Level 6 Maths Assessment Test 2

Name: MARK SCHEME Class: Date:

N	C	A	S	HD	Total Score	Level
/2	/14	/17	/20	/8	/61	

N Numbers and the Number System:

1. Write these numbers in order of size, starting with the smallest.

$0.44 \quad \frac{3}{7} \quad 41\% \quad \frac{2}{5} \quad \frac{9}{20}$

- 2 marks for all correct
- 1 mark – first & last correct

$\frac{2}{5}$ 41% $\frac{3}{7}$ 0.44 $\frac{9}{20}$

smallest

2 marks (L6/N1)

C Calculating:

2. In 2013, Debco made $240 million in profit.
Profits in 2014 are expected to be 20% higher.
How much profit is Debco expected to make in 2014?

Either 240×1.2 or $240 + 48$

award M1

$288 million (A2)

2 marks (L6/C1)

3. Mr Jackson divided £420 between his children in the ratio of their ages.
John is 13 and Will is 7.
How much money do they get each?

13 : 7

$\times$ (21 $\times$) 21

$\frac{420}{20} = 21$ (M1) award

273 : 147

J W

273 : 147 (A2)

2 marks (L6/C2)

4. *"The inverse of increasing by 10% is decreasing by 10%."*

Is this statement true or false?
Explain your answer

(A1)

NO – either provide an example or

(A1) – show that $0.9 \times 1.1 \neq 1$ or

– explain how it is 10% of a different amount each time

2 marks (L6/C3)

5. **Calculate:**

a) $\frac{1}{3} + \frac{3}{10}$

award M1 for either $\frac{10}{30}$ or $\frac{9}{30}$

19/30

A2

b) $\frac{3}{5} - \frac{1}{8}$

award M1 for either $\frac{24}{40}$ or $\frac{5}{40}$

19/40

A2

c) $\frac{5}{6}$ of £72

award M1 for $(72 \div 6) \times 5$

£60

A2

d) $7 \times \frac{1}{5}$

7/5 oe

A2

8 marks (L6/C4)

A **Algebra:**

6. The equation $x^3 + x = 20$ has a solution that lies between 2 and 3.
Use a trial & improvement method to find this solution correct to 1 decimal place.
Show all your working

2 marks for sight of trial for 2.5 & 2.6 and for concluding 2.6.

(18.125) (20.176)

2.6

2 marks (L6/A1)

1 mark for one complete trial correct

7. Solve:

i) $5x - 6 = 39$

$x = 9$ (A1)

ii) $2(y + 11) = 60$

$2y + 22 = 60$ or $y + 11 = 30$

award (M1)

$y = 19$ (A2)

iii) $4t + 23 = 11t + 2$

Award (M1) for up to two correct operations

e.g. $4t + 21 = 11t$ (M1)

$21 = 7t$ (M1)

$t = 3$ (A3)

6 marks (L6/A2)

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8. Here are the first five terms of a sequence:

8, 14, 20, 26, 32, ...

a) Write down an expression in terms of n for the nth term of this sequence

$6n + 2$ (A1)

b) Iona says that the 10th term is 64 – is she correct? Justify your answer.

n

10^{th} term: $6 \times 10 + 2 = 62$ (M1)

