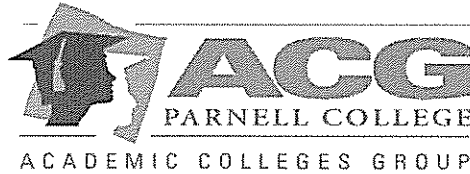


Mark Scheme.

Teacher	Tutor Class	Name [Print clearly]
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## MAY EXAMINATIONS 2013

**SUBJECT: Year 7 Mathematics**

Time allowed: 1 hour 30 minutes

Total Marks:125

**READ THESE INSTRUCTIONS FIRST**

All your answers and working are to be written on the examination paper.

**Calculators are permitted.**

**Show all your working for questions worth more than 1 mark.**

Answer **all** questions.

The number of marks is given in [ ] at the end of each question or part question.

Section	Total	Mark
Measurement	30	
Location	15	
Whole Numbers	30	
Fractions, Decimals, Percentages	30	
Problem Solving	20	
<b>TOTAL</b>	<b>125</b>	

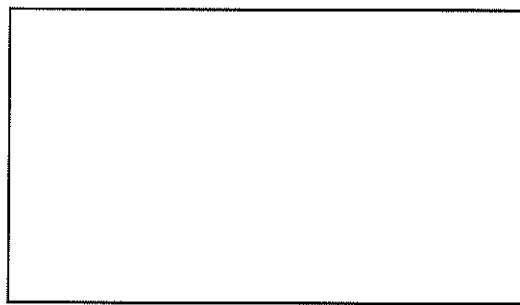
**This document consists of 17 printed pages and 1 blank pages**

## Measurement

1. Complete the unit conversion table shown. [5]

a) 1 km	1000	m
b) 300 cm	3	m
c) 200 mm	20	cm
d) 2 L	2000	ml
e) 150 cm <sup>3</sup>	150	ml

2. a) Measure the rectangle below and write in your measurements in the space given. [2]



----- 68 mm ± 1 ✓

----- 38 mm ± 1 ✓

- b) Calculate the perimeter and area. Show your working.

$$38 \times 2 + 68 \times 2 = 212 \pm 4$$

Perimeter = 212 ± 4 [2]

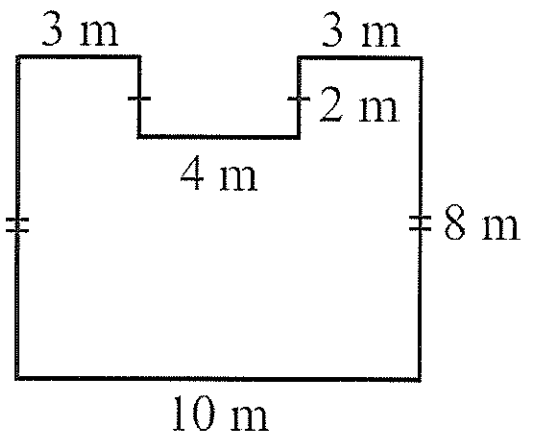
68 × 38 mm - then measurements from 2(a)

Area = 2584 [2]

2479 - 2691 mm<sup>2</sup> ✓

3. Here is a plan of Ms Perrin's garden.  
 a) Calculate the area of the garden.  
 Show your working

*appropriate working ✓*



Area = 72 m<sup>2</sup> [3]

- b) Ms Perrin needs to put a fence around the whole perimeter to keep her dog in. She has been told that it will cost \$84 for each metre of fence. Calculate the total cost of the fence. Show working.

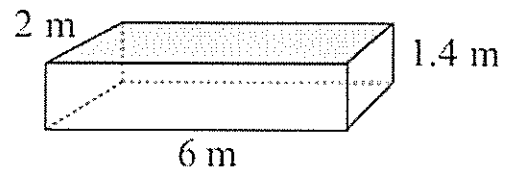
*perimeter = 40 m ✓*  
*40 m × \$84*

Total Cost = \$3200 [2]

- c) Ms Perrin is thinking about putting in a small swimming pool in the garden like the one shown in the diagram.

- (i) What is the volume of the pool?

