

ISEB Assessments Year 7 Maths Test 1

Author: ISEB



This test contains a selected set of 10 questions in a particular topic order.

- 100 marks are available in total.
- You should take no more than 1 hour to complete the test.
- Write your answers in the spaces provided.
- Always write down your working, except when you are told not to.
- Calculators are not allowed.

SAMPLE

NOTE TO TEACHERS

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Year 7 Maths Test 1

1. (a) The temperature at the bottom of a mountain was 18°C .

As I walked up the mountain, the temperature dropped by 20 degrees.

(i) What was the temperature when I reached the top?

Answer: $^{\circ}\text{C}$ (2)

(ii) While I was at the top, the sun came out and the temperature rose to 10°C .

What rise in temperature did the sun cause?

Answer: degrees (2)

(b) Write 168 as a product of its prime factors, using index notation.

Answer: (3)

- (c) Use the multiplication fact below to help you answer the following questions.

$$13 \times 57 = 741$$

Find the value of:

(i) 0.13×570

Answer: (1)

(ii) $7.41 \div 5.7$

Answer: (1)

(iii) $7.41 \div 1.3$

Answer: (1)

SAMPLE

Year 7 Maths Test 1

2. (a) Calculate $0.8 \text{ m} - 327 \text{ mm}$. Give your answer in **centimetres**.

Answer: cm (3)

(b) A big crate contains 120 bottles, each containing $\frac{3}{4}$ litre of juice.
How many litres of juice do the bottles contain in total?

Answer: litres (3)

(c) (i) Emma has a collection of 32 stamps.
She gives 8 of them to Hannah.
What fraction of the stamps does Emma keep?

Answer: (2)

(ii) Hannah now has 40 stamps.
What percentage of them are the new ones which Emma gave her?

Answer: % (2)

3. (a) (i) Find $\frac{3}{8}$ of 24 kg.

Answer: kg (2)

(ii) Find 30% of 120 kg.

Answer: kg (2)

(iii) Add 853 g to 2.5 kg. Give your answer in kilograms.

Answer: kg (3)

(b) Cassandra is baking a cake.

The recipe says she needs 8 ounces of flour.

She wants to work in grams.

There are 16 ounces in 1 pound.

1 pound is about 454 grams.

(i) About how many grams of flour does Cassandra need?

Answer: g (2)

(ii) Cassandra's scales only measure to the nearest 10 grams.

Write your answer to part (i) to the nearest 10 grams.

Answer: g (1)

Year 7 Maths Test 1

4. This calculation square shows two ways of getting from the 2 in the top left-hand corner to the 14 in the bottom-right corner.

There are two left-to-right calculations and two top-to-bottom calculations.

2	×	3	=	6
+				+
5				8
=				=
7	×	2	=	14

- (i) Fill in the gaps in these calculation squares.

(4)

(a)

7	×	3	=	.....
-				+
2				4
=				=
.....	×	=

(b)

.....	×	=
+				×
12				3
=				=
.....	×	6	=	120

- (ii) (a) Complete this calculation square. (2)

5	+	.....	=	.....
×				×
.....			
=				=
.....	+	.....	=	80

There is more than one way of completing this square.

