Mark Scheme

Maths Teacher FON / MCL / PER	Tutor Class	Name [Print clearly]

ACG
PARNELL COLLEGE
ACADEMIC COLLEGES GROUP

MAY EXAMINATIONS 2015

SUBJECT: Year 7 Mathematics

Time allowed: 1 hour 30 minutes **Total Marks:135**

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
Numbers	25	
Algebra	25	
Angles/lines	20	
Decimals	20	
Directed Numbers	20	
Problem Solving	25	
TOTAL	135	

This document consists of 19 printed pages and 1 blank page

1. Using the number 2789

   a) Give the **place value** of the 7 digit — 100's [1]

   b) What is the **value** of the 8 digit? — 80 [1]

2. Write 3529 using expanded notation.

   $3\times1000 + 5\times100 + 2\times10 + 9\ (\times1)$ [1]

3. Show full working for the following questions
   (marks will only be awarded if correct working is shown).

a) Calculate the difference between 87 and 21	b) Find the sum of 65 and 47
$\begin{array}{r} 87 \\ -\ 21 \\ \hline 66 \end{array}$ ✓ ✓ ✓ [2]	$\begin{array}{r} 65 \\ +\ 47 \\ \hline 112 \end{array}$ ✓ ✓ ✓ [2]
c) What is the product 24 and 9?	
$\begin{array}{r} 24 \\ \times\ 9 \\ \hline 216 \end{array}$ ✓ ✓ ✓ [2]	

4. a) List **all** of the factors of 18 in factor pairs. [2]

   1, 18 2, 9 3, 6

   ✓ all factors but not in pairs
   ✓ 2 pairs only
   ✓ all 3 pairs.

5. Find the highest common factor of 12 and 18.

   1, 12, 2, (6), 3, 4 ✓

   1, 18, 2, 9, 3, (6) HCF = 6 ✓ [2]

T3

6. a) Give the first 4 multiples of 6. 6, 12, 18, 24 [1]

b) Find the lowest common multiple of 9 and 6. 9, 18 ✓

18 ✓ [2]

7. Rewrite $5 \times 5 + 2 \times 2 \times 2$ in index form and as a basic numeral

Index form $5^2 + 2^3$ [2]

Basic numeral 33 [1]

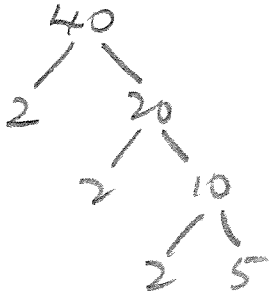
8. List the first 3 square numbers all 3 needed 1, 4, 9 [1]

9. Using leading figure estimation on the numbers , approximate the answer to (correct working must be shown):

$47 \times 14 =$ 50×10 ✓ no working

500 ✓ [2]

10. Write 40 as a product of prime factors.



$2^3 \times 5$ $2 \times 2 \times 2 \times 5$ [1]

11. Complete the sentence $7 \times 4 + 7 \times 5 = 7(4 + 5)$ [2]

12

13. Rewrite each expression in its simplest form.

a. $4 \times a + 5 \times b$

$4a + 5b$ [2]

c. $3d + 6d$

$9d$ [1]

14. Using the starting number and the rule given, write the next **two** numbers in each pattern.

a. 9; add 5

9 14 19 [2]

b. 2; multiply by 3 and add 2

2 8 26 [2]

15. For each pattern below, write **the rule** used to find the next number.

a) 5, 9, 13, 17

5; add 4 [2] o.e

b) 18, 15, 12, 9

18; minus 3 [2] o.e

16. If a=5, b=9 and c=7 calculate the value of the following expressions

a) 3a

15 [1]

b) 2b + 2c

32 [1]

c) 2(a + b) ÷ c

$2(5+9) \div 7$

$2 \times 14 \div 7$

4 [2]

