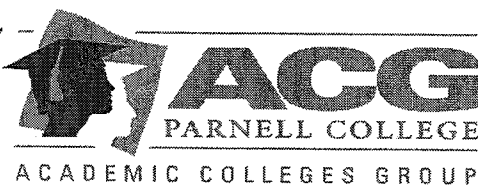


Teacher FON/ MCL/ DIM	Class:	Name [Print clearly]
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Marks Scheme



NOVEMBER EXAMINATIONS 2013

SUBJECT: Year 7 Mathematics

Time allowed: 2 Hours

Total Marks: 175

READ THESE INSTRUCTIONS FIRST

Answer all questions

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

This is a question and answer booklet. Write your answers in the spaces provided.

You may use a calculator.

SHOW YOUR WORKING AT ALL TIMES.

Do not use staples, paper clips, highlighters, glue or correction fluid.

Write in dark blue or black pen. You may use a pencil for diagrams, graphs or rough working.

Topic	Marks
Semester One	60
Geometry	25
Statistics	16
Patterns (Algebra)	10
Time	10
Transformation Geometry	12
Probability	10
Problem Solving	32
Total Marks:	175

This document consists of 19 printed pages and 1 blank page

Semester One

1. Round 135 to the nearest 10.

140 [1]

2. In the number 63184:

a) Give the place value of the 8.

10's [1]

b) What is the value of the 1?

100 [1]

c) Write the number in expanded form.

$6 \times 10000 + 3 \times 1000 + 1 \times 100 + 8 \times 10 + 4$ [1]

3. Estimate 72×46 using one figure approximation (working must be shown to get marks). [2]

$$\begin{array}{r} 70 \\ \times 50 \\ \hline 3500 \end{array} \checkmark$$

Must show 1 figure
approx for any marks

4. Calculate (full working must be shown to gain any marks) [7]

a) $57 - 39 =$

$$\begin{array}{r} 57 \\ - 39 \\ \hline 18 \end{array} \checkmark$$

c) $52 \times 37 =$

$$\begin{array}{r} 52 \\ \times 37 \\ \hline 364 \\ 1560 \\ \hline 1924 \end{array} \checkmark$$

b) $2548 \div 7 =$

$$\begin{array}{r} 364 \\ 7 \overline{) 2548} \end{array} \checkmark$$

d) $37 - 5 \times 3 + 8 =$

$$37 - 15 + 8 = 30 \checkmark$$

5. List the factor pairs of 36:

3 pairs ✓
5 pairs ✓

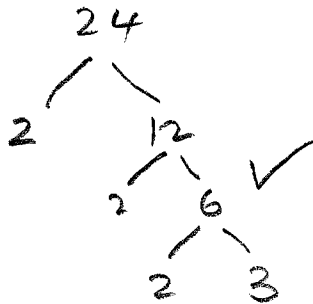
1, 36 2, 18 3, 12 4, 9 6, 6 [2]

6. Give the first 4 multiples of 3

need all 4. for marks

3, 6, 9, 12 [1]

a) Write 24 as a product of prime factors showing how you found the prime factors.



$2 \times 2 \times 2 \times 3$ [2]

7. John makes model trains and uses a scale of 1:50.

b) He is going to make a model of a train carriage that is 10 metres long.
How long would his model be?

$$10 \text{ m} = \frac{1000 \text{ cm}}{50} \checkmark$$

$$= 20 \text{ cm}$$

20 cm or 0.2 m [2]