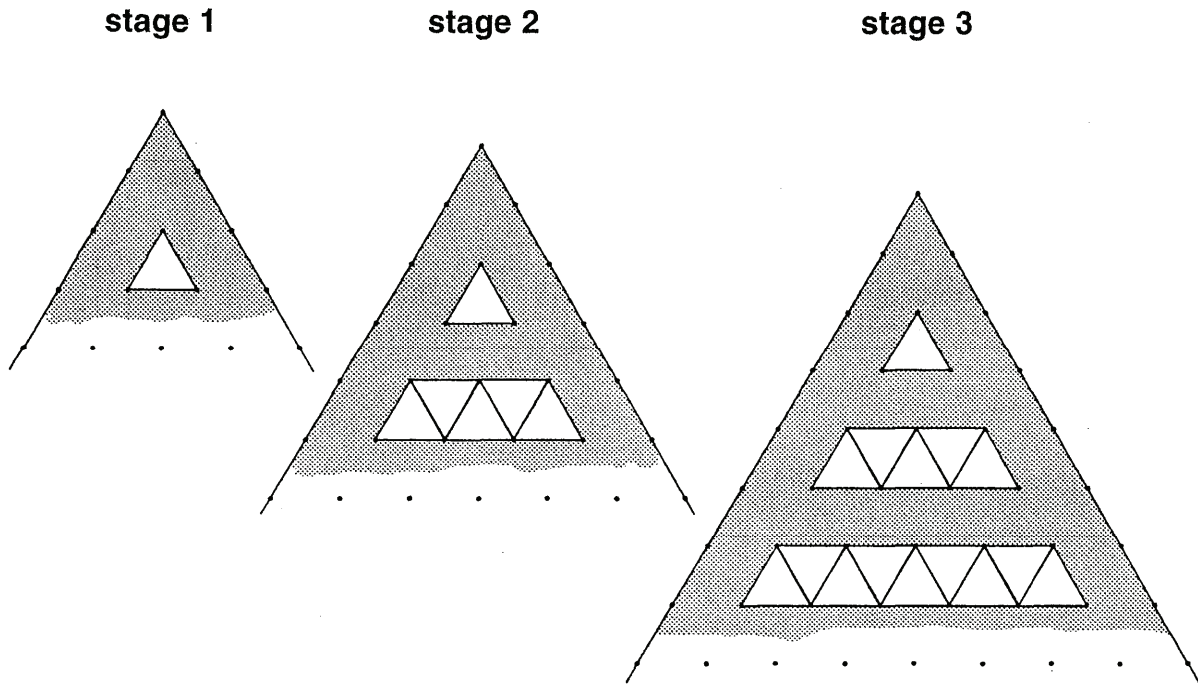
- (b) Investigate other ways. (4)

5	+	.....	=	.....
×				×
.....			
=				=
.....	+	.....	=	80

5	+	.....	=	.....
×				×
.....			
=				=
.....	+	.....	=	80

5. A gardener finds a box of white tiles in the shape of equilateral triangles. He sets them into dark cement in the angle between two flowerbeds to make a pattern.

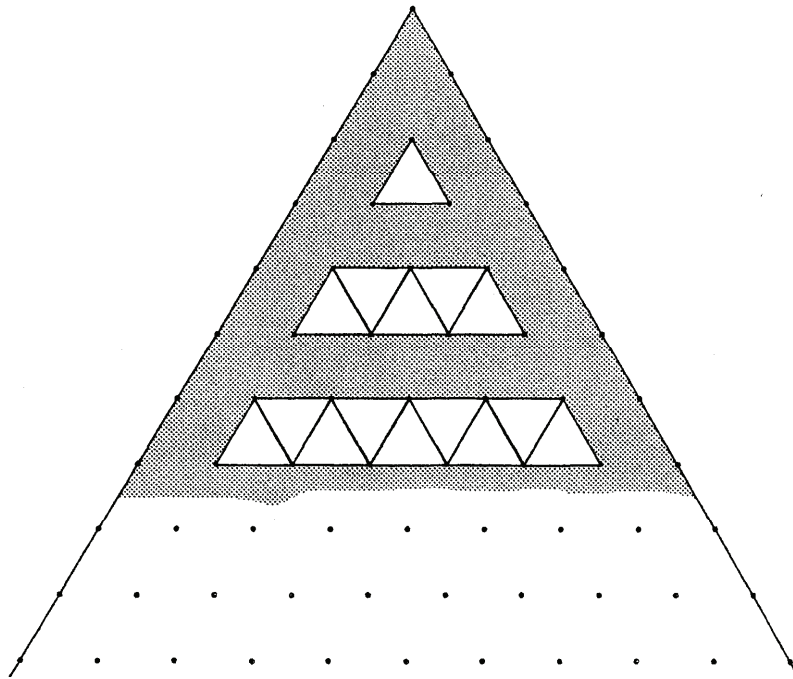
The first three stages of the pattern are drawn on isometric dotted paper.