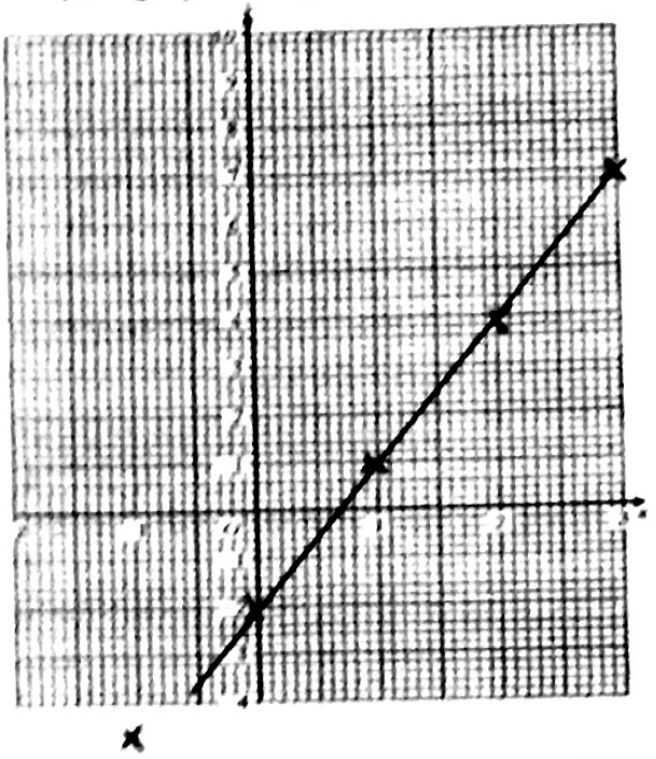
So Iona is wrong (S1)

3 marks (L6/A3)

9. (a) On the grid, draw the graph of $y = 3x - 2$

You may find the table of values useful

x	-2	-1	0	1	2	3
y	-8	-5	-2	1	4	7

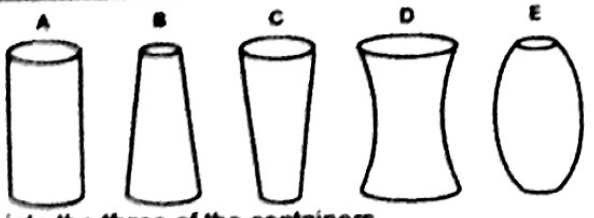


A1 (but can be seen from graph) 0-3

M1 plotting & connected

2 marks (L6/A4)

10. a) Here are 5 containers.



Water is poured at a constant rate into the three of the containers.

The graphs show the depth of water as the containers fill up.

Fill in the gaps below to show which container matches each graph.

Graph 1 matches container ..C..

Graph 2 matches container ..A..

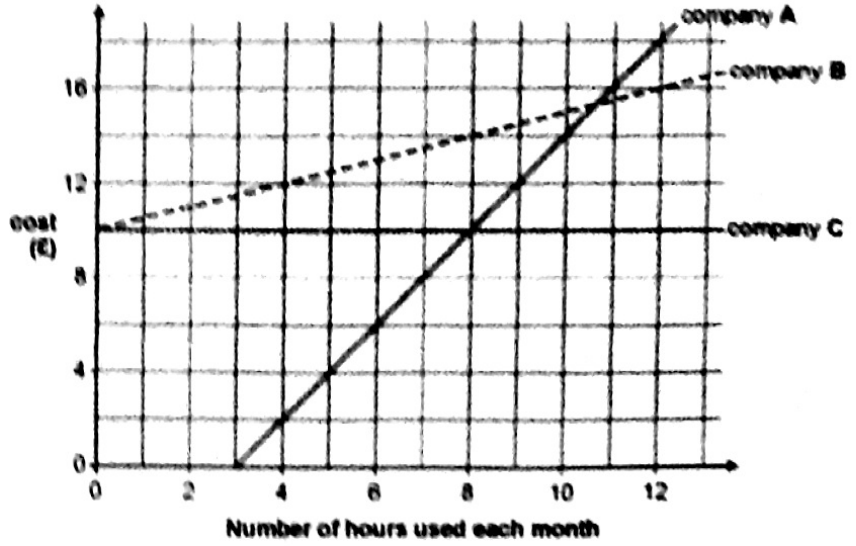
Graph 3 matches container ..E..

2 marks - all correct

1 mark - 2 correct

2 marks (L6/A5)

b) Companies charge different amounts to connect people to the Internet.
The graph shows how much three companies charge each month.



2 marks – all correct

Fill in the missing numbers in these sentences.

Company A:
The first ...3... hours used every month are free, then they charge £2 for every hour.