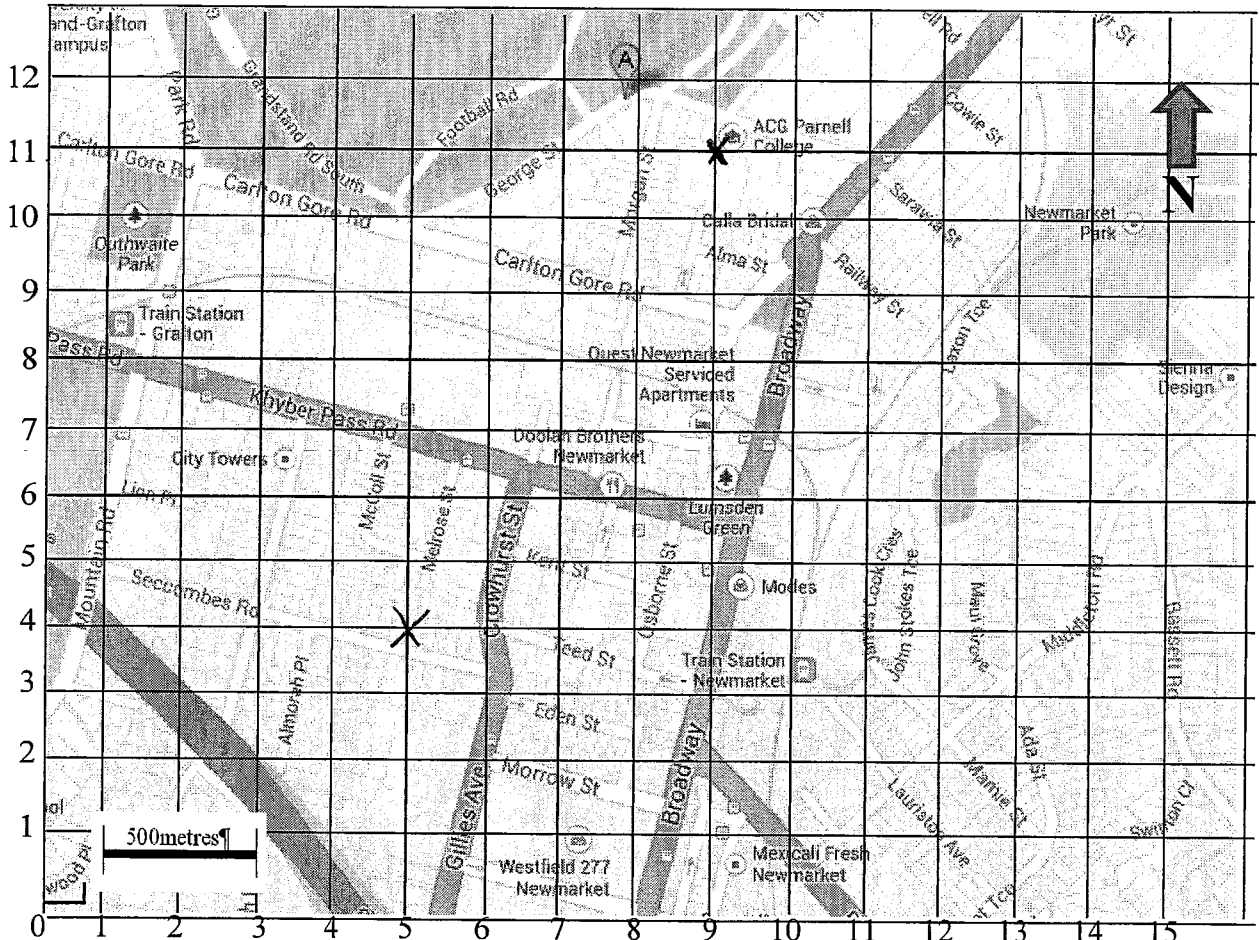
c) The height of one of John's model train drivers is 4cm.

How tall is the real train driver using his original scale of 1:50?

$$4 \text{ cm} \times 50 = \checkmark$$

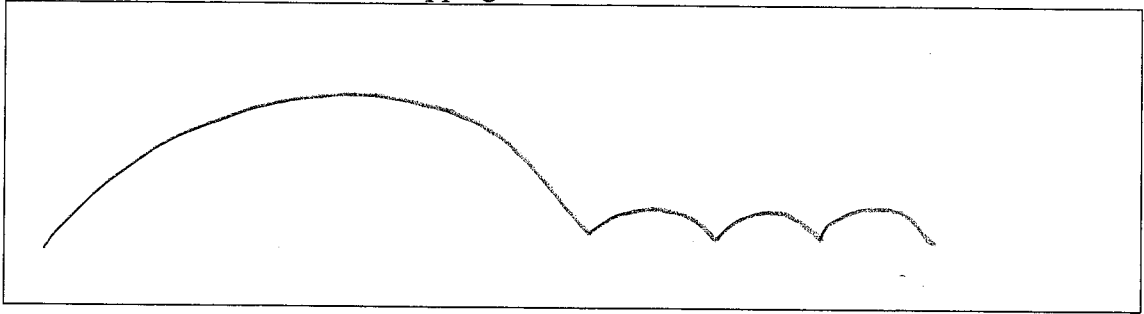
200 cm. or 2m [2]

8. Use the map to answer the questions given.



- a) Give the co-ordinates of ACG Parnell College (marked with a X) $(9, 11)$ [2] *must have brackets for full marks*
- b) What is at the co-ordinate (7.5, 6)? Doolan Brothers [1]
- c) Give the length of Carlton Gore Rd.
 $\frac{9.2 \text{ cm}}{2} \times 500$ ✓
2300m. ✓ [2]
- d) Give the compass direction to travel from ACG Parnell College to City Towers.
SW [1]
- e) Mark the co-ordinate (5,4) with an X on the map above. [1]

9. In the box below draw the locus of a soccer ball being kicked a long way and then bouncing three times before stopping.