- (i) Another copy of **stage 3** is drawn here.

Extend it to make **stage 4**.

(2)



- (ii) Complete this table for the results so far, and extend it for **stage 5**. (3)

stage	1	2	3	4	5
number of tiles added	1				
total number of white tiles	1				

- (iii) Starting with **stage 5**, how many white tiles will be **added** to make **stage 7**?

Answer: white tiles (3)

The gardener finds that there are 125 tiles in the box.

- (iv) What is the largest stage of the pattern which he can build?

Answer: **stage** (2)

Year 7 Maths Test 1

6. (a) Toffee, Honey and Marmalade are three cats.

Toffee has a mass of t kg.

- (i) Honey is 2 kg heavier than Toffee.

Write an expression for Honey's mass in kilograms.

Answer: (1)

- (ii) Marmalade is twice as heavy as Toffee.

Write an expression for Marmalade's mass in kilograms.

Answer: (1)

- (iii) The total mass of the three cats is 10 kg.

Write an equation, involving t , for the total mass of the cats. Use your answers to parts (i) and (ii) to help you.

Answer: (3)

- (b) Mr and Mrs Biggs use a formula to work out their children's pocket money.

They use a for the age in years of the child, and p for the number of pence of pocket money.

The formula is:

$$p = 10(2a + 5)$$

- (i) James is 10 years old.

How much pocket money is he given?

Answer: £ (2)

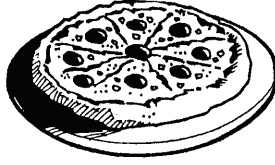
- (ii) James' sister is given £1.70

How old is she?

Answer: years (3)

7. (a) Sam's Pizza Parlour has a special offer.

80 pence for the base, plus
only 30 pence for each topping



(i) Alli's pizza has five toppings.

What does it cost?

Answer: £ (2)

(ii) Complete the formula for the cost, c pence, of a pizza with t toppings.

Answer: $c =$ (2)

(iii) Bobby's pizza costs £1.70

How many toppings are on it?

Answer: toppings (2)

(b) (i) Factorise $4x - 12y$

Answer: (2)

(ii) Multiply out the bracket $5(a + 3b)$

Answer: (2)

Turn over to the next page for question 8

SAMPLE

Year 7 Maths Test 1

8. (a) A piece of wire 3.24 metres long is bent to make a square.

(i) What is the length, in metres, of each side of the square?