1 mark – 2 correct

Company B:
They charge £10 each month, with an extra charge of ...50... p for each hour used.

Company C:
They charge ...£10 per month (flat rate)...

2 marks (L6/A5)

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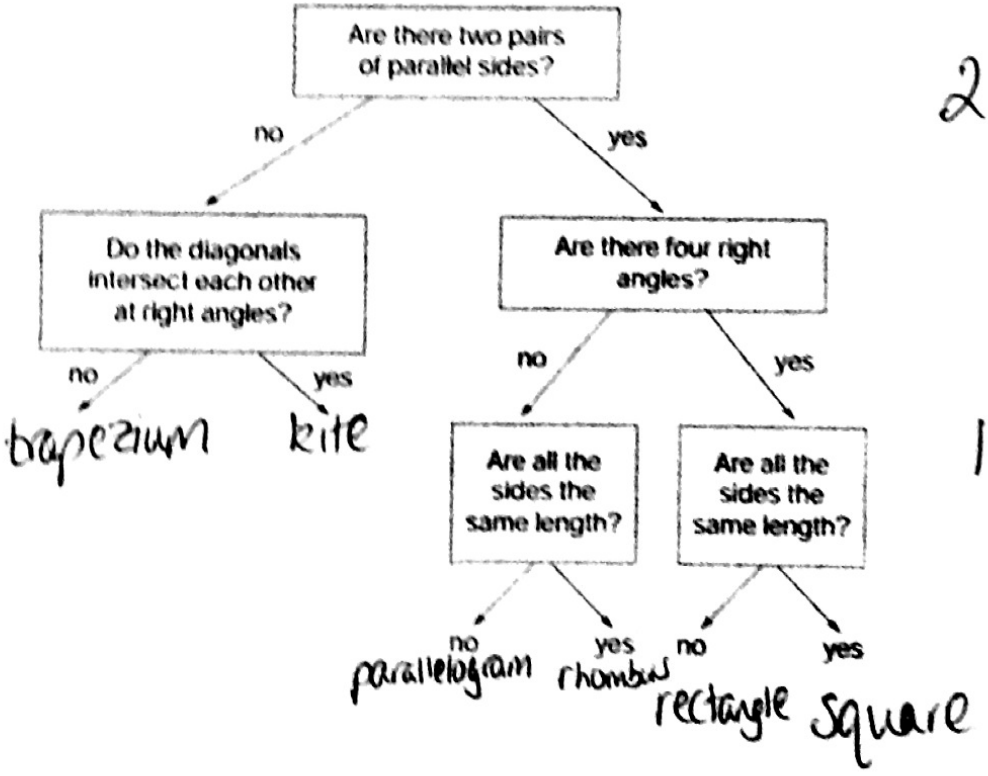
3 Shape, Space and Measure:

11. Look at the quadrilateral identification chart below – complete the missing shapes at the ends of the branches.

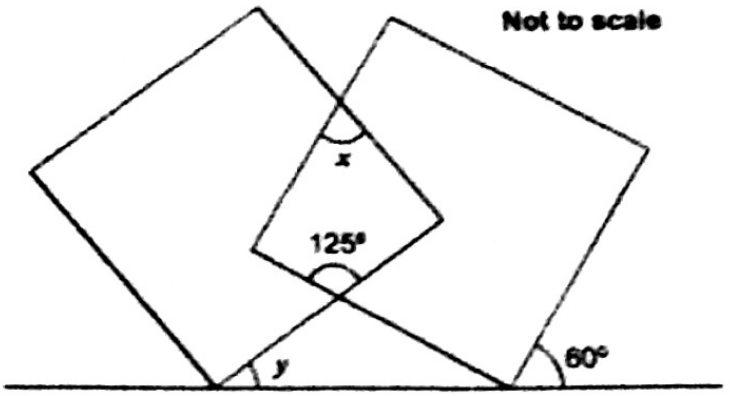


2 marks – 5 or 6 correct shapes/choices

1 mark – 3 or 4 correct

2 marks (L6/S1)

