y=4$



QUESTION 5 (6 marks)

a) A fruit picker can pick 480 oranges in 3 hours. At this rate, how long will the fruit picker take to pick 200 oranges. Give your answer in hours and minutes.

160 / hr

1hr 15min

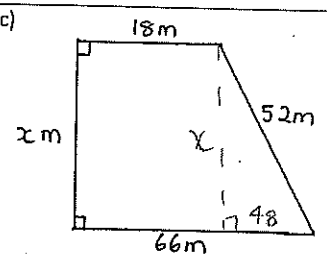
b) If $M=\frac{5k}{18}$, find K when $M=10$

$10=\frac{5k}{18}$

$5k=180$

$k=36$

c)



$x^2=52^2-48^2$

$x^2=400$

$x=20$

(i) Find the value of x

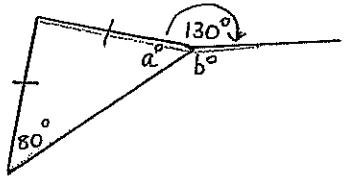
(i) $x=20$

(ii) Find the area of the trapezium

$A=\frac{1}{2}20(18+66)=840$

(ii) $A=840m^2$

d)



Find a and b

a = 80

b = 150