[1]

10. Alex has 24 rings.

- a) One third of them are made of gold.
How many gold rings does she have?

$$24 \div 3 \checkmark$$

$$8 \checkmark$$

[2]

- b) Six of her rings have diamonds in.
What fraction in simplest form have diamonds in?

$$\frac{6 \div 6}{24 \div 6} \checkmark$$

$$\frac{1}{4} \checkmark$$

[2]

11. Calculate the following giving the answer in simplest form where possible showing full working. [5]

a) $\frac{2}{9} + \frac{3}{9} = \frac{5}{9} \checkmark$

b) $\frac{2}{9} + \frac{3}{9} + \frac{1}{9} = \frac{6}{9} = \frac{2}{3} \checkmark$

c) $\frac{7}{8} - \frac{3}{8} = \frac{4}{8} = \frac{1}{2} \checkmark$

12. Complete the fractions:

$$\frac{3}{4}$$

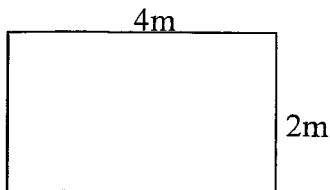
$$\frac{9}{12} \checkmark$$

$$\frac{15}{20} \checkmark$$

[2]

- 13.

- a) Calculate the area and perimeter of the rectangle below.



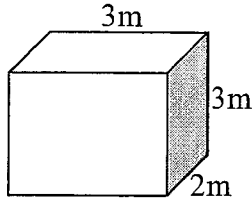
$$4 \times 2 \checkmark$$

Perimeter 12m [2]

$$4 + 4 + 2 + 2 \checkmark$$

Area 8m² [2]

b) Calculate the volume of the cuboid shown.



$$3\text{m} \times 3\text{m} \times 2\text{m} \quad \checkmark$$

$$\underline{18\text{m}^3} \quad \checkmark \quad [2]$$

14. Complete the following decimal calculations.
Full working must be shown to gain any marks.

[7]

<p>a) $5.2 \times 2.3 =$</p> $\begin{array}{r} 5.2 \\ \times 2.3 \\ \hline 156 \\ 1040 \\ \hline 11.96 \end{array} \quad \checkmark \quad \checkmark$	<p>b) $25.48 - 3.26 =$</p> $\begin{array}{r} 25.48 \\ - 3.26 \\ \hline 22.22 \end{array} \quad \checkmark$
<p>c) $8.25 \div 5 =$</p> $\begin{array}{r} 1.65 \\ 5 \overline{) 8.25} \end{array} \quad \checkmark \quad \checkmark$	<p>a) $5.32 - 3.57 =$</p> $\begin{array}{r} 5.32 \\ - 3.57 \\ \hline 1.75 \end{array} \quad \checkmark \quad \checkmark$

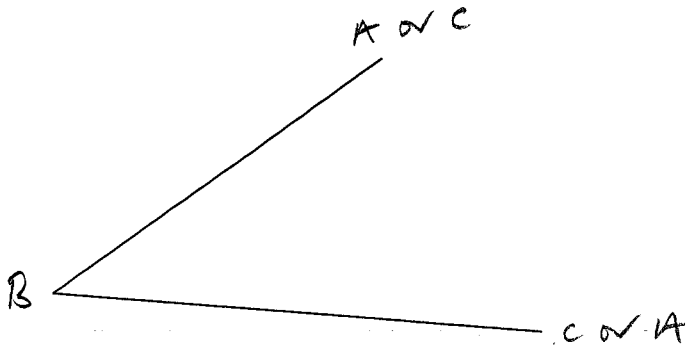
15. Complete the conversion table below.

[6]

Fractions	Decimals	Percentages
$\frac{1}{2}$	0.5	50%
$\frac{3}{8}$	0.375	37.5%
$\frac{1}{5}$ or $\frac{2}{10}$	0.2	20%

Geometry

16. Measure the angle below.



a) Write the size of the angle in the space provided.