12. Calculate the values of the missing angles x and y.



x = 55° y = 25°

A1 A1

2 marks (L6/S2)

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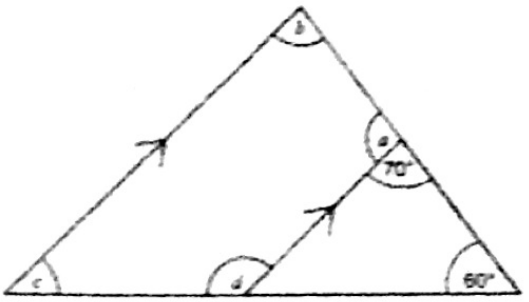
13. Look at the diagram below:



Not drawn accurately

Calculate the values of the missing angles b and c

b = 70° and c = 50°

A1 A1

2 marks (L6/S3)

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14. Kay types the instructions to draw a regular pentagon:

repeat 5 [forward 10, left turn 72]

Complete the instructions to draw a regular hexagon.

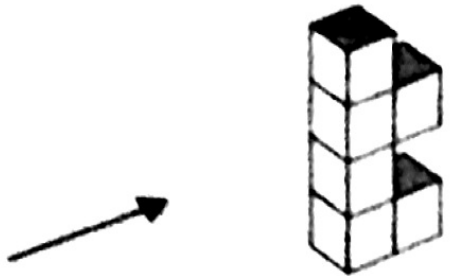
repeat 6 [forward 10, left turn 60°]

A2

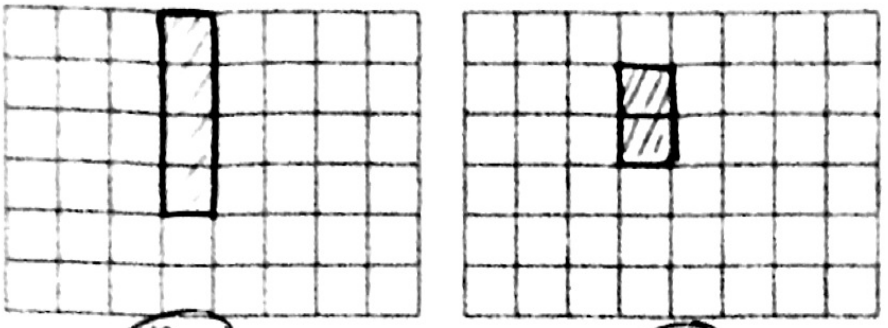
2 marks (L6/S4)

award M1 for $\frac{360}{6}$

15. The diagram shows a solid made of 6 identical cubes.



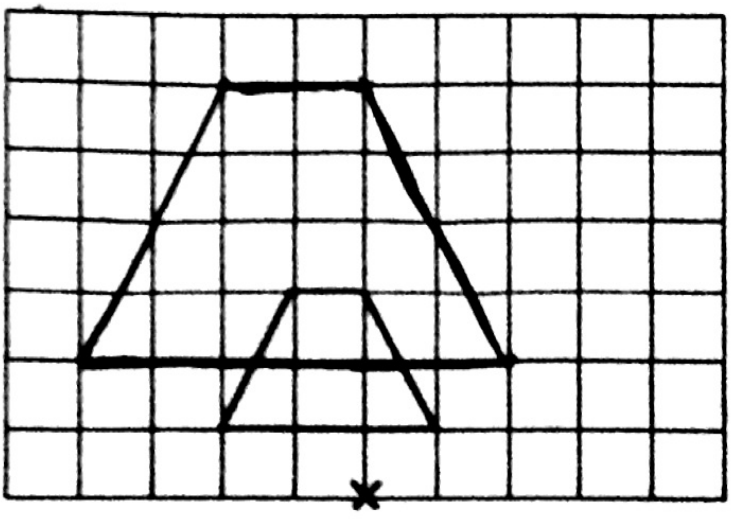
On the grids show the side elevation of the solid from the direction of the arrow and the plan of the solid.