*2 × 1.4 × 6 ✓*



Volume = 16.8 m<sup>3</sup> [2]

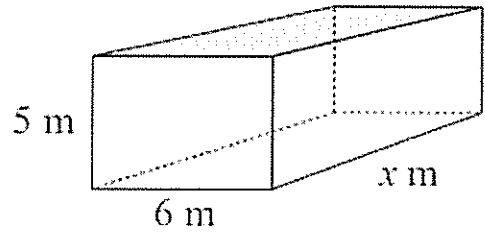
- (ii) What the capacity of the pool?

*16.8 m<sup>3</sup> × 1000 L ✓*

Capacity = 16800 L [2]

4. The volume of this cuboid is  $120 \text{ m}^3$ .  
How long is the side that is marked as  $x$ ?

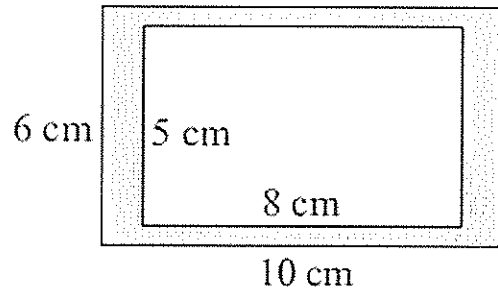
$$120 \div (5 \times 6) \checkmark$$



$$x = \underline{4 \text{ m}} \checkmark [2]$$

5. A rectangular piece of card is to be used to make a picture frame as shown.  
Calculate the area of frame (the shaded area) shown in the picture.

$$10 \times 6 - 5 \times 8 \checkmark$$



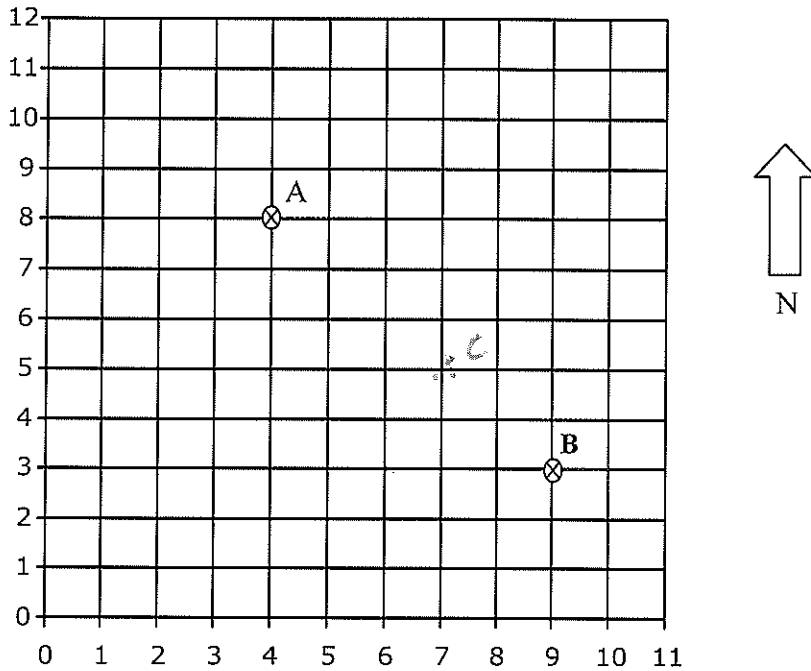
$$\text{area} = \underline{20 \text{ cm}^2} \checkmark [3]$$

6. Fill in the blank spaces with the most suitable unit of measurement. .

- |                               |   |     |
|-------------------------------|---|-----|
| (a) The capacity of cup       | <u>          mL          </u>             | [1] |
| (b) The length of a bus       | <u>          m          </u>              | [1] |
| (c) The length of an ant      | <u>          mm          </u>             | [1] |
| (d) The volume of a shoe box  | <u>          cm<sup>3</sup>          </u> | [1] |
| (e) The area of the gym floor | <u>          m<sup>2</sup>          </u>  | [1] |

## Location

7.



a) Give the coordinates of:

i) Point A (4, 8)

ii) Point B (9, 3)

*correct numbers in order ✓  
brackets ✓*

[2]

[2]

b) Draw an X at point at (7, 5) and label it C

[1]

c) What is the compass direction of A from B?