15

17. Complete the tables below using the formulae given.

a) a=2b

b	4	6	10 ✓
a	8 ✓	12 ✓	20

[3]

b) c=3d+5

d	3	5	8 ✓
c	14 ✓	20 ✓	29

[3]

18. Rewrite in expanded form a^4

axaxaxa [1]

19. Simplify using index notation

a) $w \times w \times w$

w^3 [1]

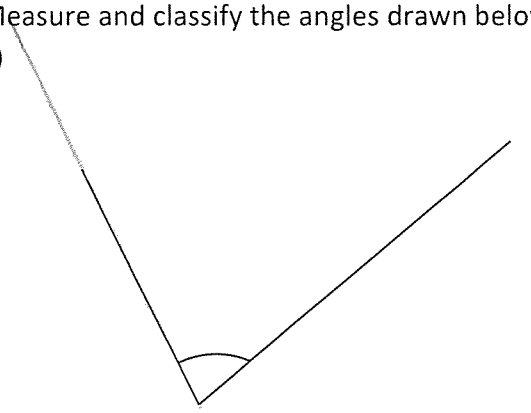
b) $n \times n + k \times k \times k$

$n^2 + k^3$ [2]

10

20. Measure and classify the angles drawn below.

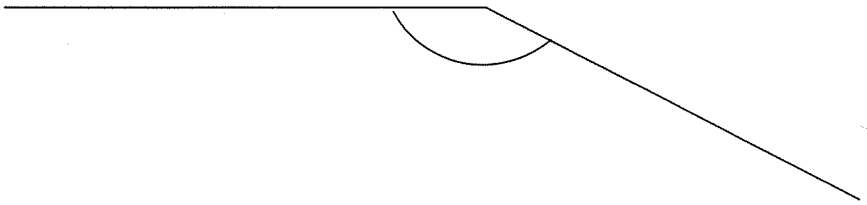
a)



Angle size 76 ± 1 [1]

Angle type acute [1]

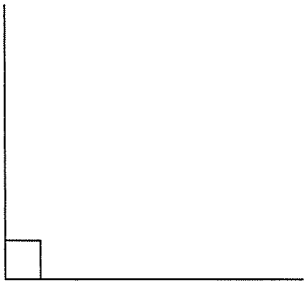
b)



Angle size 154 ± 1 [1]

Angle type obtuse [1]

c)



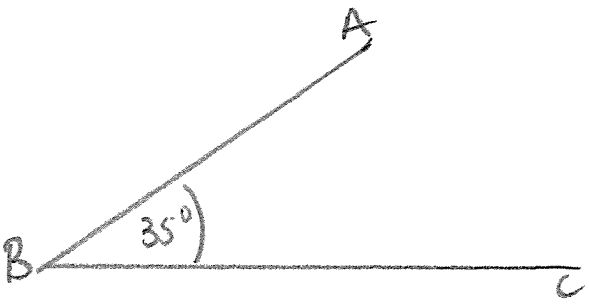
Angle size 90° [1]

Angle type right angle [1]

6

21. As accurately as you can

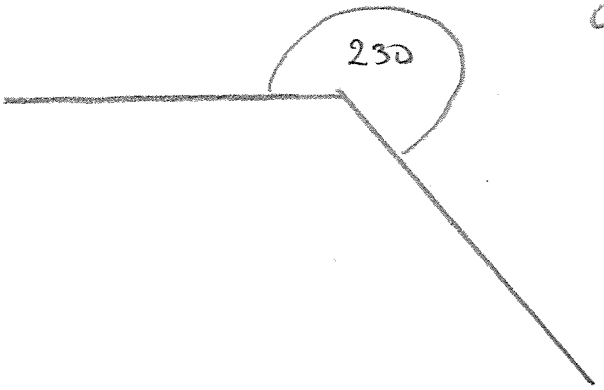
a) draw a 35° angle in the space below and name it using 3 point notation name the angle ABC.



angle = 35 ± 1 ✓
3 pt notation B at vertex ✓

[2]

b) draw a 230° angle in the space below and give the angle type.