A1 A1

2 marks (L6/S5)

16. Enlarge this shape by scale factor 2 with centre X

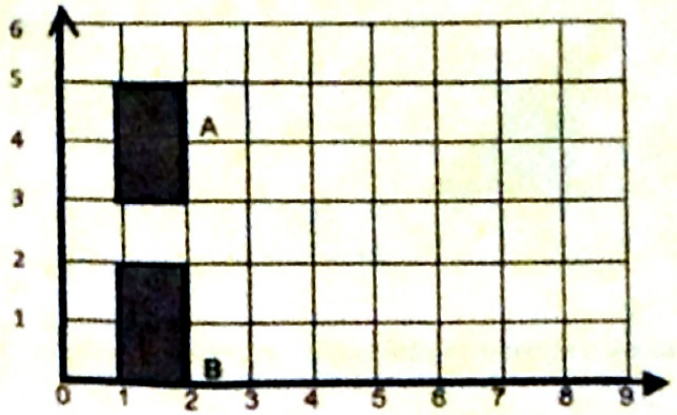


M1 correct size

M1 correct position

2 marks (L6/S6)

17. Look at the diagram below:



any 2 of: (1 mark for each)

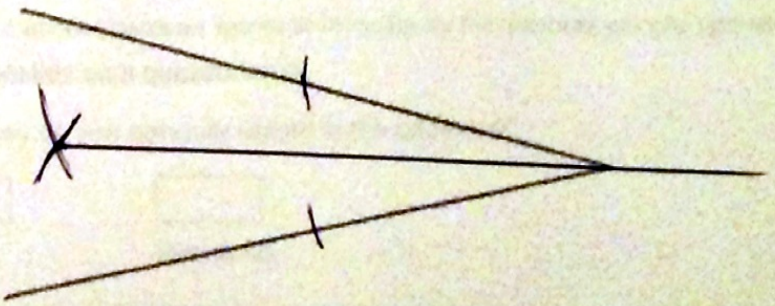
Describe two different transformations that would map shape A onto shape B:

1. Translation $\begin{pmatrix} 0 \\ -3 \end{pmatrix}$
2. Reflection in $y = 2.5$
3. Rotation 180° about (1.5, 2.5)

2 marks (L6/S7)

~~or 4. Enlargement s.f. -1, centre (1.5, 2.5)~~

18. Construct the angle bisector of the angle below:

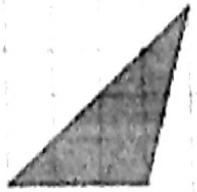


2 marks (L6/S8)

1 mark – construction process (arcs)

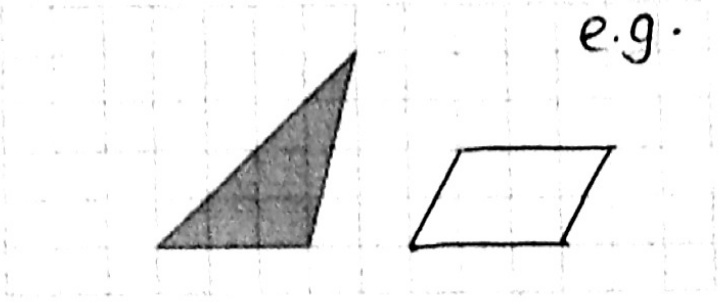
1 mark – accuracy.

19. a) Calculate the area of the triangle in the diagram below:



6 A1

b) On the grid below draw a parallelogram that has the same area as the triangle.



A1

2 marks (L6/S9)

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20. Work out the **circumference** of a circle with a radius of 8cm.
Give your answer correct to 1 decimal place

$C = \pi \times d$
$= \pi \times 16$ ← award M1

50.3cm A1

2 marks (L6/S10)

HD **Handling Data**

21. The manager of a school canteen wants to investigate the amount people spend in the canteen

She uses this question on a questionnaire.