N/W [1]

d) If each square on the grid above is 5 m what is the shortest distance from A to B if you can only walk along the grid lines?

30m [1]

8. a) Using a scale of 1 centimetre to represent 5 metres draw a accurate line to represent 35 m.

7cm

[1]

- b) A window on a doll's house is shown below. The doll's house is made at a scale of 1:50 of a real house. By using your measurements of the outer dimensions of the window drawn calculate the dimensions of the real window?



31mm ± 1mm

$$31 \times 50 = 1550 \text{ mm}$$

$$70 \times 50 = 3500 \text{ mm}$$

70mm ± 1mm

length 1550 mm height 3500 mm [2]  
 1500 - 1600      3500 - 3550

- c) A door measures 75 cm wide and 2 m high. Using the scale given for the doll's house, what would the dimensions of the doll's house door be?

$$75 \text{ cm} = 750 \text{ mm}$$

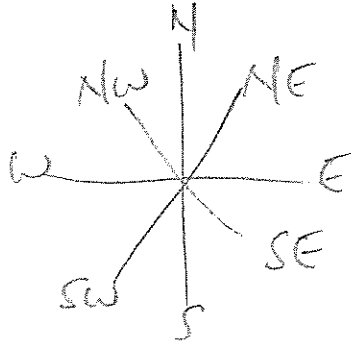
$$2 \text{ m} = 2000 \text{ mm}$$

$$\frac{750}{50} = 15$$

$$\frac{2000}{50} = 40$$

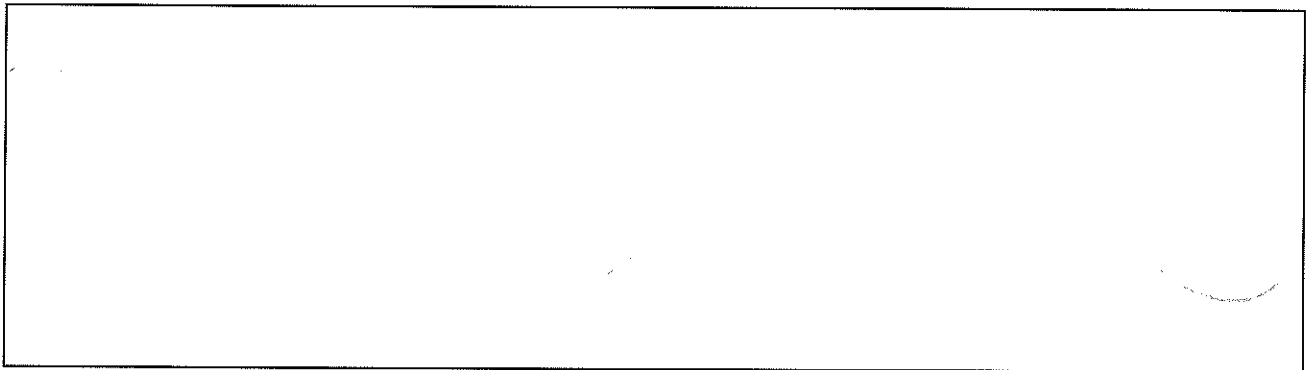
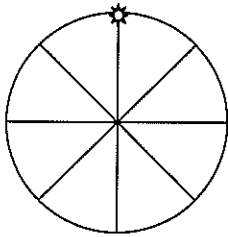
width 15 mm height 40 mm [3]

9. Draw a compass showing the 8 main compass points.



[1]

10. Below is a bicycle wheel with light attached at the top.  
In the box provided draw the locus of the light as the bicycle wheel rolls to the right.



[1]

## Whole Numbers

11. Rearrange the digits **5 9 6 2 4** into the smallest number possible.

24569 [1]

12. Write a single number where :  
the place value of 6 is hundreds,  
the value of 3 is three thousand,  
the units position contains a 3,  
and there are no tens.