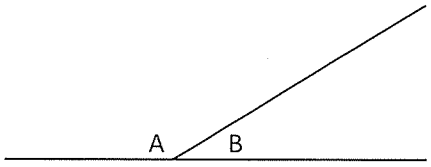


angle 230 ± 1 ✓

Angle type reflex ✓ [2]

22. Complete the sentence based on the information in the diagrams shown.

a)

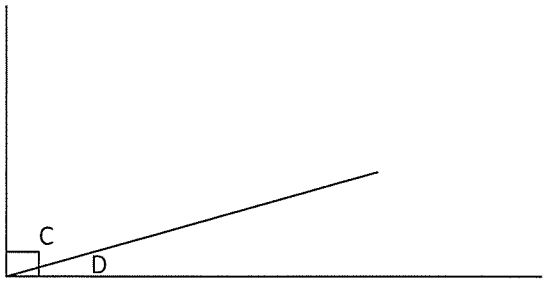


Angles A and B are supplementary ✓ angles because they add to 180 ✓

[2]

6

b)



Angle C and D are complementary angles because they add up to 90°

[2]

23. Draw and label the following:

a) the ray AB

b) the line DE

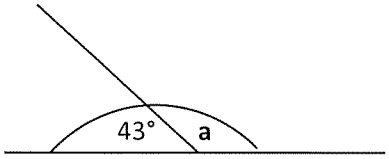
c) the line segment FG

[3]

24.

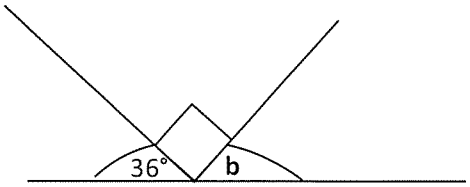
Calculate the size of the missing angles that have been labelled.
(these are not drawn to scale so can not be measured)

a)



a= 137 [1]

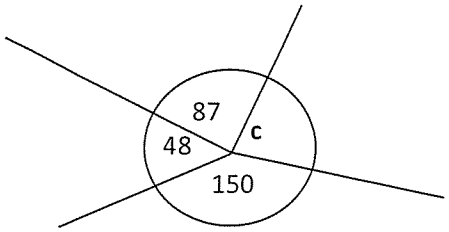
b)



b= 54 [1]

7

c)



c= 75 [1]

must see evidence of working.

25. Calculate the value of each of the problems below.
Show full working (no marks will be awarded without appropriate working).

WWW.

a) 13.52 + 1.3 + 0.256=

$$\begin{array}{r} 13.52 \\ 1.3 \\ 0.256 \\ \hline 15.076 \end{array}$$

15.076 [1]

b) 18.79 -5.52=

$$\begin{array}{r} 18.79 \\ -\ 5.52 \\ \hline 13.27 \end{array}$$

13.27 [1]

c) 16.43-2.76=

$$\begin{array}{r} {}^{5}{}^{1}{}^{3}{}^{4} \\ 16.\cancel{4}\cancel{3} \\ -\ 2.76 \\ \hline 13.67 \end{array}$$

13.67 [1]

d) 24.72 ÷ 4=

$$4\overline{)\,24.72}\quad 6.18$$

6.18 [1]

e) 17.43 ÷ 5= (there should be **no** remainder)

$$5\overline{)\,17.43^{3}0}\quad 3.486$$

3.486 ✓ [2]

6

f) $16.3 \times 3 =$

$$\begin{array}{r} 16.3 \\ \times \quad 3 \\ \hline 48.9 \end{array}$$

48.9 ✓ [1]

g) $26.45 \times 4 =$

$$\begin{array}{r} 26.45 \\ \times \quad 4 \\ \hline 105.8 \end{array}$$

105.8 ✓ [1]

h) $14.54 \times 100 =$

$$\begin{array}{r} 14.54 \\ \times 100 \\ \hline 1454 \end{array} \checkmark$$

1454 ✓ [2]