"How much money do you normally spend in the canteen?"

☐ A lot ☐ Not much

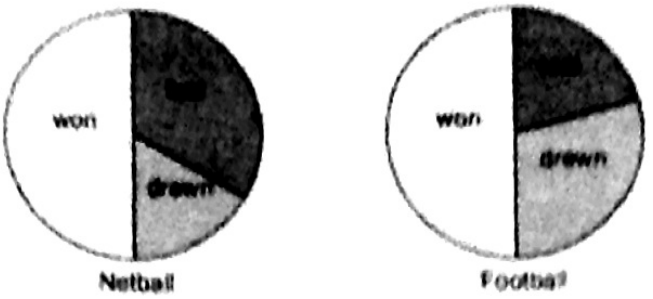
Design a better question for the canteen manager to use.
You should include some response boxes.

Any question including
- time period
- response boxes that do not overlap but cater for all.

A1

1 mark (L6/H1)

22. The pie charts show the results of a school's netball and football matches.



Netball Football

The netball team played 30 games and the football team played 24 games

a) Estimate the percentage of games the netball team lost.

approx $\frac{1}{3}$ up to $\frac{2}{5}$ ie accept 10 – 12

A1

b) David says "the two teams won the same number of games".

Is he correct? Justify your answer.

NO – netball team won 15 (half of 30)
and football team won 12 (half of 24)

A1

2 marks (L6/H2)

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23. I roll an ordinary dice and toss a coin.
If I get a '3' on the dice and a HEAD I record this as (3, H)
List all the possible outcomes

(1, H) (1, T)
(2, H) (2, T)
(3, H) (3, T)
(4, H) (4, T)
(5, H) (5, T)
(6, H) (6, T)

A1

1 mark (L6/H3)

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24. The probability that a certain traffic light shows red as James approaches it is 0.3 and the probability that it is green is 0.65. What is the probability that it is amber?

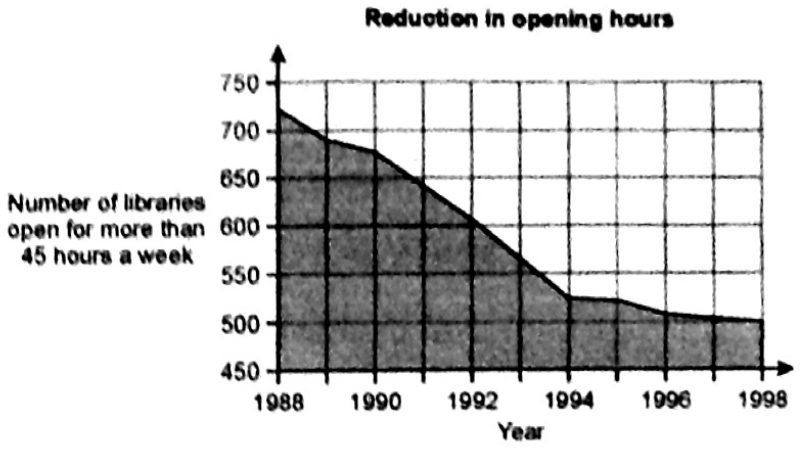
1 – 0.3 – 0.65

0.05

A1

1 mark (L6/H4)

25. A newspaper wrote an article about public libraries in England and Wales.
It published this diagram.



Data on libraries from LISU (Library and Information Statistics Unit)

Use the diagram to decide whether each statement below is true or false, or whether you cannot be certain.

(a) The number of libraries open for more than 45 hours per week **fell by more than half** from 1988 to 1998.

☐ True ☒ False ☐ Cannot be certain

Explain your answer.

Fell from 725 to 500 ie by 225, which is less than half (2)

(b) In **2004** there will be **about 450 libraries** open in England and Wales for more than 45 hours a week.

☐ True ☐ False ☒ Cannot be certain

Explain your answer.

This depends on whether the trend continues as historically. (1)

3 marks (L6/H5)