3603 [1]

13. Showing full working calculate (marks will only be awarded if appropriate working is shown):

<p>a) <math>365 + 8346 =</math></p> $\begin{array}{r} 8346 \\ + 365 \\ \hline 8711 \end{array} \checkmark$ <p style="text-align: right;">[1]</p>	<p>b) <math>24 \times 36 =</math></p> $\begin{array}{r} 24 \\ \times 36 \\ \hline 144 \quad \checkmark \\ 720 \quad \checkmark \\ \hline 864 \quad \checkmark \end{array}$ <p style="text-align: right;">[3]</p>
<p>c) <math>657 - 89 =</math></p> $\begin{array}{r} 5 \overset{14}{\cancel{6}} 5 7 \\ - 89 \\ \hline 568 \end{array} \checkmark$ <p style="text-align: right;">[1]</p>	<p>d) <math>3144 \div 6 =</math></p> $\begin{array}{r} 524 \checkmark \\ 6 \overline{) 3144} \\ \underline{3144} \\ 0 \end{array} \checkmark$ <p style="text-align: right;">[2]</p>



14. Using the number 8365
- a) Round to the nearest 10 8370 [1]
- b) Round to the nearest 100 8400 [1]
- c) Rewrite the number using one figure approximation. 8000 [1]

15. Solve the following problems:

a)  $4 + 5 \times 3 =$

19 [1]

b)  $(8 - 6) \times (3 + 4) - 2 \times 3 =$

$2 \times 7 - 6$   
 $14 - 6$

8 [1]

16. Using the numbers between 20 and 40 only (including 20 and 40), write down the

a) prime numbers

23, 29, 31, 37 [2] ✓  
2 ✓  
4 ✓

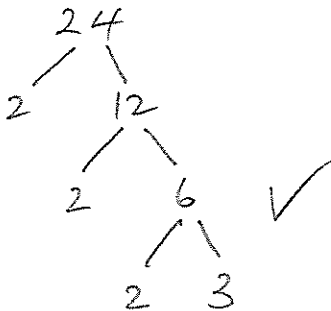
b) the multiples of 6

24 30 36 [2] ✓  
2 ✓  
3 ✓

c) the square numbers

25 36 [2] ✓

17. Write 24 as a product of prime factors (show full working)



$24 = 2 \times 2 \times 2 \times 3$  [2] ✓

18. a) Find the lowest common multiple of 6 and 8. (show working)

$$\begin{array}{l} 8: 8, 16, 24 \\ 6: 6, 12, 18, 24 \end{array} \quad \checkmark$$

- b) List the factors of 8.

$$\underline{24} \quad \checkmark \quad [2]$$

$$\underline{1, 2, 4} \quad \checkmark \quad [1]$$

19. Using one figure approximation calculate. Working must be shown

$$3643 + 84 + 7 =$$

$$4000 + 80 + 7 \quad \checkmark$$

$$\underline{4087} \quad \checkmark \quad [2]$$

20. Write 2546 in expanded form.

$$\underline{2 \times 1000 + 5 \times 100 + 4 \times 10 + 6} \quad [1]$$

21. Solve:

a)  $356 \times 100 =$

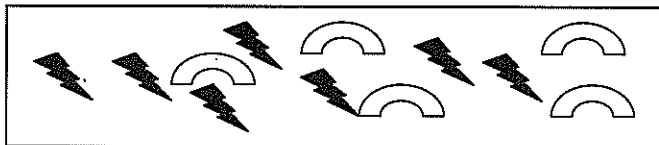
$$\underline{35600} \quad [1]$$

b)  $4537 \div 1000 =$

$$\underline{4.537} \quad [1]$$

## Fractions, Decimals and Percentages

22. In the rectangle shown there are lightning bolts and rainbows.



What fraction of the pictures are rainbows?

$$\frac{5}{12}$$

[1]

23. Complete the table below by filling the missing numbers.

	Fraction	Decimal
a	$\frac{1}{8}$	0.125
b	$\frac{3}{8}$	0.375
c	$\frac{155}{100}$	1.55

[3]

24. a) Rewrite  $\frac{18}{48}$  in its simplest form.

$$\frac{3}{8} \quad \checkmark$$

[2]