26. Write 3.065 in expanded form.

$3 \times 1 + \frac{6}{100} + \frac{5}{1000}$ or $3 \times 1 + 0.06 + 0.005$ o.e

[1]

27. Turn the fractions below into the decimal form.
Show full working (no marks will be awarded without appropriate working)

a) $\frac{5}{8}$

$$8 \overline{)\, 5.000} \quad 0.625$$

0.625 [1]

b) $\frac{11}{5}$

$$5 \overline{)\, 11.0} \quad 2.2$$

2.2 [1]

28. The times of three runners are 11.067, 11.607 and 11.67 seconds.
    a) Write them in order from fastest to slowest.

11.067, 11.607, 11.67 [1]

    b) What is the sum of all their times? (show full working)

11.067
11.607
11.670
34.344

www

34.344 [1]

29. Write 0.675 as a fraction.

$\frac{675}{1000}$ or $\frac{27}{40}$ [1] 0.e

30. A wooden toy block is 4.3 cm high. If 6 were stacked up to make a tower how high would the tower be? (show full working)

4.3
x 6
25.8

www

25.8 [2]

31. John buys a new pencil on Monday which is 17.3 cm long. After using it for a week it is only 11.84 cm long.
    What length of pencil has he used up? (show full working)

$17\overset{6}{\cancel{.}}\overset{12}{3}0$
$-\ 11.84$ ✓
5.46

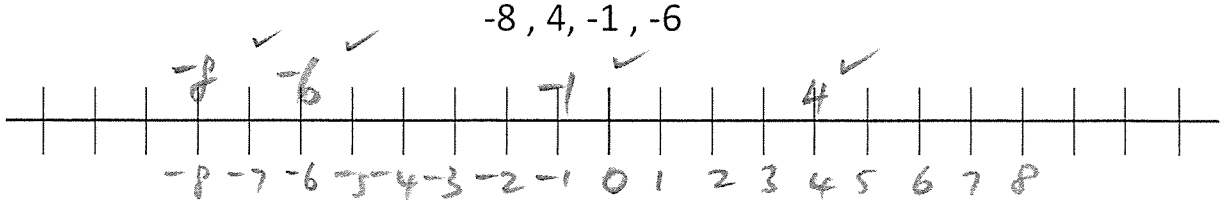
www

✓
5.46 cm [2]

7

32. Place the following 4 numbers clearly on the number line below.

-8 , 4, -1 , -6

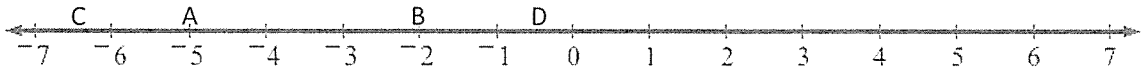


[4]

33. Use a directed number to represent each of the following in the table below. [5]

a)	a loss of $50	-50 ✓
b)	20 m below sea level	-20 ✓
c)	2 floors above ground level	+2 ✓
d)	a deposit of $35 into your bank account	+35 ✓
e)	Ten degrees below zero	-10 ✓