40° ± 1 [1]

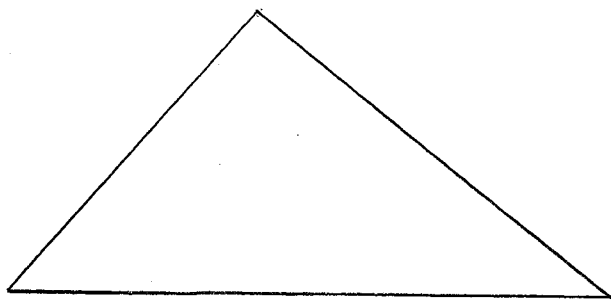
b) On the drawing above use three point notation to label the angle ABC. [1]

c) Complete the sentence below.

The angle above is a/an acute angle [1]

17.

a) Using a compass and ruler draw a triangle with sides 5cm, 6cm and 8cm.
Leave your construction lines.
(no marks will be awarded without construction lines.) [3]



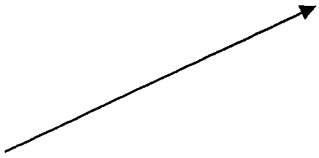
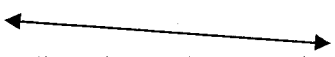
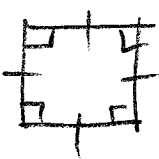
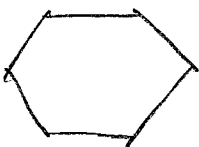
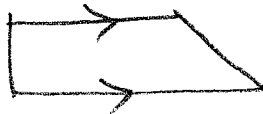
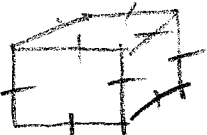
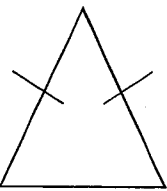
Size correct ✓
Construction ✓

b) Put the most appropriate word in the sentence below.

The triangle is a scalene triangle. [1]

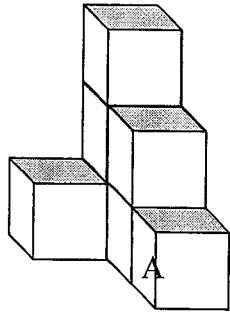
18. Complete the table below: (some have been done for you). Show proper marking to indicate equal or parallel sides or equal angles and be specific with the names.

[12]

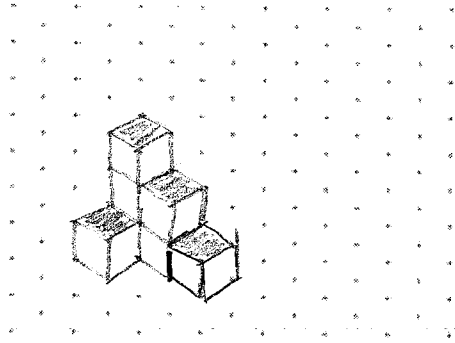
Drawing	Name	Definition
	Ray	Is a line with starting point but no end point.
	line	infinite in both directions
	Square	4 equal sides 4 right angles
	Hexagon	A polygon with 6 sides.
	Trapezium	1 pair of parallel sides
	Cube	A polyhedron with 6 sides which are all squares
	isosceles triangle	2 equal sides 2 equal angles

19.

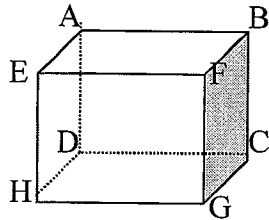
Draw an oblique projection of the block figure from the question below with the side marked A as the leading edge. [3]



*drawing correct ✓
orientation correct ✓*



20.



From the figure above name **one**

a) vertex

_____ [1]

b) face

_____ [1]

c) edge

_____ [1]

Statistics, Charts and Graphs

21. In a swimming relay team the four swimmers can swim 100 m in 85 secs, 90 secs, 87 secs and 94 secs.
Calculate the average time for the four swimmers.

$$\frac{356}{4} \quad \checkmark$$

89 ✓ [2]

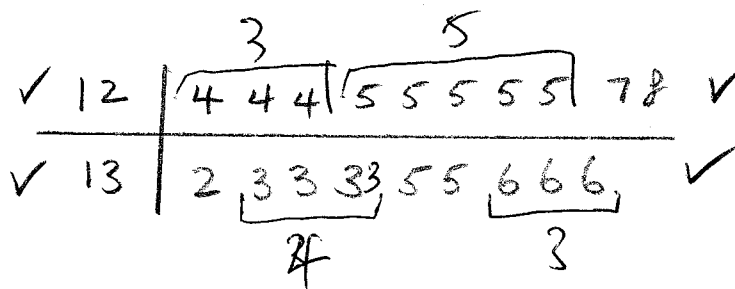
22. A survey is done of 20 year 5 students' heights. The results are given in centimetres below.