- b) Write  $\frac{20}{7}$  as a mixed number

$$2\frac{6}{7}$$

[1]

- c) Write  $3\frac{5}{8}$  as an improper fraction

$$\frac{29}{8}$$

[1]

25. Calculate the following: (working must be shown)

<p>a) <math>3.25 + 14.2 =</math></p> $\begin{array}{r} 3.25 \\ 14.2 \\ \hline 17.45 \end{array}$ <p>[1]</p>	<p>b) <math>\frac{3}{8} + \frac{7}{8} =</math> (show the answer as a mixed number)</p> $\frac{10}{8} = 1\frac{2}{8}$ <p>[2]</p>
<p>c) <math>4.23 \times 5 =</math></p> $\begin{array}{r} 4.23 \\ \times 5 \\ \hline 21.15 \end{array}$ <p>numbers correct ✓ decimal pt correct ✓ place ✓ [2]</p>	<p>d) <math>16.244 \div 4 =</math></p> $4 \overline{) 16.244} \begin{array}{l} 4 \\ \cdot 0 \\ \cdot 6 \\ \cdot 1 \end{array}$ <p>[2]</p>
<p>e) <math>0.4 \times 0.3 =</math></p> $\begin{array}{r} 0.4 \\ \times 0.3 \\ \hline 0.12 \end{array}$ <p>same as (c) [2]</p>	

26. a) Two fifths of the children in a class of 20 students wear glasses. How many students wear glasses in the class? Show working.

$$\begin{aligned} 20 \div 5 &= 4 \\ 4 \times 2 &= 8 \end{aligned}$$

8 ✓ [2]

b) What percentage of the children wear glasses?

$$\frac{8}{20}$$

40% [1]

- c) In a different class the teacher checks her roll and she discovers that 9 of her students have birthdays in May. She works out that this is  $\frac{3}{8}$  of her class.  
How many students does she have in her class?

$$9 \div 3 = 3 \quad \checkmark$$

$$3 \times 8 = 24$$

24 ✓

[2]

27. If a student scores 34 out of 40 on a test, what is her score as a percentage?

$$34 \div 40 \times 100$$

85%

[2]

28. Three students have just received a test back and are arguing about who did better. John says he got 42 out of 60, Mary says her mark is higher because she got  $\frac{6}{8}$  of all of the questions correct but Alex says he is the best because he got 0.74 of all the questions right. By turning all of their scores into percentages show who scored best. (show all working)

$$J \quad 42 \div 60 \times 100 = 70\%$$

$$M \quad 6 \div 8 \times 100 = 75\%$$

$$A \quad 0.74 \times 100 = 74\%$$

John 70%

Mary 75%

Alex 74%

[3]

29. A shop had a sale and decided to reduce its prices by 35%. If a pair of shoes normally cost \$150, how much would they cost with the 35% taken off?

$$\$150 \div 100 \times 35 = \$52.50 \quad \checkmark$$

$$\$150 - \$52.50 = \$97.50 \quad \checkmark$$

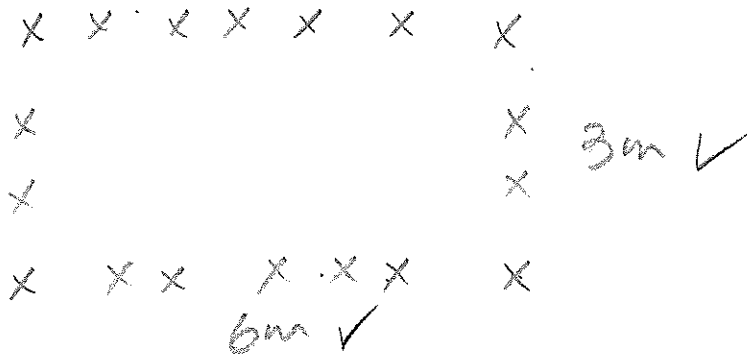
\$97.50 ✓

[3]

## Problem Solving

30. Farmer F wants to build a pen to keep his chickens in. He decides that his chickens would be happiest in a rectangular shaped pen where the short side is half the length of the long side. He uses 18 posts to build his pen and he is going to space them one metre apart.