34. Give the value of each letter written on the number line.



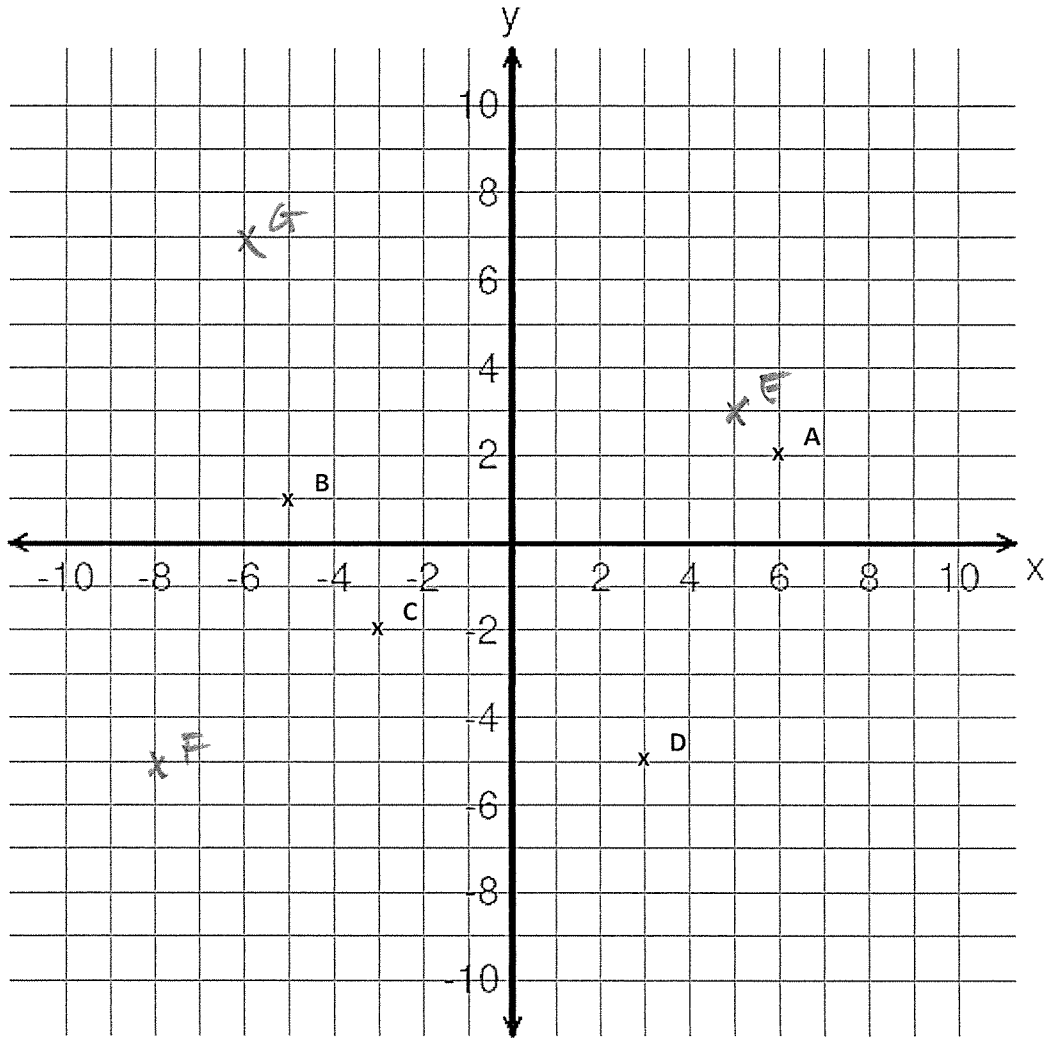
A= -5 B= -2 C= $-6\frac{1}{2}$ D= $-\frac{1}{2}$ [4]

13

take off 1 mark if no brackets are given.

35. a) Give the coordinates of A (6,2), B (-5,1), C (-3,-2), D (3,-5),

[4]



b) Plot each of the points given below with an 'x' on the number plane above and make sure you label each one with the letter given.

E = (5, 3), F= (-8, -5), G = (-6,7)

[3]

If no x drawn take off 1 mark.
Exact position must be clearly shown.