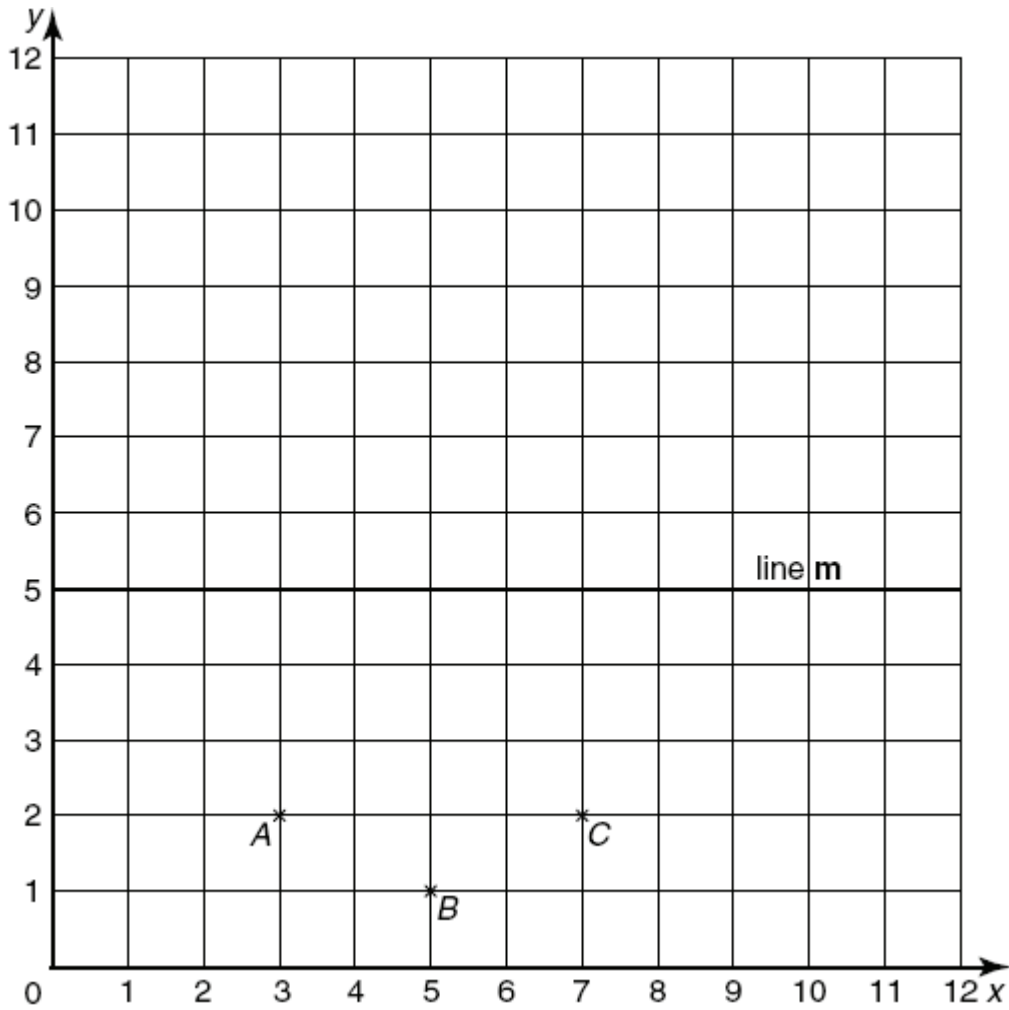
Answer: m (2)

(ii) Write your answer to part (i) in centimetres.

Answer: cm (1)

SAMPLE

- (b) (i) On the grid below, plot the point $D (5, 3)$. (1)



- (ii) Join $ABCD$ in order.
Which type of quadrilateral have you drawn?

Answer: (2)

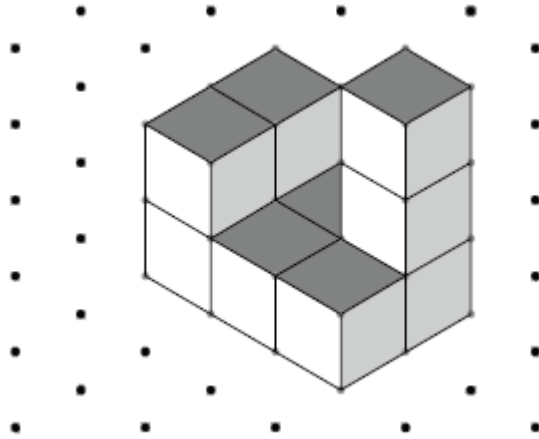
- (iii) Draw the reflection of $ABCD$ in the line m . (2)

- (iv) In a space on the grid, draw a kite. (2)

Year 7 Maths Test 1

9. (a) (i) The diagram shows a model made from centimetre cubes.
The bottom layer of the model has six cubes.

What is the volume of the model?