136 125 136 135 125 133 133 128 125 135
124 125 133 124 125 132 133 127 136 124

- a) Draw up a tally table and frequency table for the data. [3]

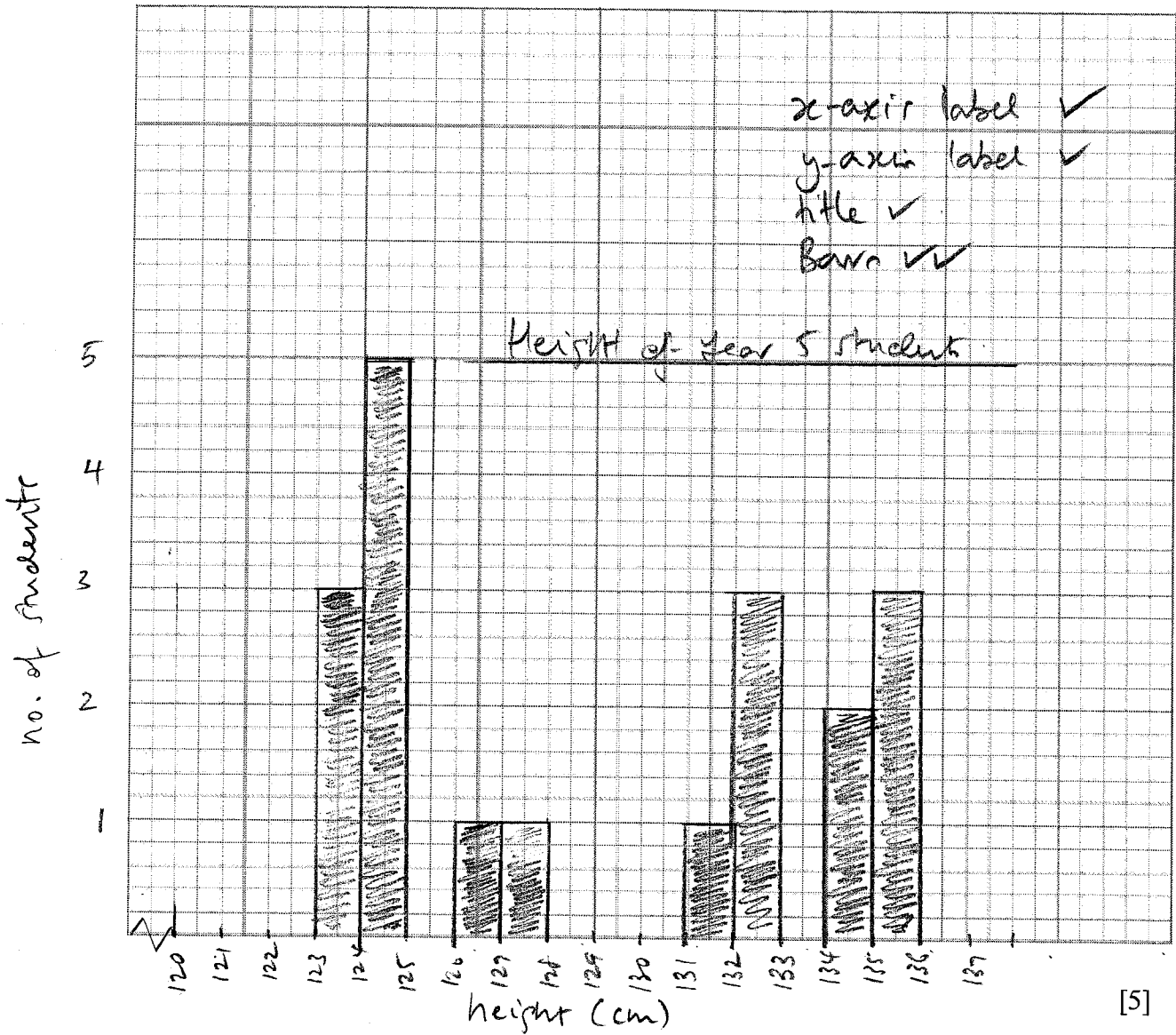
	Tally	Freq
124		3
125		5
126		
127		1
128		1
129		
130		
131		
132		1
133		4
134		
135		2
136		3

- b) Draw a stem and leaf plot for the results. [4]



lose 1 mark if leaves are not in order.

- c) Using the data on heights of the children draw a Bar graph to represent the data on the graph paper below.



[5]

- d) If there are 100 students in year 5 how many would you expect to be 133 cm tall?