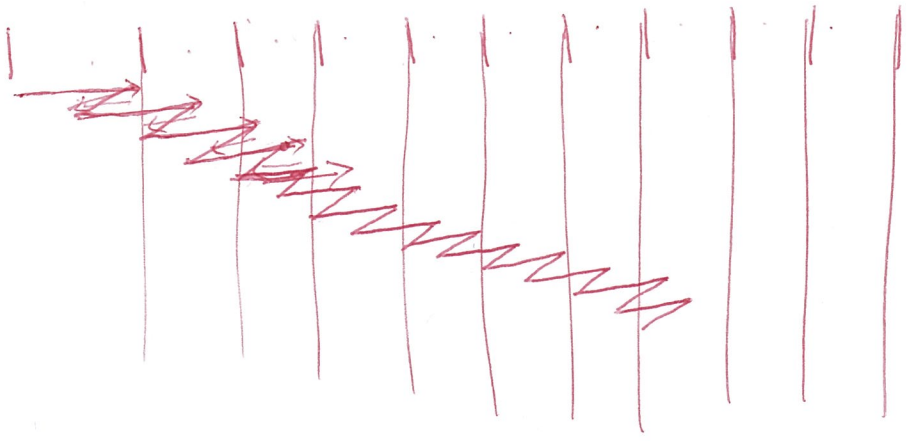
36. Two consecutive numbers (where one number is one bigger than the other) add together to equal 147 and multiply to equal 5402.
What are the two numbers?

working ✓

73✓, 74✓ [3]

37. A frog is at the bottom of a 10 metre well. The sides of the well are very slippery and when he tries to climb out he can climb up 1 metre but slips back half a metre each time. It takes him 3 minutes to climb 1 metre and 30 seconds to slip back half a metre.
How long does it take the frog to climb out of the well?

working ✓



66✓ MINS [2]

5

36. A farmer has a rectangular paddock where the perimeter is 51 metres. The length of the paddock is double the width.
How long is the width and the length of the rectangular paddock?

Length = 17 [1]

Width = 8.5 [1]

37. Fred sold square chocolates for 16 cents each and round chocolates for 11 cents. One customer bought twice as many square chocolates as round chocolates at a total cost of $4.30.
How many chocolates of each type did he buy?

Square 20

Round 10

[3]

40. John and Mildred have 2 children Angela and Bernard. John is 4 years older than Mildred. Mildred is 28 years older than Angela and Angela is twice as old as Bernard. The total of all their ages is 88 years.
How old are the children?

working ✓

Angela 8 ✓

Bernard 4 ✓

[3]

41. Mr Mac is a very kind teacher and buys 3 **identical** boxes of chocolates to share with his class. The class is divided into 3 groups. One group has 5 students, one has 4 students and the third group has 6 students. He gives each group a box. The groups with 4 or 5 students can share the chocolates equally in their groups but the group of 6 has an extra chocolate left over. There are less than 30 chocolates in a box. 2
How chocolates are there in each box?

4 8 12 16 (20) 24 28
5 10 15 (20) 25 30 ✓
6 12 (18) 24 30

20 ✓ [2]

5

42. A fish tank contains crabs and octopuses. Crabs have 10 legs and octopuses have 8 legs. If there are 166 legs and 19 bodies in the tank, calculate how many octopuses and how crabs there are in the tank.

appropriate working ✓

Octopuses 12 ✓

Crabs 7 ✓ [3]

43. A pet shop sells rabbits for $9 and kittens for $7 each. The table bellows shows the amount of money the shop makes from selling rabbits and kittens over one week.

Day	Amount of money
Monday	$57
Tuesday	$25
Wednesday	$46
Thursday	$43
Friday	$53

One of these totals is wrong. Which day has the wrong figure? Explain why it is wrong.

no combination of the multiples of 9 and 7 will add up to 25 ✓

Tuesday [2]

44. John uses 2 flashing lights when he rides his bike. The first light flashes every 18 seconds and the other one flashes every 24 seconds.

a) If they are started at the same time how many seconds pass before they flash at the same time?

18 36 54 (72) ✓

24 48 (72)

72 ✓ [2]

b) How many times will they flash at the same time in 5 minutes?

24 48 (72) 96 120 (144) 168 192 (216) 240 264 (288)

4 [1]

c) If John adds a third flashing light that flashes every 5 seconds and they are started at the same time how long will it take for all three lights to flash at the same time?

72 144 216 288 (360) ✓

multiple of 18, 24 and 5

360 ✓ [2]