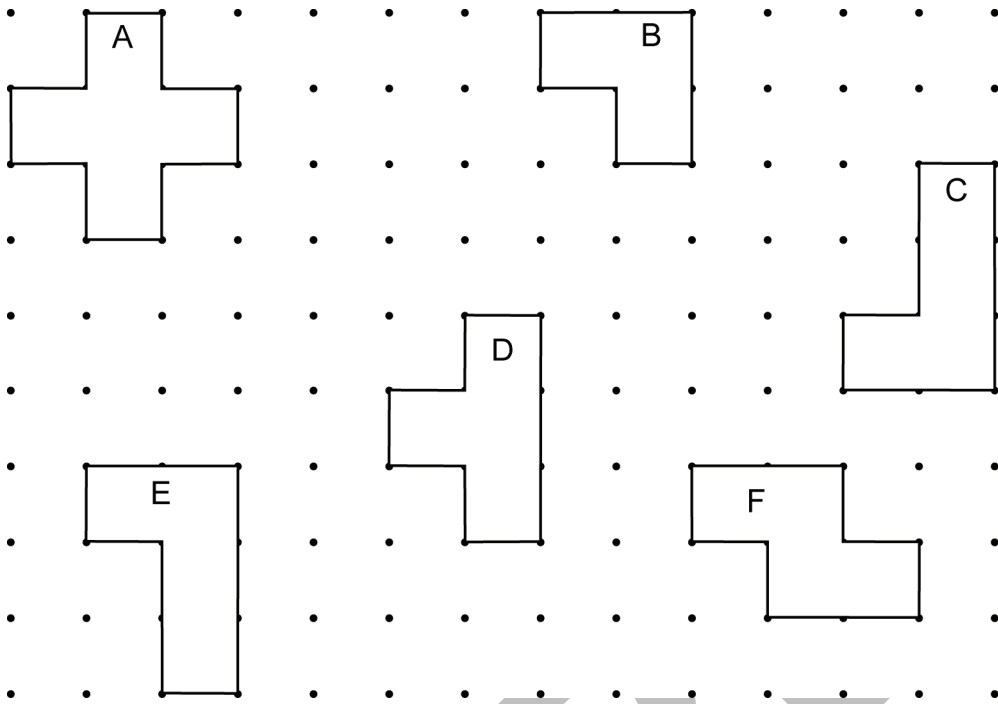


Answer: cm³ (1)

- (ii) Bert adds more cubes to form a cuboid.
What is the smallest number of cubes he must add?

Answer: cubes (1)

(b) Look at these shapes.



(i) Name a pair of shapes which are congruent.

Answer: and (1)

(ii) Which shape has the largest area?

Answer: (1)

(iii) Which shape has the smallest perimeter?

Answer: (1)

(iv) Draw in all the lines of symmetry on the shapes. (3)

(v) Mark with * the centre of rotation of any shapes with rotational symmetry. (2)

Year 7 Maths Test 1

10. Five friends have carried out an investigation into the numbers of small animals found underneath paving slabs.

Each girl studied one paving slab.

The results were recorded on a piece of paper as shown below, but rain has made some figures unreadable.

name	numbers of animals found under a paving slab				
	centipedes	millipedes	woodlice	beetles	total
Anna	5	3	8	4	
Bea	0	4	5	2	
Carrie	6		8	3	
Diana		6	3		
Edwina	4	3			
total	24	19		17	

Edwina can remember that she found twice as many woodlice as millipedes, and the same number of beetles as Carrie.

- (i) Complete the table of data. (6)

- (ii) Use the data in the table to prepare a short report on the investigation.

You may draw diagrams if you wish.

- Do not spend too long on this question. (4)

ISEB Assessments Year 7 Maths Test 1 Answers

Author: ISEB



This document consists of a full set of answers to the questions in Year 7 Maths Test 1.

Total marks: 100

These answers are part of *Year 7 Maths Test 1.zip*, which also contains:

Year 7 Maths Test 1.pdf

(the test)

Year 7 Maths Test 1 Teacher's Document.pdf

(the teacher's document)

REQUIRED PRINT SETTINGS

This document must be printed with Page Scaling set to 'None'.

It can be printed on A4, or on A3 in booklet form, according to your preference.

Printer settings may vary, so refer to the documentation for your printer to locate its paper size option. Page scaling can be found in Adobe Acrobat under Page Handling in the print dialog. To reach the print dialog, go to File>Print.

Illustrations will not print to the correct scale if these settings are not applied.