$4 \times 5 \checkmark$

$\frac{20}{15} \checkmark$

[2]

Algebra

23.

a) Give the next 2 numbers in the sequence:

5, 12, 19, 26, 33, 40

[2]

b) Describe the sequence in words.

starting at 5 add 7

[2]

c) Write this formula in symbolic form.

$$a = 7n - 2$$

[2]

d) Write the formula for the following sequences in symbolic form:

18, 15, 12, 9

$$a = 21 - 3n$$

[2]

24. Solve the equations below

a) $3 \times a + 2 = 17$

$$a = 5 \quad [1]$$

b) $20 - 8 \div b = 16$

$$b = 2 \quad [1]$$

Time and Temperature

25. Convert the following times between 12 and 24 hour time.

[5]

5.04 pm	1704 ✓
12.23 pm	1223 ✓
12:15 am ✓	0015
9:45 pm ✓	2145
12 pm	1200 ✓

26. If Jake leaves home at 7.43 am and arrives at work at 9.11 am how many hours and minutes has it taken for the journey.

1 ✓ hours 28 ✓ mins [2]

27. Calculate how many minutes there are in 3 days.

$$3 \times 24 \times 60 \checkmark$$

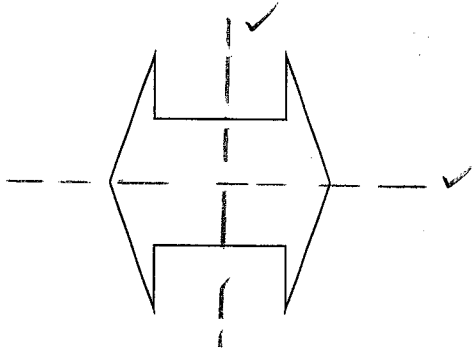
4320 ✓ mins [2]

28. On a winter's day the lowest temperature recorded was (minus) -5 degrees and the highest temperature for the day was 22 degrees. How many degrees are there between the lowest and highest temperature?

27 [1]

Transformations

29. Draw in the lines of symmetry on the figure below. [2]



30.

a) Transform the Arrow labeled A

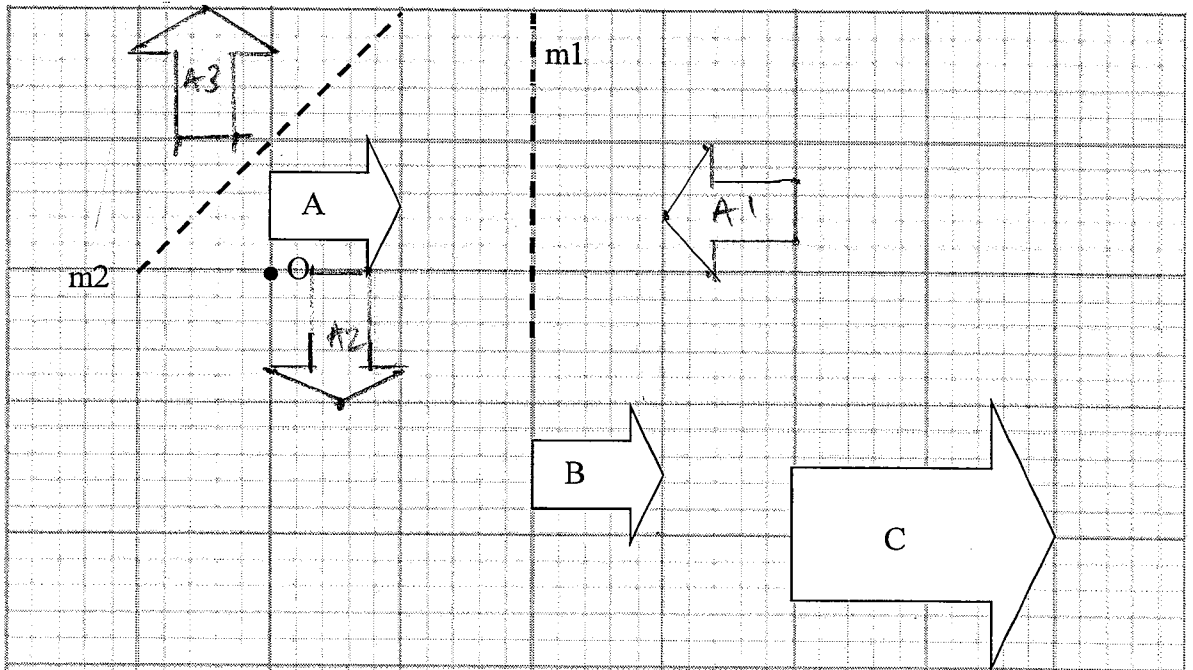
- (i) Reflect A in the mirror line m_1 and label the image A_1
- (ii) Rotate A about centre O 90 degrees clockwise and label the image A_2
- (iii) Reflect A in the mirror line m_2 and label the image A_3

orientation ✓
position ✓
[2]
rotation ✓
position ✓
[2]
orientation ✓
position ✓
[2]

b) Fully describe the single transformation that would transform

(i) A to B Translation 10 right 10 down [2]

(iv) A to C Enlargement scale factor 2 [2]



Probability

31.

a) There are 20 Pebbles in a packet. There are 5 red, 4 green, 3 yellow and 8 blue Pebbles.