a) Draw a diagram showing how many posts there are in each side of his pen.



b) What is the perimeter of the chicken pen? [2]

18m [1]

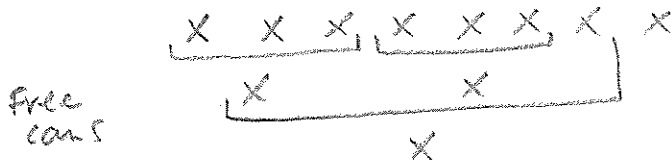
c) If each chicken needs half a square metre of space to be happy, how many chickens can Farmer F have in his pen?

$$18 \times 2$$

36 [1]

31. The Wattle Baked Bean Company decided to have a promotion. They put special labels on their cans and for every 3 labels collected, customers would get an extra can of baked beans with the special label on.

a) (i) If Fred buys 8 cans how many extra cans would he get?

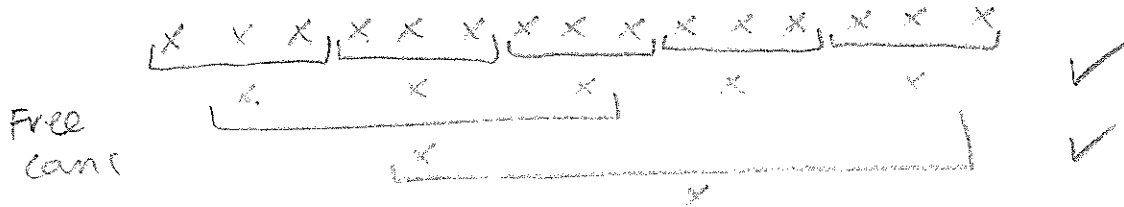


3 [1]

(ii) How many more cans would he have to buy to get another free can?

1 [1]

b) Mr M loves baked beans and he buys 15 cans of the special baked beans. How many free cans will he get?



7 ✓ [3]

32. Four friends, A, B, C and D each have a pet. One has a fish, one a cat, one a bird and one has a frog. Using the clues given work out who owns each type of pet.

A's pet has legs but no feathers,  
 B's has no fur or hair,  
 C's pet must live in or near the water,  
 and D's pet has no legs.

	A	B	C	D
Fish	X	X	X	✓
Cat	✓	X	X	X
Bird	X	✓	X	X
Frog	X	X	✓	X

A = Cat ✓ B = Bird ✓ C = Frog ✓ D = Fish ✓ [5]

33. John is 5 times as old as his son JJ. The sum of their ages is a square number. Next year both of their ages will be prime numbers and in 2 years both of their ages will be multiples of 4. What are their ages?

Square #'s ~~4~~ ~~9~~ 16 25 36 49 64  
 $JJ \times 5 = J$  1,5 2,10 3,15 4,20 5,25 (6,30) 7,35 8,40 9,45  
 $6+1=7$   
 $30+1=31$  } both prime  
 $6+2=8$   
 $30+2=32$  } multiples of 4  
 John 30  
 JJ 6 [3]



34. Mrs H loves Jelly beans and bought a bag of less than 100 for herself. Mrs H is also quite good at Mathematics so she decided to eat a different fraction of them each day. On day one she ate  $\frac{1}{10}$ , on day two she ate  $\frac{1}{9}$  of the jelly beans left, on day three she ate  $\frac{1}{8}$  of the remaining jelly beans. Below is a list of the fraction she ate each day.

Day	1	2	3	4	5
Fraction eaten	$\frac{1}{10}$	$\frac{1}{9}$	$\frac{1}{8}$	$\frac{1}{7}$	$\frac{1}{6}$

Each day she ate a whole number of jelly beans because the fraction of the remainder each day always came to a whole number. On day 6 she had 25 jelly beans left.

How many Jelly Beans did Mrs H buy to start with?

- ⑤  $25 \div 5 \times 6 = 30$
- ④  $30 \div 6 \times 7 = 35$
- ③  $35 \div 7 \times 8 = 40$
- ②  $40 \div 8 \times 9 = 45$
- ①  $45 \div 9 \times 10 = 50$



50 ✓ [3]