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Year 7 Maths Test 1 Answers

1. (a) (i) -2°C (2)
 (ii) 12 degrees (2)
- (b) $2^3 \times 3 \times 7$ (3)
- (c) (i) 74.1 (1)
 (ii) 1.3 (1)
 (iii) 5.7 (1)
2. (a) 47.3 cm (3)
- (b) 90 litres (3)
- (c) (i) $\frac{3}{4}$ (2)
 (ii) 20% (2)
3. (a) (i) 9 kg (2)
 (ii) 36 kg (2)
 (iii) 3.353 kg (3)
- (b) (i) 227 g (2)
 (ii) 230 g (1)
4. (i) (a) Completed calculation square (2)

7	×	3	=	21
-				+
2				4
=				=
5	×	5	=	25

(b) Completed calculation square (2)

8	×	5	=	40
+				×
12				3
=				=
20	×	6	=	120

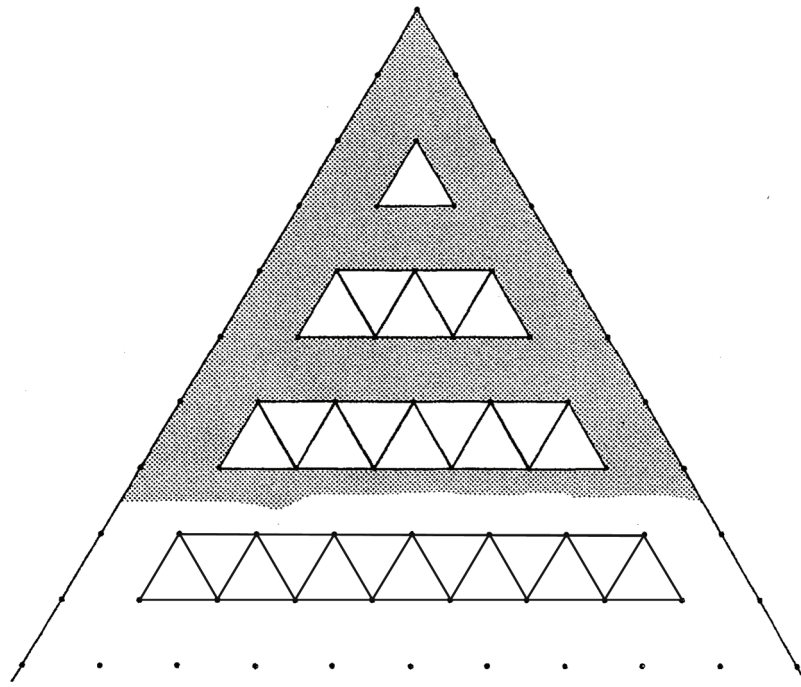
(ii) (a) Answers vary (2)

5	+	15	=	20
×				×
12				4
=				=
60	+	20	=	80

(b) Answers vary (4)

5	+	3	=	8	5	+	5	=	10
×				×	×				×
4				10	6				8
=				=	=				=
20	+	60	=	80	30	+	50	=	80

5. (i) Freehand drawing acceptable (2)



- (ii) Completed table (1 mark for each column) (3)