(i) What is the probability that when one is picked out at random it will be green?

$\frac{4}{20}$ or $\frac{1}{5}$ [1]

(ii) What is the probability that it is not blue?

$\frac{12}{20}$ or $\frac{3}{5}$ [1]

(iii) Using the same packet of Pebbles John says if he combines some of the colours he can get a probability of 0.75. Which colours is John wanting to combine?

green, yellow, blue [1]

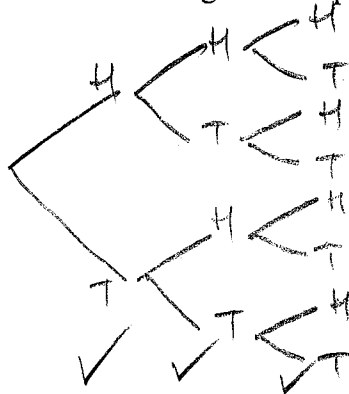
b) In a giant pack of Pebbles there are 140 Pebbles. How many green Pebbles would you estimate should be in the giant pack?

$\frac{4}{20}$ or $\frac{1}{5}$ are green
 $140 \div 5 = 28$

✓
28 [2]

32.

a) Draw a tree diagram to represent 3 coins being tossed.



[3]

b) List all of the possible outcomes.

HHH, HHT, HTH, HTT, THH, THT, TTH, TTT

[2]

4 correct 1 mark
 8 correct 2 marks

Problem Solving

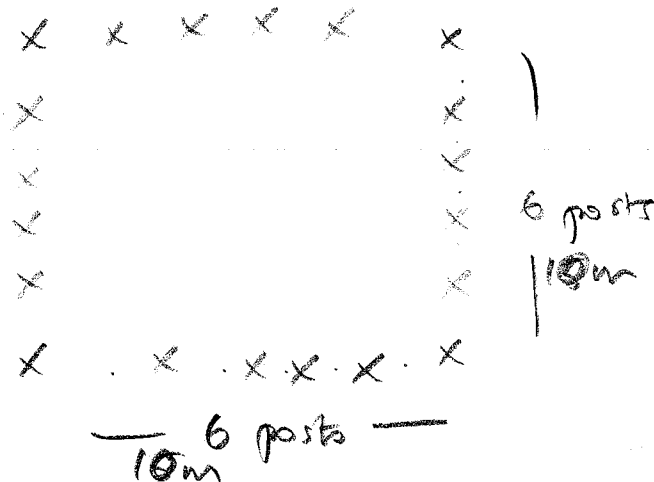
(Working must be shown for all questions in this section)

all answers must show working to get full marks

33. Farmer Oscar wants to put a fence around his paddock and he uses 20 posts.

a) The first paddock he builds is in the shape of a square and the posts must be 2 metres apart.

(i) Draw a diagram of this paddock showing the position of each of the 20 posts. [1]

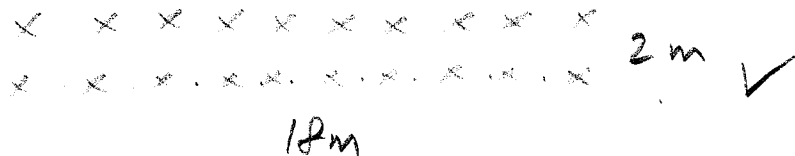


(ii) What is the area of the paddock?

$$10\text{m} \times 10\text{m} = 100\text{m}^2$$

100m² [2]

b) Draw a diagram of the paddock with the smallest area that can be made with the same 20 posts also placed 2 metres apart and calculate its area.



$$18\text{m} \times 2\text{m} = 36\text{m}^2$$

Area= 36m² [2]

34. Fred, James and Sara all sat tests. Fred scored 84%, James got 20 out of 24 correct and Sara got $\frac{17}{20}$ of all of the questions correct. They argued about who is the smartest.

Show how the test results can be compared to show who the smartest is and who came second and third out of the 3 students. (working must be shown for any marks to be awarded)

Fred 84%

James $\frac{20}{24} \times 100 = 83.3\%$ ✓

Sara $\frac{17}{20} \times 100 = 85\%$

no working
no marks

first Sara 85%

second Fred 84% ✓

third James 83.3% ✓

35. Michael is paid \$20 for the first 8 hours he works and is then paid \$30 per hour for any hours he works after the first 8. Before he gets his pay 15% is taken out to pay tax.

a)

- (i) How much will he get before paying tax if he works 11 hours?

$$\begin{aligned} \$20 \times 8 &+ \$30 \times 3 \\ \$160 &+ \$90 \end{aligned}$$

$$20 + 30 \times 3 = \$110$$

$$\$250$$

[2]

- (ii) How much will he get after he has paid tax?

$$\frac{250}{100} \times 15 =$$

$$\$212.50$$

[2]

$$\$250 - \$37.50 = \$212.50$$

- b) How many hours will he need to work to get paid \$263.50 after his tax has been paid?

$$\frac{263.50}{85} \times 100 = \$310$$

$$8 + 5 = 13 \text{ hrs}$$

$$150 + 30 = 5 \text{ hrs}$$

$$\begin{array}{r} 263.50 \\ - 310 \\ \hline 160 \\ - 150 \\ \hline 150 \end{array}$$

$$13 \text{ hrs}$$

[2]

$$17 \frac{2}{3} \text{ hrs}$$

36. JoSoe had three mathematics tests this term. He got 82% in the first and 73% in the second and 85% in the third test.

a) Calculate his average for the three tests.

$$\frac{82 + 73 + 85}{3} = \frac{240}{3} \checkmark$$

$$\frac{80}{3} \% \quad [2]$$

b) What mark does he need to get in his fourth test if he is to achieve an 82% average over the four tests?

$$\begin{array}{r} 82 \times 4 = 328 \\ - 240 \checkmark \\ \hline 88 \end{array}$$

$$\frac{88}{4} \% \quad [2]$$

37. Three children Alex, Ben and Charles are given a total of \$360.

a) Alex is given three times as much as Charles and Charles gets half as much as Ben.

Calculate how much each boy gets.

A	B	C	✓
3C	2C	C	
$6C = 360$			
$C = 60$			

any suitable working

Alex 180 ✓ Ben 120 ✓ Charles 60 ✓ [4]

b) The boys each use their money for different things.

Alex spends two thirds of his on a cell phone, Ben spends 10% of his on ice-cream and Charles invests his so that he has an extra 25% after one year. Calculate how much each boy has at the end of one year.

A $180 \div 3 = 60$

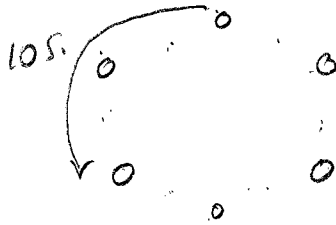
C $\frac{60 \times 25}{100} = 15$

B $120 \div 10 = 12$
 $120 - 12 = 108$

$60 + 15 = 75$

Alex \$60 ✓ Ben \$108 ✓ Charles \$75 ✓ [3]

38. Jenny's model train is set up on a circular track. Six telephone poles are evenly spaced around the track. The engine of the train takes 10 seconds to go from the first pole to the third pole.
How long would it take the engine to go all the way around the track?



$$\frac{10s}{2} = 5s$$

$$5s \times 6 = 30s$$

30 sec [2]

39. Farmer Ben keeps ducks and cows. He has 22 animals which have a total of 56 legs. All of the ducks and cows have all of their legs.
How many of each type of animal does he have?

<u>Cow</u>	<u>Ducks</u>	<u>Legs</u>	
6/24	16/32	22/56	✓

$$\begin{array}{r} \text{Ducks} = \underline{16} \quad \checkmark \\ \text{Cows} = \underline{6} \quad \checkmark \end{array}$$

[3]

40. Leslie sold oranges. The first person bought one third of her oranges. The second person bought 4. The third person bought one quarter of the remaining oranges. At the end of the day Leslie had 15 oranges left.
How many oranges did Leslie have at the start of the day?

$$15 \quad \leftarrow 15 \div 3 \times 4 = 20$$

$$20 \quad \leftarrow 20 + 4 \quad \checkmark$$

$$24 \quad \leftarrow 24 \div 2 \times 3$$

$$36 \quad \leftarrow$$

36 [2]

The End

Nina 33

Thomas 53

Oscar 86%

Piper 60%

Jasper 71%