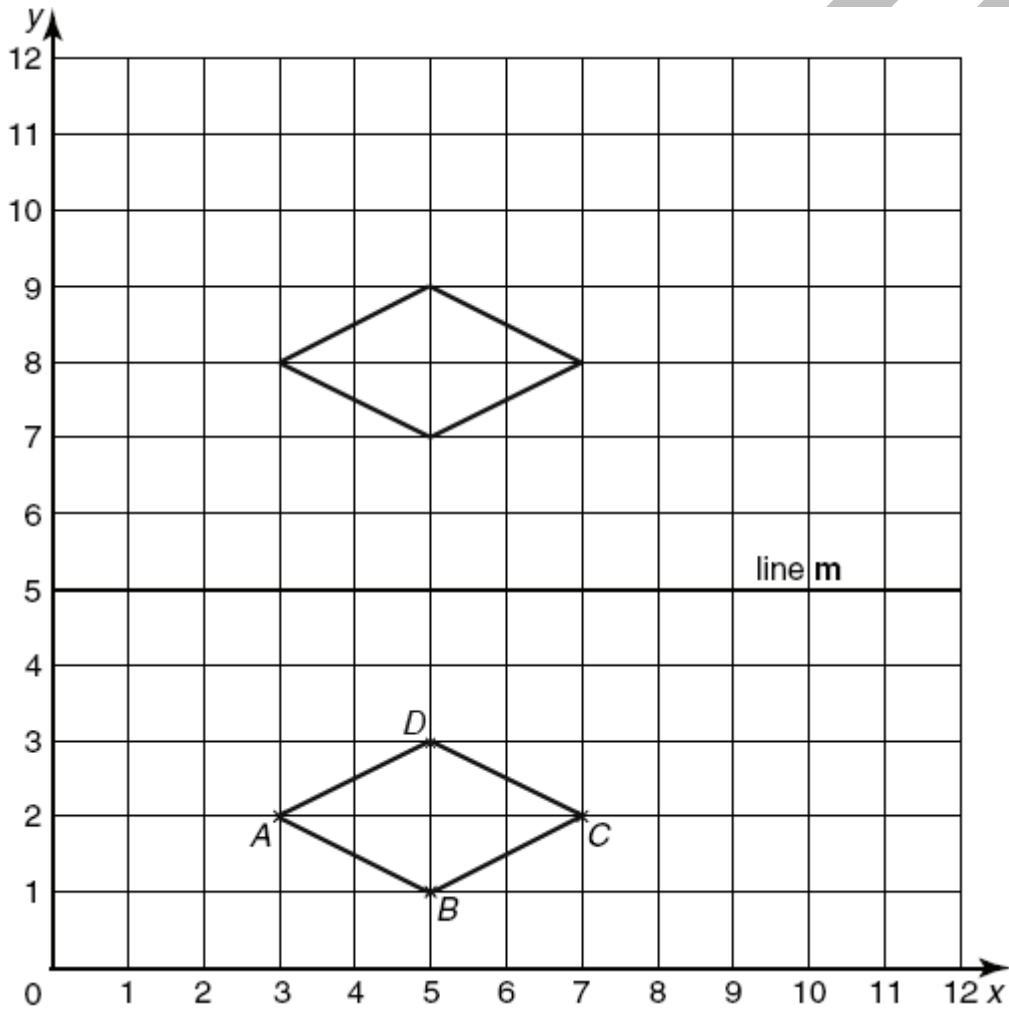
stage	1	2	3	4	5
number of tiles added	1	4	4	4	4
total number of white tiles	1	5	9	13	17

- (iii) 8 white tiles (3)

- (iv) stage 32 (2)

6. (a) (i) $t + 2$ (1)
 (ii) $2t$ (1)
 (iii) $4t + 2 = 10$ (allow 2 marks for $3t + 2 = 10$) (3)
- (b) (i) £2.50 (2)
 (ii) 6 years (3)

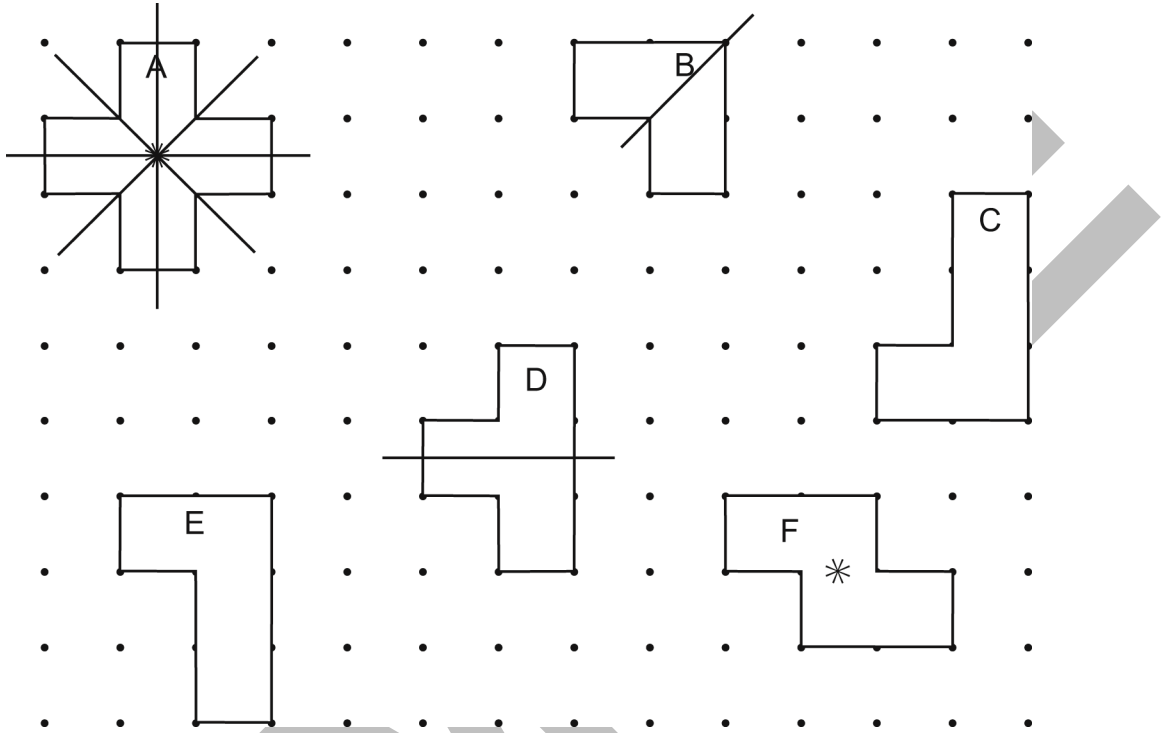
7. (a) (i) £2.30 (2)
 (ii) $c = 80 + 30t$ or $c = 30t + 80$ (2)
 (iii) 3 toppings (2)
- (b) (i) $4(x - 3y)$ (allow 1 mark for $2(2x - 6y)$) (2)
 (ii) $5a + 15b$ (2)
8. (a) (i) 0.81 m (2)
 (ii) 81 cm (allow the mark if correct based upon incorrect part (i)) (1)
- (b) (i) (5, 3) plotted on diagram (1)



- (ii) $ABCD$ drawn; rhombus (2)
 (iii) Reflection in line **m** drawn (2)
 (iv) Check pupils have drawn a kite accurately (2)

Year 7 Maths Test 1 Answers

9. (a) (i) 10 cm^3 (1)
 (ii) 8 cubes (1)
- (b) (i) C and E (1)
 (ii) A (1)
 (iii) B (1)
 (iv) Lines of symmetry drawn on A, B and D (2)



- (v) Centres of rotation marked on A and F (2)

10. (i) Completed table (6)

name	numbers of animals found under a paving slab				
	centipedes	millipedes	woodlice	beetles	total
Anna	5	3	8	4	20
Bea	0	4	5	2	11
Carrie	6	3	8	3	20
Diana	9	6	3	5	23
Edwina	4	3	6	3	16
total	24	19	30	17	90

- (ii) Answers vary (4)

SAMPLE

ISEB Assessments

Year 7 Maths Test 1

Teacher's Document



This test contains a selected set of 10 questions aimed at Year 7 pupils.
The questions are arranged in a particular topic order as follows:

Topic	Question
Number	1
	2
Calculations	3
Problems	4
	5
Algebra	6
	7
Shape, Space and Measures	8
	9
Handling Data	10

Total marks: 100

Total time allocated: 1 hour

Calculators are not allowed.

Teachers should feel free to use this resource in whatever way is most appropriate for their scheme of work. The test can be attempted all at once and is designed to take a Year 7 pupil approximately one hour to complete.

Some questions require pupils to explain their answers. If you feel that this is too demanding, pupils can be instructed to explain themselves orally to you or to the rest of the class in a discussion.

Please refer to the printing instructions provided on the next page of this teacher's document before printing copies of the test or the accompanying answers.

This teacher's document is part of *Year 7 Maths Test 1.zip*, which also contains:

Year 7 Maths Test 1.pdf (the test)
Year 7 Maths Test 1 Answers.pdf (the answers)

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SAMPLE